



# JDF Specification

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# Table of Contents

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## Front Matter

<b>Legal Notice</b> .....	i
<b>Table of Contents</b> .....	iii
<b>JDF Preface and User Overview</b> .....	xlv
<b>Chapter 1 Introduction</b> .....	1
<b>1.1 Background on XJDF</b> .....	1
<b>1.2 Design Criteria for XJDF</b> .....	1
1.2.1 Simplify and reduce variations .....	2
1.2.1.1 Reduce the barrier of entry .....	2
1.2.1.2 Replace abstract data types with explicit elements and children .....	2
1.2.1.3 Remove ResourceLinks .....	2
1.2.2 Enable dynamic changes .....	2
1.2.2.1 Remove schema defaults. ....	2
1.2.2.3 Retain the semantic structures .....	2
1.2.2.4 Remove implementation specific details.....	2
1.2.4.1 Spawning and Merging.....	3
1.2.5 Enhance Compatibility with standard XML and XML Tools .....	3
1.2.6 Partitioning and Inheritance .....	3
1.2.6.1 Removal of Partition SignatureName .....	3
1.2.7 Device Capabilities .....	3
<b>1.3 Background on JDF</b> .....	3
<b>1.4 Document References</b> .....	4
<b>1.5 Conventions Used in This Specification</b> .....	4
1.5.1 Text Styles .....	4
1.5.2 XPath Notation Used in this Specification.....	5
1.5.3 Modification Notes .....	6
1.5.3.1 Location of Modification Notes.....	6
1.5.4 Specification of Cardinality.....	7
1.5.5 Template for Narrative Description of Resources .....	7
1.5.6 Template for Tables that Describe Elements .....	8
<b>1.6 Glossary</b> .....	9
1.6.1 Conformance Terminology.....	16
1.6.2 Conformance Requirements for JDF XJDF Entities .....	17
1.6.2.1 Conformance Requirements for Support of Attributes and Attribute Values.....	17
1.6.2.2 Conformance Requirements for Support of Elements .....	18

## Table of Contents

1.6.2.3 Conformance Requirements for Support of Processes .....	18
1.6.2.4 Conformance Requirements for Support of Combined Processes.....	18
1.6.3 Conformance to Settings Policy.....	19
1.6.4 Interoperability Conformance Specifications.....	19
<b>1.7 Data Structures .....</b>	<b>19</b>
<b>1.8 Units .....</b>	<b>22</b>
1.8.1 Counting in JDF XJDF .....	23
<b>Chapter 2 Overview of JDF XJDF .....</b>	<b>25</b>
<b>2.1 System Components .....</b>	<b>25</b>
2.1.1 Job Components.....	25
2.1.1.1 Jobs and Nodes .....	25
2.1.1.2 Elements.....	25
2.1.1.3 Attributes .....	25
2.1.1.4 Relationships.....	25
2.1.1.5 Links .....	26
2.1.2 Referencing External Data.....	26
2.1.3 Identifying Sections of XJDF from External Sources .....	26
2.1.4 Identifying Sections of XJDF from within the Same XJDF .....	26
2.1.5 Workflow Component Roles .....	26
2.1.5.1 Machines .....	27
2.1.5.2 Devices.....	27
2.1.5.3 Agents .....	27
2.1.5.4 Queue .....	27
2.1.5.5 Controllers .....	28
2.1.5.6 Management Information Systems—MIS .....	28
2.1.5.7 System Interaction .....	28
<b>2.2 JDF XJDF Workflow .....</b>	<b>30</b>
2.2.1 Product Intent and Processes.....	31
2.2.2 Job Structure.....	31
<b>2.3 Hierarchical Tree Structure and Networks in JDF .....</b>	<b>33</b>
<b>2.4 Role of Messaging in JDF XJDF .....</b>	<b>35</b>
<b>2.5 Coordinate Systems in JDF XJDF .....</b>	<b>35</b>
2.5.1 Introduction .....	35
2.5.1.1 Source Coordinate Systems .....	37
2.5.2 Coordinates and Transformations.....	37
2.5.3 Coordinate Systems of Resources and Processes.....	38
2.5.3.1 Coordinate Systems of Combined Processes.....	38
2.5.3.2 Coordinate System Transformations .....	38
2.5.4 Product Example: Simple Brochure .....	40
2.5.5 General Rules .....	46

---

2.5.6 Homogeneous Coordinates .....	46
<b>Chapter 3 Structure of XJDF JDF Nodes and Jobs .....</b>	<b>49</b>
<b>3.1 Modification Notes .....</b>	<b>50</b>
<b>3.2 Generic Contents of All Elements .....</b>	<b>50</b>
3.2.1 Structure Diagram.....	52
<b>3.3 JDF XJDF Node .....</b>	<b>53</b>
3.3.1 Modification Notes .....	53
3.3.2 XJDF Node .....	53
3.3.3 Structure Diagram of XJDF JDF Node.....	61
<b>3.4 Common Elements .....</b>	<b>63</b>
3.4.1 Comment .....	63
3.4.2 GeneralID.....	66
<b>3.5 Common Node Types .....</b>	<b>67</b>
3.5.1 Product Intent Nodes .....	68
3.5.1.1 Process Group Nodes.....	69
3.5.1.2 Use of the Types Attribute in Process Group Nodes – Gray Boxes .....	69
<b>3.5.2 Process Nodes.....</b>	<b>70</b>
3.5.2.1 Use of NamedFeature in Product and Process Group Nodes .....	70
3.5.2.2 Specifying NamedFeatures with GeneralID .....	70
3.5.2.3 ResourceLink Structure in Process Group Nodes.....	70
3.5.3 Combined Process Nodes .....	72
3.5.3.1 Combined Process Nodes with Multiple Processes of the Same Type.....	72
3.5.3.2 Specifying non-linear dependencies in a Combined Process Node.....	73
3.5.4 Process Nodes.....	75
<b>3.6 AncestorPool .....</b>	<b>75</b>
3.6.1 Ancestor.....	75
<b>3.7 CustomerInfo .....</b>	<b>77</b>
<b>3.8 NodeInfo .....</b>	<b>77</b>
<b>3.9 StatusPool .....</b>	<b>77</b>
<b>3.10 ResourcePool and its Resource Children .....</b>	<b>77</b>
3.10.1 ResourcePool .....	77
3.10.2 Resource.....	77
3.10.3 Abstract Resource .....	78
3.10.3.1 SourceResource .....	82
3.10.4 Structure Diagram.....	82
<b>3.11 ProductList .....</b>	<b>83</b>
<b>3.12 ResourceSet .....</b>	<b>84</b>
3.12.1 Structure Diagram of ResourceSet.....	85

3.12.2 Dependent .....	86
<b>3.13 Subelements of Resource .....</b>	<b>87</b>
3.13.1 Location .....	87
3.13.2 Part .....	88
3.13.2.1 Partitioned Subsets of ResourceSets .....	94
3.13.2.2 Selecting a Partition .....	94
3.13.2.3 Referencing Multiple Resources of the Same Type .....	94
3.13.2.4 Multiple Part Elements in One Resource .....	94
3.13.3 AmountPool .....	95
3.13.3.1 Structure Diagram of AmountPool .....	95
3.13.3.2 PartAmount .....	95
<b>3.13.4 Resource Classes .....</b>	<b>97</b>
3.13.4.1 Parameter Resource .....	97
3.13.4.1.1 Abstract Parameter Resource .....	98
3.13.4.2 Intent Resource .....	98
3.13.4.3 ImplementationResource .....	98
3.13.4.4 Consumable Resource .....	98
3.13.4.5 Quantity Resource .....	98
3.13.4.6 Handling Resource .....	98
3.13.4.7 PhysicalResource .....	99
3.13.4.7.1 Abstract PhysicalResource .....	99
3.13.4.7.2 Location .....	100
3.13.4.8 PlaceHolder Resource .....	101
3.13.5 Position of Resources within JDF Nodes .....	101
3.13.6 Pipe Resources .....	101
3.13.7 ResourceUpdate .....	101
<b>3.14 ResourceLinkPool and ResourceLink .....</b>	<b>102</b>
3.14.1 ResourceLinkPool .....	102
3.14.2 ResourceLink .....	102
3.14.3 Structure Diagram .....	105
3.14.3.1 AmountPool and PartAmount .....	112
3.14.3.1.1 AmountPool .....	112
3.14.3.1.2 PartAmount .....	112
3.14.4 Resource Amount .....	116
3.14.4.1 Specifying Amount for a Partially-Completed Process .....	116
3.14.5 Identification of PhysicalResources .....	116
3.14.5.0.1 Lot .....	117
<b>3.15 ResourcePool and ResourceLinkPool – Deep Structure .....</b>	<b>118</b>
3.15.1 ResourceElement – Subelement of a Resource .....	118
3.15.1.1 ResourceElement .....	118
3.15.1.2 Abstract ResourceElement .....	118
3.15.2 ResourceRef – Element for Inter-Resource Linking and refelement .....	118
3.15.2.1 ResourceRef .....	118

---

3.15.2.2 Abstract ResourceRef .....	118
3.15.2.3 ResourceRef Elements in the AncestorPool/Ancestor Element .....	119
3.15.2.4 Status of a Resource that Contains an rRef Reference .....	120
3.15.2.5 Alignment of ResourceLink and ResourceRef .....	120
3.15.3 Set of Resources and Partitioned Subsets Thereof.....	121
3.15.4 Resource Amount .....	121
3.15.4.1 Evaluating and Updating Amount-Related Attributes in a Device.....	122
3.15.4.2 Specifying Amount for a Partially-Completed Process .....	123
3.15.5 Description of Partitioned Resources.....	125
3.15.5.1 Subelements in Partitioned Resources.....	125
3.15.5.2 Amount in Partitioned Resources .....	126
3.15.5.3 Relating PartIDKeys and Partitions .....	127
3.15.5.3.1 Incomplete Partitions .....	127
3.15.5.3.2 Number of Partition Keys per Partitioned Leaf or Node .....	127
3.15.5.3.3 Degenerate Partitions .....	128
3.15.5.4 Partitioning of Resource Subelements .....	128
3.15.5.5 Logical Partitions and the Identical Element.....	130
3.15.5.5.1 Identical .....	130
3.15.5.5.2 Restrictions when using Identical Elements .....	131
3.15.6 PartIDKeys Attribute and Partition Keys .....	132
3.15.6.1 Partitionable Resource .....	132
3.15.6.2 Part .....	134
3.15.6.3 Options in Intent Resources .....	144
3.15.6.4 Locations of PhysicalResources .....	144
3.15.7 Linking to Resources .....	145
3.15.7.1 Linking to Subsets of Resources.....	146
3.15.7.2 Reordering the Processing of Resources .....	146
3.15.7.3 Handling Amount in a ResourceLink to a Partitioned Resource .....	146
3.15.7.4 Implicit, Sparse and Explicit PartUsage in Partitioned Resources .....	147
3.15.7.5 Referencing Multiple Resources of the Same Type .....	148
3.15.8 Splitting and Combining Resources.....	150
<b>3.16 AuditPool and Audit .....</b>	<b>151</b>
3.16.1 AuditPool.....	152
3.16.2 Structure Diagram.....	153
3.16.3 Abstract Audit.....	154
3.16.4 Audit.....	154
3.16.4.1 Structure Diagram of Audit Elements .....	155
3.16.4.2 Created .....	158
3.16.4.3 Deleted .....	158
3.16.4.4 Merged .....	158
3.16.4.5 Modified.....	159
3.16.4.6 AuditNotification .....	159
3.16.4.7 Notification .....	159
3.16.4.8 PhaseTime .....	163

## Table of Contents

3.16.4.9 AuditStatus.....	163
3.16.4.9.1 Activity .....	166
3.16.4.9.2 ModulePhase .....	166
3.16.4.10 ProcessRun.....	168
3.16.4.11 AuditResource .....	169
3.16.4.12 ResourceAudit .....	169
3.16.4.12.1 Logging Machine Data by Using the ResourceAudit .....	172
3.16.4.12.2 Logging Changes in Product Descriptions by Using the ResourceAudit .....	173
3.16.4.13 Spawed.....	174
<b>3.17 XJDF Extensibility .....</b>	<b>175</b>
<b>3.18 JDF Extensibility .....</b>	<b>175</b>
3.18.1 Namespaces in XML .....	175
3.18.1.1 JDF XJDF Namespace.....	175
3.18.1.2 JDF Extension Namespace .....	175
3.18.2 Foreign Namespaces.....	175
3.18.3 Creating Extension Assets:.....	176
3.18.4 Extending Process Types .....	176
3.18.4.1 Rules about Process Extension .....	176
3.18.5 Extending the NodeInfo and CustomerInfo Nodes .....	177
3.18.6 Extending Existing Resources .....	177
3.18.7 Extending NMTOKEN Lists.....	177
3.18.8 Creating New Resources.....	177
3.18.9 Future JDF XJDF Extensions .....	178
3.18.10 Maintaining Extensions .....	178
3.18.11 Processing Unknown Extensions.....	178
3.18.12 Derivation of Types in XML Schema.....	178
<b>3.19 JDF Versioning .....</b>	<b>178</b>
3.19.1 JDF Versioning Requirements .....	178
3.19.2 JDF Version Definition .....	179
3.19.3 JDF Version Policies.....	179
3.19.3.1 JDF Specification Version Policies .....	179
3.19.3.2 JDF Schema Version Policies .....	180
3.19.3.3 JDF Application Version Policies.....	180
3.19.3.3.1 JDF Agent Version Policies .....	180
3.19.3.3.2 JDF Device/Controller Version Policies .....	180
<b>Chapter 4 Life Cycle of JDF XJDF .....</b>	<b>183</b>
<b>4.1 Introduction .....</b>	<b>183</b>
<b>4.2 Creation and Modification .....</b>	<b>183</b>
4.2.1 Product Intent Constructs .....	183
4.2.1.1 Representation of Product Intent .....	184
4.2.1.2 Representation of Product Binding.....	184

---

4.2.2 Specification of Delivery of End Products .....	184
4.2.3 Specification of Process Specifics for Product Intent Nodes .....	184
<b>4.3 Process Routing .....</b>	<b>186</b>
4.3.1 Determining Executable Nodes .....	186
4.3.2 Distributing Processing to Work Centers or Devices .....	187
4.3.3 Device / Controller Selection.....	188
<b>4.4 Execution Model .....</b>	<b>188</b>
4.4.1 Serial Processing .....	188
4.4.2 Partial Processing of Nodes with Partitioned Resources.....	190
4.4.3 Overlapping Processing Using Pipes .....	191
4.4.3.1 Dynamic Pipes .....	194
4.4.3.2 Pipes of Partitionable Resources.....	195
4.4.3.3 Example JMFPush Sequence.....	195
4.4.3.4 Comparison of Non-Dynamic and Dynamic Pipes.....	196
4.4.4 Parallel Processing .....	196
4.4.5 Iterative Processing .....	197
4.4.5.1 Informal Iterative Processing.....	197
4.4.5.2 Formal Iterative Processing .....	197
4.4.6 Approval, Quality Control and Verification .....	197
<b>4.5 Spawning and Merging .....</b>	<b>198</b>
4.5.1 Case 1: Standard Spawning and Merging .....	199
4.5.2 Case 2: Spawning and Merging with Resource Copying.....	201
4.5.2.1 Spawning of Resources with Inter-Resource Links.....	201
4.5.3 Case 3: Parallel Spawning and Merging of Partitioned Resources .....	202
4.5.4 Case 4: Nested Spawning and Merging in Reverse Sequence .....	202
4.5.5 Case 5: Spawning and Merging of Independent Jobs .....	203
4.5.6 Case 6: Simultaneous Spawning and Merging of Multiple Nodes .....	203
<b>4.6 Node and Resource IDs .....</b>	<b>203</b>
<b>4.7 Error Handling .....</b>	<b>204</b>
4.7.1 Classification of Notifications .....	204
4.7.2 Event Description.....	204
4.7.3 Error Logging in the JDF File.....	205
4.7.4 Error Handling via Messaging (JMF) .....	205
<b>4.8 Test Running .....</b>	<b>205</b>
4.8.1 Resource Status During a Test Run .....	205
<b>4.9 Capability and Constraint Definitions .....</b>	<b>206</b>
<b>Chapter 5 JMF XJMF Messaging with the Job Messaging Format .</b>	<b>207</b>
<b>5.1 JMF XJMF Root .....</b>	<b>208</b>

5.1.1 Message .....	210
5.1.2 Message .....	210
5.1.3 Structure Diagram.....	211
<b>5.2 List of All JMF XJMF Messages .....</b>	<b>213</b>
<b>5.3 JMF XJMF Message Families .....</b>	<b>216</b>
5.3.1 Query .....	216
5.3.1.1 Subscription .....	218
5.3.2 Command .....	220
5.3.3 Signal .....	222
5.3.3.1 Trigger .....	223
5.3.3.2 ChangedPath .....	224
5.3.4 Response.....	224
5.3.5 Acknowledge.....	226
5.3.6 Registration.....	229
<b>5.4 JMF Handshaking .....</b>	<b>229</b>
5.4.1 Single Query/Command Response Communication .....	230
5.4.2 Signal and Acknowledge Handshaking.....	230
5.4.3 Reliable Signalling .....	230
5.4.4 Persistent Channels.....	230
5.4.4.1 Persistent Channels for Signals.....	231
5.4.4.2 Persistent Channels for Commands .....	231
5.4.5 Subscription .....	231
5.4.5.1 ObservationTarget .....	232
5.4.6 Scope of Subscriptions .....	233
5.4.7 Deleting Persistent Channels.....	233
<b>5.5 JMF Messaging Levels .....</b>	<b>233</b>
<b>5.6 Error and Event Messages .....</b>	<b>234</b>
<b>5.7 Message Template .....</b>	<b>234</b>
5.7.1 Object Type Column .....	235
5.7.1.1 QueryTypeObj .....	235
5.7.1.2 CommandTypeObj.....	235
5.7.1.3 ResponseTypeObj.....	235
<b>5.8 Messages for Events and Capabilities .....</b>	<b>236</b>
5.8.1 Events .....	237
5.8.2 KnownControllers.....	237
5.8.3 KnownDevices .....	237
5.8.3.1 QueryKnownDevices.....	237
5.8.3.1.1 DeviceFilter .....	238
5.8.3.2 DeviceFilter .....	238
5.8.3.3 ResponseKnownDevices .....	239

5.8.3.3.1 DeviceList .....	239
5.8.3.4 DeviceList .....	239
5.8.3.5 SignalKnownDevices .....	240
<b>5.8.4 KnownJDFServices .....</b>	<b>240</b>
<b>5.8.5 KnownMessages .....</b>	<b>240</b>
5.8.5.1 QueryKnownMessages .....	240
5.8.5.1.1 KnownMsgQuParams .....	241
5.8.5.2 KnownMsgQuParams .....	241
5.8.5.3 ResponseKnownMessages .....	241
5.8.5.3.1 MessageService .....	242
5.8.5.4 MessageService .....	242
5.8.5.5 SignalKnownMessages .....	244
<b>5.8.6 KnownSubscriptions .....</b>	<b>244</b>
5.8.6.1 QueryKnownSubscriptions .....	245
5.8.6.1.1 SubscriptionFilter .....	245
5.8.6.2 SubscriptionFilter .....	245
5.8.6.3 ResponseKnownSubscriptions .....	246
5.8.6.3.1 SubscriptionInfo .....	246
5.8.6.4 SubscriptionInfo .....	247
5.8.6.5 SignalKnownSubscriptions .....	247
<b>5.8.7 Notification .....</b>	<b>248</b>
5.8.7.1 QueryNotification .....	248
5.8.7.1.1 NotificationFilter .....	249
5.8.7.2 NotificationFilter .....	249
5.8.7.3 ResponseNotification .....	250
5.8.7.4 SignalNotification .....	250
5.8.7.4.1 Notification .....	251
5.8.7.4.2 Error .....	254
5.8.7.4.3 Event .....	254
5.8.7.4.4 Milestone .....	254
<b>5.8.8 RepeatMessages .....</b>	<b>255</b>
<b>5.8.9 RequestForAuthentication .....</b>	<b>255</b>
5.8.9.1 RequestForAuthentication Command .....	255
5.8.9.1.1 AuthenticationCmdParams .....	256
5.8.9.1.2 Certificate .....	257
5.8.9.1.3 AuthenticationResp .....	257
5.8.9.2 RequestForAuthentication Query .....	257
5.8.9.2.1 AuthenticationQuParams .....	258
<b>5.8.10 StopPersistentChannel .....</b>	<b>259</b>
5.8.10.1 CommandStopPersistentChannel .....	259
5.8.10.1.1 StopPersChParams .....	260
5.8.10.2 StopPersChParams .....	260
5.8.10.3 ResponseStopPersistentChannel .....	260
<b>5.9 Messages to Query/Command a Job, Device or Controller Relating to Jobs and Devices .....</b>	<b>261</b>

## Table of Contents

5.9.1 FlushResources .....	262
5.9.1.1 FlushResources Command .....	262
5.9.1.2 CommandFlushResources .....	262
5.9.1.3 FlushResources Query .....	263
5.9.1.4 QueryFlushResources .....	263
5.9.1.4.1 FlushResourceParams .....	264
5.9.1.5 ResponseFlushResources.....	264
5.9.1.5.1 FlushedResources .....	265
5.9.1.6 SignalFlushResources.....	265
5.9.2 ModifyNode.....	265
5.9.2.1 ModifyNode Command .....	265
5.9.2.2 ModifyNode Signal.....	265
5.9.2.2.1 ModifyNodeCmdParams .....	265
5.9.2.2.2 NewComment .....	266
5.9.3 NewJDF .....	267
5.9.3.1 NewJDF Query .....	267
5.9.3.1.1 NewJDFQuParams .....	267
5.9.3.2 NewJDF Command.....	267
5.9.3.2.1 NewJDFCmdParams .....	268
5.9.3.2.2 IDInfo .....	268
5.9.4 NodeInfo .....	269
5.9.5 Occupation.....	269
5.9.6 Resource.....	269
5.9.6.1 Resource Query.....	269
5.9.6.2 QueryResource.....	269
5.9.6.2.1 ResourceQuParams .....	270
5.9.6.3 Resource Command.....	274
5.9.6.4 CommandResource .....	274
5.9.6.4.1 ResourceCmdParams .....	276
5.9.6.5 ResponseResource .....	279
5.9.6.5.1 ResourceInfo .....	279
5.9.6.6 SignalResource .....	284
5.9.7 ResourcePull.....	284
5.9.7.1 ResourcePullParams .....	285
5.9.8 ShutDown .....	286
5.9.8.1 CommandShutDown.....	287
5.9.8.1.1 ShutDownCmdParams .....	287
5.9.8.2 ShutDownCmdParams.....	287
5.9.8.3 ResponseShutDown .....	288
5.9.9 Status.....	288
5.9.9.1 QueryStatus.....	288
5.9.9.1.1 StatusQuParams .....	289
5.9.9.2 StatusQuParams .....	289
5.9.9.3 ResponseStatus .....	291
5.9.9.3.1 DeviceInfo .....	291
5.9.9.4 DeviceInfo .....	291

---

5.9.9.4.1 Activity .....	294
5.9.9.5 JobPhase.....	294
5.9.9.6 ModuleStatus .....	297
5.9.9.7 SignalStatus .....	298
5.9.10 Track .....	299
5.9.11 UpdateJDF.....	299
5.9.11.1 UpdateJDF Command.....	299
5.9.11.2 UpdateJDF Signal .....	300
5.9.11.2.1 UpdateJDFCmdParams .....	300
5.9.11.2.2 CreateLink .....	301
5.9.11.2.3 CreateResource .....	301
5.9.11.2.4 MoveResource .....	301
5.9.11.2.5 RemoveLink .....	301
5.9.12 WakeUp .....	302
5.9.12.1 CommandWakeUp.....	303
5.9.12.1.1 WakeUpCmdParams .....	303
5.9.12.2 WakeUpCmdParams.....	303
5.9.12.3 ResponseWakeUp .....	303
<b>5.10 Messages for Pipe Control .....</b>	<b>304</b>
5.10.1 PipeControl .....	304
5.10.1.1 CommandPipeControl .....	305
5.10.2 PipeParams .....	305
5.10.3 Common PipeControl Element .....	305
5.10.3.1 PipeParams.....	305
5.10.3.2 @Operation = Close .....	307
5.10.4 PipeClose.....	307
5.10.4.1 @Operation = Pull .....	307
5.10.5 PipePull.....	307
5.10.5.1 @Operation = Push .....	308
5.10.6 PipePush.....	308
5.10.6.1 @Operation = Pause .....	309
5.10.7 PipePause.....	309
5.10.7.1 ResponsePipeControl.....	310
<b>5.11 Queue Support .....</b>	<b>310</b>
5.11.1 Queue Entry ID Generation .....	310
<b>5.12 Messages for Queue Entry Handling .....</b>	<b>311</b>
5.12.1 AbortQueueEntry .....	317
5.12.1.1 AbortQueueEntryParams .....	317
5.12.2 HoldQueueEntry .....	318
5.12.2.1 HoldQueueEntryParams .....	318
5.12.3 ModifyQueueEntry .....	318
5.12.3.1 CommandModifyQueueEntry .....	319
5.12.3.1.1 ModifyQueueEntryParams .....	319

5.12.3.2 ResponseModifyQueueEntry1 .....	321
5.12.4 RemoveQueueEntry .....	321
5.12.4.1 RemoveQueueEntryParams .....	322
5.12.5 RequestQueueEntry .....	322
5.12.5.1 CommandRequestQueueEntry .....	322
5.12.5.1.1 RequestQueueEntryParams .....	323
5.12.5.2 RequestQueueEntryParams .....	323
5.12.5.3 ResponseRequestQueueEntry1 .....	323
5.12.6 ResubmitQueueEntry .....	324
5.12.6.1 CommandResubmitQueueEntry .....	324
5.12.6.1.1 ResubmissionParams .....	325
5.12.6.2 ResubmissionParams .....	325
5.12.6.2.1 Referencing values for incremental update .....	325
5.12.6.2.1.1 Finding the correct XJDF node to update .....	325
5.12.6.2.1.2 Finding the correct Resource to update .....	325
5.12.6.2.2 Updating values .....	325
5.12.6.2.3 Removing values .....	325
5.12.6.3 ResponseResubmitQueueEntry1 .....	326
5.12.7 ResumeQueueEntry .....	326
5.12.7.1 ResumeQueueEntryParams .....	327
5.12.8 ReturnQueueEntry .....	327
5.12.8.1 CommandReturnQueueEntry .....	328
5.12.8.1.1 ReturnQueueEntryParams .....	328
5.12.8.2 ReturnQueueEntryParams .....	328
5.12.8.3 ResponseReturnQueueEntry1 .....	329
5.12.9 SetQueueEntryPosition .....	329
5.12.9.1 QueueEntryPosParams .....	329
5.12.10 SetQueueEntryPriority .....	330
5.12.10.1 QueueEntryPriParams .....	330
5.12.11 SubmitQueueEntry .....	330
5.12.11.1 CommandSubmitQueueEntry .....	331
5.12.11.1.1 QueueSubmissionParams .....	331
5.12.11.2 QueueSubmissionParams .....	331
5.12.11.3 ResponseSubmitQueueEntry .....	334
5.12.12 SuspendQueueEntry .....	335
5.12.12.1 SuspendQueueEntryParams .....	335
<b>5.13 Messages for Global Handling of Queues .....</b>	<b>335</b>
5.13.1 CloseQueue .....	337
5.13.2 FlushQueue .....	337
5.13.2.1 FlushQueue Command .....	337
5.13.2.1.1 FlushQueueParams .....	338
5.13.2.2 FlushQueue Query .....	338
5.13.2.2.1 FlushQueueInfo .....	339
5.13.3 HoldQueue .....	339
5.13.4 OpenQueue .....	339

---

5.13.5 QueueEntryStatus.....	339
5.13.6 QueueStatus .....	339
5.13.6.1 QueryQueueStatus .....	340
5.13.6.1.1 QueueStatusParams .....	340
5.13.6.2 ResponseQueueStatus .....	341
5.13.6.3 SignalQueueStatus .....	341
5.13.7 ResumeQueue.....	342
5.13.8 SubmissionMethods.....	342
5.13.8.1 SubmissionMethods.....	342
<b>5.14 Elements for Queues .....</b>	<b>343</b>
5.14.1 Queue .....	343
5.14.2 QueueEntry.....	345
5.14.3 QueueEntryDef .....	347
5.14.4 QueueFilter .....	348
<b>5.15 Gang Jobs .....</b>	<b>349</b>
5.15.1 ForceGang.....	350
5.15.1.1 CommandForceGang .....	350
5.15.1.1.1 GangCmdFilter .....	351
5.15.1.2 GangCmdFilter .....	351
5.15.1.3 ResponseForceGang .....	351
5.15.2 GangStatus .....	351
5.15.2.1 CommandGangStatus .....	351
5.15.2.1.1 GangQuFilter .....	352
5.15.2.2 GangQuFilter .....	352
5.15.2.3 ResponseGangStatus .....	352
5.15.2.3.1 GangInfo .....	352
5.15.2.4 GangInfo .....	352
<b>5.16 Extending Messages .....</b>	<b>353</b>
5.16.1 IfraTrack Support .....	354
<b>Chapter 6 Processes .....</b>	<b>355</b>
<b>6.1 Combining Individual Process Steps .....</b>	<b>355</b>
6.1.1 Nodes with Multiple Processes of the Same Type.....	355
<b>6.2 Process Template .....</b>	<b>355</b>
<b>6.3 General Processes .....</b>	<b>358</b>
6.3.1 Approval.....	358
6.3.2 Buffer .....	358
6.3.3 Combine.....	359
6.3.4 Delivery .....	359
6.3.5 ManualLabor .....	360
6.3.6 Ordering .....	360

6.3.7 Packing .....	360
6.3.8 QualityControl .....	360
6.3.9 ResourceDefinition.....	361
6.3.10 Split .....	361
6.3.11 Verification .....	361
<b>6.4 Prepress Processes .....</b>	<b>363</b>
6.4.1 AssetListCreation.....	363
6.4.2 Bending.....	363
6.4.3 ColorCorrection.....	364
6.4.4 ColorSpaceConversion .....	364
6.4.5 ContactCopying .....	365
6.4.6 ContoneCalibration .....	366
6.4.7 CylinderLayoutPreparation .....	366
6.4.8 DBDocTemplateLayout.....	367
6.4.9 DBTemplateMerging .....	367
6.4.10 DieDesign .....	367
6.4.11 DieLayoutProduction.....	367
6.4.12 DigitalDelivery .....	370
6.4.13 FilmToPlateCopying.....	370
6.4.14 FormatConversion .....	371
6.4.15 ImageEnhancement.....	371
6.4.16 ImageReplacement .....	371
6.4.17 ImageSetting.....	371
6.4.18 Imposition.....	372
6.4.18.1 Glossary for Automated Imposition .....	373
6.4.18.2 Variables for Automated Imposition .....	377
6.4.18.3 Execution Model for Automated Imposition .....	379
6.4.18.4 Configuration for Various Automated Impositions .....	382
6.4.18.4.1 Using Logical Stacks .....	382
6.4.18.4.1.1 Imposition for Cut and Stack .....	382
6.4.18.4.2 Imposition for Signatures with Saddle Stitching .....	383
6.4.18.4.3 Selecting from Multiple Imposition Templates When Processing an unstructured PDL .....	384
6.4.18.4.4 Imposition for Start of a Chapter .....	384
6.4.18.4.5 Imposition for Regenerating Sheet Surfaces .....	385
6.4.18.4.6 Imposition for Document-Major Processing of a VDP Structured PDL .....	385
6.4.19 InkZoneCalculation .....	385
6.4.20 Interpreting .....	386
6.4.20.1 RIPing .....	386
6.4.21 LayoutElementProduction .....	387
6.4.22 LayoutPreparation .....	387
6.4.23 LayoutShifting .....	388
6.4.24 PageAssigning .....	388

---

6.4.25 PDFToPSConversion.....	388
6.4.26 PDLCreation .....	389
6.4.27 Preflight.....	389
6.4.28 PreviewGeneration .....	390
6.4.29 Proofing.....	392
6.4.30 PSToPDFConversion.....	392
6.4.31 RasterReading .....	393
6.4.32 Rendering .....	393
6.4.33 RIPing .....	394
6.4.34 Scanning .....	395
6.4.35 Screening.....	395
6.4.36 Separation.....	396
6.4.37 SheetOptimizing.....	396
6.4.38 SoftProofing .....	397
6.4.39 Stripping.....	397
6.4.39.1 Pagination in Stripping .....	397
6.4.40 Tiling .....	399
6.4.41 Trapping.....	400
<b>6.5 Press Processes .....</b>	<b>400</b>
6.5.1 ConventionalPrinting.....	401
6.5.2 DigitalPrinting.....	403
6.5.3 Varnishing .....	405
6.5.4 IDPrinting .....	406
<b>6.6 Postpress Processes .....</b>	<b>406</b>
6.6.1 AdhesiveBinding .....	406
6.6.2 BlockPreparation.....	406
6.6.3 BoxFolding .....	406
6.6.4 BoxPacking .....	407
6.6.5 Bundling .....	408
6.6.6 CaseMaking .....	408
6.6.7 CasingIn .....	409
6.6.8 ChannelBinding .....	409
6.6.9 CoilBinding .....	410
6.6.10 Collecting .....	411
6.6.11 CoverApplication .....	411
6.6.12 Creasing .....	412
6.6.13 Cutting .....	412
6.6.14 DieMaking .....	413
6.6.15 Dividing .....	413
6.6.16 Embossing .....	414

## Table of Contents

6.6.17 EndSheetGluing.....	414
6.6.18 Feeding .....	415
6.6.19 Folding .....	416
6.6.20 Gathering .....	416
6.6.21 Gluing.....	417
6.6.22 HeadBandApplication .....	418
6.6.23 HoleMaking .....	418
6.6.24 Inserting .....	418
6.6.25 Jacketing.....	419
6.6.26 Labeling .....	419
6.6.27 Laminating .....	420
6.6.28 LongitudinalRibbonOperations.....	420
6.6.29 LooseBinding .....	420
6.6.30 Binding Methods .....	421
6.6.30.1 Single-Leaf Binding Methods.....	421
6.6.30.2 Loose-Leaf Binding Method.....	421
6.6.30.3 Mechanical Binding Methods.....	421
6.6.31 Numbering .....	422
6.6.32 Palletizing.....	422
6.6.33 Perforating .....	423
6.6.34 PlasticCombBinding.....	423
6.6.35 PrintRolling.....	424
6.6.36 RingBinding.....	424
6.6.37 SaddleStitching .....	425
6.6.38 ShapeCutting .....	425
6.6.39 ShapeDefProduction .....	426
6.6.40 Shrinking .....	426
6.6.41 SideSewing .....	427
6.6.42 SpinePreparation .....	427
6.6.43 SpineTaping.....	427
6.6.44 Stacking .....	428
6.6.45 StaticBlocking .....	428
6.6.46 Stitching .....	428
6.6.47 Strapping.....	429
6.6.48 StripBinding.....	430
6.6.49 ThreadSealing.....	430
6.6.50 ThreadSewing.....	430
6.6.51 Trimming .....	431
6.6.52 WebInlineFinishing.....	431
6.6.53 Winding .....	432
6.6.54 WireCombBinding .....	432

---

6.6.55 Wrapping.....	433
<b>6.7 Postpress Processes Structure .....</b>	<b>433</b>
6.7.1 Block Production .....	433
6.7.1.1 Block Compiling.....	434
6.7.1.2 Block Joining .....	434
6.7.1.3 Binding Methods.....	434
6.7.1.3.1 Single-Leaf Binding Methods .....	434
6.7.1.3.2 Loose-Leaf Binding Method .....	434
6.7.1.3.3 Mechanical Binding Methods .....	434
6.7.2 HoleMaking .....	435
6.7.3 Laminating .....	435
6.7.4 Numbering .....	435
6.7.5 Packaging Processes .....	435
6.7.6 Processes in Hardcover Book Production .....	435
6.7.7 Sheet Processes.....	436
6.7.8 Tip-on/in .....	436
6.7.9 Trimming .....	436
6.7.10 Web Processes.....	436
<b>Chapter 7 Product Intents .....</b>	<b>439</b>
<b>7.1 Product Description .....</b>	<b>439</b>
7.1.1 Representation of Product Binding .....	439
7.1.2 Product.....	439
7.1.3 Intent.....	441
7.1.4 Product Intent.....	441
7.1.5 Structure Diagram of ProductList.....	442
7.1.6 Product Intent Descriptions.....	442
<b>7.2 Intent Properties Template .....</b>	<b>443</b>
7.2.1 Abstract Span Element .....	444
7.2.2 Span Elements.....	445
7.2.2.1 DurationSpan .....	446
7.2.2.2 EnumerationSpan .....	446
7.2.2.3 IntegerSpan .....	447
7.2.2.4 NameSpan .....	447
7.2.2.4.1 Specifying New Values in a NameSpan Subelement .....	447
7.2.2.5 NumberSpan .....	447
7.2.2.6 OptionSpan .....	448
7.2.2.7 ShapeSpan.....	448
7.2.2.8 StringSpan.....	449
7.2.2.9 TimeSpan .....	449
7.2.2.10 XYPairSpan .....	449
<b>7.3 ArtDeliveryIntent .....</b>	<b>450</b>

7.3.1 ArtDelivery .....	453
<b>7.4 AssemblingIntent .....</b>	<b>456</b>
7.4.1 AssemblyItem .....	457
7.4.2 BindIn .....	457
7.4.3 BlowIn .....	457
7.4.4 StickOn .....	458
<b>7.5 BindingIntent .....</b>	<b>458</b>
7.5.1 BindList .....	461
7.5.2 BindItem .....	462
7.5.3 AdhesiveBinding .....	463
7.5.4 BookCase .....	463
7.5.5 ChannelBinding .....	463
7.5.6 CoilBinding .....	463
7.5.7 EdgeGluing .....	463
7.5.8 HardCoverBinding .....	464
7.5.9 LooseBinding .....	467
7.5.10 PlasticCombBinding .....	468
7.5.11 RingBinding .....	468
7.5.12 SaddleStitching .....	469
7.5.13 SideSewing .....	470
7.5.14 SideStitching .....	470
7.5.15 SoftCoverBinding .....	470
7.5.16 StripBinding .....	472
7.5.17 Tabs .....	472
7.5.18 Tape .....	473
7.5.19 ThreadSealing .....	473
7.5.20 ThreadSewing .....	473
7.5.21 WireCombBinding .....	473
<b>7.6 ColorIntent .....</b>	<b>474</b>
7.6.1 SurfaceColor .....	478
7.6.2 ColorsUsed .....	481
<b>7.7 ContentCheckIntent .....</b>	<b>481</b>
7.7.1 ProofItem .....	482
<b>7.8 DeliveryIntent .....</b>	<b>483</b>
7.8.1 DropItemIntent .....	489
7.8.2 Pricing .....	489
7.8.3 Payment .....	490
7.8.4 CreditCard .....	490
<b>7.9 EmbossingIntent .....</b>	<b>490</b>

---

<b>7.9.1 EmbossingItem .....</b>	<b>490</b>
<b>7.10 FoldingIntent .....</b>	<b>492</b>
<b>7.11 HoleMakingIntent .....</b>	<b>493</b>
<b>7.12 InsertingIntent .....</b>	<b>494</b>
7.12.1 InsertList .....	495
7.12.2 Insert.....	495
<b>7.13 LaminatingIntent .....</b>	<b>496</b>
<b>7.14 LayoutIntent .....</b>	<b>496</b>
<b>7.15 MedialIntent .....</b>	<b>500</b>
<b>7.16 NumberingIntent .....</b>	<b>508</b>
<b>7.17 PackingIntent .....</b>	<b>508</b>
<b>7.18 ProductionIntent .....</b>	<b>509</b>
<b>7.19 ProofingIntent .....</b>	<b>510</b>
7.19.1 ProofItem .....	511
<b>7.20 PublishingIntent .....</b>	<b>512</b>
<b>7.21 ScreeningIntent .....</b>	<b>513</b>
<b>7.22 ShapeCuttingIntent .....</b>	<b>514</b>
7.22.1 ShapeCut.....	514
<b>7.23 SizeIntent .....</b>	<b>515</b>
<b>7.24 VariableIntent .....</b>	<b>515</b>
<b>Chapter 8 Resources .....</b>	<b>517</b>
<b>8.1 Resource .....</b>	<b>517</b>
8.1.1 Location .....	520
8.1.2 Specific Resourcer.....	520
<b>8.2 AdhesiveBindingParams .....</b>	<b>520</b>
<b>8.3 ApprovalParams .....</b>	<b>520</b>
8.3.1 ApprovalPerson .....	521
<b>8.4 ApprovalSuccess .....</b>	<b>522</b>
<b>8.5 ApprovalDetails .....</b>	<b>522</b>
8.5.1 ApprovalDetails.....	522
<b>8.6 Assembly .....</b>	<b>523</b>
8.6.1 AssemblySection .....	525
8.6.2 PageAssignedList .....	526
<b>8.7 AssetListCreationParams .....</b>	<b>527</b>

<b>8.8 BendingParams .....</b>	<b>528</b>
<b>8.9 BinderySignature .....</b>	<b>528</b>
8.9.1 Pagination for BinderySignatureType Fold .....	529
8.9.2 On the use of Bleed .....	534
8.9.3 On the use of Trim .....	534
8.9.4 SignatureCell .....	538
<b>8.10 BlockPreparationParams .....</b>	<b>543</b>
<b>8.11 BoxFoldingParams .....</b>	<b>544</b>
8.11.1 BoxApplication .....	546
8.11.2 BoxFoldAction .....	546
<b>8.12 BoxPackingParams .....</b>	<b>550</b>
<b>8.13 BufferParams .....</b>	<b>551</b>
<b>8.14 Bundle .....</b>	<b>552</b>
8.14.1 BundleItem .....	553
<b>8.15 BundlingParams .....</b>	<b>555</b>
<b>8.16 ByteMap .....</b>	<b>555</b>
8.16.1 Band .....	557
8.16.2 PixelColorant .....	557
<b>8.17 CaseMakingParams .....</b>	<b>557</b>
<b>8.18 CasingInParams .....</b>	<b>559</b>
<b>8.19 ChannelBindingParams .....</b>	<b>560</b>
<b>8.20 CoilBindingParams .....</b>	<b>561</b>
<b>8.21 CollectingParams .....</b>	<b>562</b>
<b>8.22 Color .....</b>	<b>563</b>
8.22.1 DeviceNColor .....	569
8.22.2 Diecutting Data (DDES3) .....	569
8.22.3 PrintConditionColor .....	570
<b>8.23 ColorantControl .....</b>	<b>574</b>
8.23.1 ColorantConvertProcess .....	580
8.23.2 ColorantOrder .....	580
8.23.3 ColorantParams .....	580
8.23.4 DeviceColorantOrder .....	580
8.23.5 ColorSpaceSubstitute .....	580
8.23.6 DeviceNSpace .....	582
<b>8.24 ColorCorrectionParams .....</b>	<b>583</b>
<b>8.25 ColorPool .....</b>	<b>584</b>

---

<b>8.26 ColorSpaceConversionParams .....</b>	<b>585</b>
<b>8.27 Component .....</b>	<b>587</b>
<b>8.28 Contact .....</b>	<b>594</b>
8.28.1 ComChannel.....	597
8.28.2 Company.....	598
8.28.3 Person.....	598
<b>8.29 ContactCopyParams .....</b>	<b>599</b>
<b>8.30 ContentList .....</b>	<b>600</b>
<b>8.31 Content .....</b>	<b>600</b>
8.31.1 ContentData.....	600
8.31.2 BarcodeProductionParams.....	603
8.31.3 ContentMetadata .....	604
8.31.4 PositionObj.....	604
<b>8.32 ConventionalPrintingParams .....</b>	<b>608</b>
<b>8.33 CoverApplicationParams .....</b>	<b>611</b>
8.33.1 Score.....	611
<b>8.34 CreasingParams .....</b>	<b>613</b>
<b>8.35 CustomerInfo .....</b>	<b>614</b>
8.35.1 CustomerMessage.....	615
<b>8.36 CutBlock .....</b>	<b>615</b>
<b>8.37 CutMark .....</b>	<b>616</b>
<b>8.38 CuttingParams .....</b>	<b>618</b>
8.38.1 CutBlock.....	618
<b>8.39 CylinderLayout .....</b>	<b>619</b>
8.39.1 CylinderPosition.....	620
<b>8.40 CylinderLayoutPreparationParams .....</b>	<b>623</b>
<b>8.41 DBMergeParams .....</b>	<b>623</b>
<b>8.42 DBRules .....</b>	<b>623</b>
<b>8.43 DBSchema .....</b>	<b>624</b>
<b>8.44 DBSelection .....</b>	<b>624</b>
<b>8.45 DeliveryParams .....</b>	<b>624</b>
8.45.1 Drop .....	628
8.45.2 DropItem .....	629
<b>8.46 DevelopingParams .....</b>	<b>631</b>
<b>8.47 Device .....</b>	<b>631</b>

8.47.1 IconList.....	635
8.47.2 Icon .....	635
8.47.3 Module .....	635
<b>8.48 DieLayout . . . . .</b>	<b>636</b>
8.48.1 RuleLength.....	637
8.48.2 Station.....	638
<b>8.49 DieLayoutProductionParams . . . . .</b>	<b>638</b>
8.49.1 RepeatDesc .....	639
<b>8.50 DigitalDeliveryParams . . . . .</b>	<b>643</b>
<b>8.51 DigitalMedia . . . . .</b>	<b>644</b>
<b>8.52 DigitalPrintingParams . . . . .</b>	<b>645</b>
8.52.1 Coordinate systems in DigitalPrinting .....	645
<b>8.53 DividingParams . . . . .</b>	<b>650</b>
<b>8.54 ElementColorParams . . . . .</b>	<b>650</b>
<b>8.55 EmbossingParams . . . . .</b>	<b>652</b>
8.55.1 Emboss .....	652
<b>8.56 Employee . . . . .</b>	<b>654</b>
<b>8.57 EndSheetGluingParams . . . . .</b>	<b>654</b>
8.57.1 EndSheet .....	655
<b>8.58 ExposedMedia . . . . .</b>	<b>656</b>
<b>8.59 ExternalImpositionTemplate . . . . .</b>	<b>658</b>
<b>8.60 FeedingParams . . . . .</b>	<b>658</b>
8.60.1 Feeder.....	659
8.60.2 FeederQualityParams .....	660
8.60.3 CollatingItem.....	661
<b>8.61 FileSpec . . . . .</b>	<b>662</b>
8.61.1 Container .....	669
8.61.2 Disposition .....	669
8.61.3 FileAlias .....	670
<b>8.62 FoldingParams . . . . .</b>	<b>671</b>
<b>8.63 FontParams . . . . .</b>	<b>676</b>
<b>8.64 FontPolicy . . . . .</b>	<b>676</b>
<b>8.65 FormatConversionParams . . . . .</b>	<b>677</b>
<b>8.66 GatheringParams . . . . .</b>	<b>677</b>
<b>8.67 GlueApplication . . . . .</b>	<b>678</b>

---

<b>8.68 GluingParams .....</b>	<b>679</b>
8.68.1 Glue .....	680
<b>8.69 HeadBandApplicationParams .....</b>	<b>680</b>
<b>8.70 HoleList .....</b>	<b>681</b>
<b>8.71 HoleMakingParams .....</b>	<b>682</b>
<b>8.72 IdentificationField .....</b>	<b>684</b>
8.72.1 BarcodeDetails.....	688
8.72.2 ExtraValues.....	689
8.72.3 Usage of barcode Attributes .....	689
<b>8.73 IDPrintingParams .....</b>	<b>691</b>
<b>8.74 ImageCompressionParams .....</b>	<b>692</b>
8.74.1 ImageCompression.....	692
8.74.2 CCITTFaxParams.....	695
8.74.3 DCTParams .....	695
8.74.4 FlateParams.....	697
8.74.5 JBIG2Params.....	697
8.74.6 JPEG2000Params .....	698
8.74.7 LZWParams .....	698
<b>8.75 ImageEnhancementParams .....</b>	<b>699</b>
8.75.1 ImageEnhancementOp .....	699
<b>8.76 ImageReplacementParams .....</b>	<b>700</b>
<b>8.77 ImageSetterParams .....</b>	<b>702</b>
<b>8.78 Ink .....</b>	<b>704</b>
<b>8.79 InkZoneCalculationParams .....</b>	<b>706</b>
<b>8.80 InkZoneProfile .....</b>	<b>707</b>
<b>8.81 InsertingParams .....</b>	<b>707</b>
<b>8.82 InterpretedPDLData .....</b>	<b>710</b>
<b>8.83 InterpretingParams .....</b>	<b>710</b>
8.83.1 InterpretingDetails.....	712
8.83.2 PDFInterpretingParams .....	713
8.83.3 OCGControl .....	714
8.83.4 ReferenceXObjParams .....	715
8.83.5 PDLResourceAlias .....	715
8.83.6 More about PDFInterpretingParams .....	716
8.83.6.1 PDF Optional Content Groups.....	716
<b>8.84 JacketingParams .....</b>	<b>716</b>

<b>8.85 LabelingParams .....</b>	<b>718</b>
<b>8.86 LaminatingParams .....</b>	<b>718</b>
<b>8.87 Layout .....</b>	<b>719</b>
8.87.1 ColorControlStrip .....	725
8.87.2 CIELABMeasuringField.....	726
8.87.3 DensityMeasuringField .....	728
8.87.4 DeviceMark .....	728
8.87.5 LayerList .....	732
8.87.6 LayerDetails .....	732
8.87.7 LogicalStackParams .....	733
8.87.8 Stack .....	733
8.87.9 PageCondition .....	734
8.87.10 SheetCondition .....	736
8.87.11 PlacedObject.....	737
8.87.12 PlacedObject.....	737
8.87.12.1 Abstract PlacedObject.....	737
8.87.13 ContentObject .....	741
8.87.14 MarkObject.....	747
8.87.15 CutMark .....	754
8.87.16 FillMark .....	755
8.87.17 MarkActivation .....	756
8.87.17.1 Dynamic Marks.....	756
8.87.18 DynamicField .....	757
8.87.19 More about Layout.....	758
8.87.19.1 Migrating from a Pre-JDF 1.3 Layout to a Partitioned Layout .....	758
8.87.19.1.1 Partition Key restrictions: .....	759
8.87.19.1.2 Position of PlacedObject Elements in Layout .....	759
8.87.19.2 CTM Definitions .....	760
8.87.19.3 Finding the Trim Box of an Object.....	760
8.87.19.4 Using Ord to Reference Elements in RunList Resources .....	761
8.87.19.5 Using Expressions in the OrdExpression Attribute .....	762
8.87.20 Signature.....	763
<b>8.88 LayoutElement .....</b>	<b>763</b>
8.88.1 Dependencies .....	767
<b>8.89 LayoutElementProductionParams .....</b>	<b>768</b>
8.89.1 LayoutElementPart .....	770
8.89.2 BarcodeProductionParams .....	771
8.89.3 PositionObj.....	771
<b>8.90 LayoutPreparationParams .....</b>	<b>777</b>
8.90.1 PageCell .....	787

---

8.90.2 ImageShift.....	789
<b>8.91 LayoutShift .....</b>	<b>793</b>
8.91.1 ShiftPoint.....	793
<b>8.92 LongitudinalRibbonOperationParams .....</b>	<b>794</b>
<b>8.93 LooseBindingParams .....</b>	<b>794</b>
8.93.1 ChannelBindingDetails.....	797
8.93.2 CoilBindingDetails.....	798
8.93.3 CombBindingDetails .....	798
8.93.4 RingBindingDetails.....	799
<b>8.94 ManualLaborParams .....</b>	<b>800</b>
<b>8.95 Media .....</b>	<b>800</b>
8.95.1 TabDimensions .....	814
8.95.2 More about Media .....	817
8.95.2.1 Inside Loss and Outside Gain .....	817
8.95.2.2 Corrugated Media: .....	818
8.95.2.3 Self adhesive Media .....	819
8.95.2.4 Flexo Plate Media .....	819
8.95.2.5 Flexo Sleeve Media .....	819
<b>8.96 MediaSource .....</b>	<b>820</b>
<b>8.97 MiscConsumable .....</b>	<b>820</b>
<b>8.98 NodeInfo .....</b>	<b>821</b>
<b>8.99 NumberingParams .....</b>	<b>825</b>
<b>8.100 OrderingParams .....</b>	<b>825</b>
<b>8.101 PackingParams .....</b>	<b>825</b>
<b>8.102 PageAssignParams .....</b>	<b>825</b>
<b>8.103 PageList .....</b>	<b>826</b>
8.103.1 PageData.....	827
8.103.2 PageElement .....	830
<b>8.104 Pallet .....</b>	<b>831</b>
<b>8.105 PalletizingParams .....</b>	<b>832</b>
<b>8.106 PDFToPSConversionParams .....</b>	<b>833</b>
<b>8.107 PDLCreationParams .....</b>	<b>836</b>
8.107.1 FontParams .....	837
8.107.2 PDFToPSConversionParams .....	837
8.107.3 PSCreationDetails.....	837
8.107.4 PSToPDFConversionParams .....	840
8.107.5 PDFCreationDetails .....	840

8.107.6 AdvancedParams.....	842
8.107.7 PDFXParams .....	844
8.107.8 ThinPDFParams .....	846
<b>8.108 PDLResourceAlias .....</b>	<b>846</b>
<b>8.109 PerforatingParams .....</b>	<b>847</b>
<b>8.110 PlaceHolderResource .....</b>	<b>847</b>
<b>8.111 PlasticCombBindingParams .....</b>	<b>847</b>
<b>8.112 PlateCopyParams .....</b>	<b>848</b>
<b>8.113 PreflightAnalysis .....</b>	<b>848</b>
<b>8.114 PreflightInventory .....</b>	<b>849</b>
<b>8.115 PreflightParams .....</b>	<b>849</b>
8.115.1 PreflightTest.....	849
8.115.2 PreflightAction.....	850
8.115.3 BasicPreflightTest.....	851
8.115.4 PreflightArgument.....	852
8.115.5 BoxArgument .....	852
8.115.6 BoxToBoxDifference .....	853
<b>8.116 PreflightProfile .....</b>	<b>854</b>
<b>8.117 PreflightReport .....</b>	<b>854</b>
8.117.1 PreflightCheck.....	855
8.117.2 PRItem .....	855
8.117.3 PRError .....	856
8.117.4 PRGroup .....	857
8.117.5 Abstract PRGroupOccurrenceBase .....	859
8.117.6 PRGroupOccurrenceBase .....	859
8.117.7 ArgumentValue .....	859
8.117.8 PRGroupOccurrence .....	859
8.117.9 StringListValue .....	860
8.117.10 PROccurrence .....	860
<b>8.118 PreflightReportRulePool .....</b>	<b>860</b>
8.118.1 PRRule.....	861
8.118.2 PRRuleAttr .....	861
<b>8.119 Preview .....</b>	<b>862</b>
<b>8.120 PreviewGenerationParams .....</b>	<b>864</b>
<b>8.121 PrintCondition .....</b>	<b>866</b>
<b>8.122 PrintRollingParams .....</b>	<b>867</b>

---

<b>8.123 ProductionPath</b>	.....	868
8.123.1 FolderSuperstructureWebPath	.....	869
8.123.2 PostPressComponentPath	.....	869
8.123.3 PrintingUnitWebPath	.....	869
<b>8.124 ProofingParams</b>	.....	870
<b>8.125 PSToPDFConversionParams</b>	.....	870
8.125.1 AdvancedParams	.....	872
8.125.2 PDFXParams	.....	874
8.125.3 ThinPDFParams	.....	876
<b>8.126 QualityControlParams</b>	.....	877
8.126.1 BindingQualityParams	.....	877
<b>8.127 QualityControlResult</b>	.....	877
8.127.1 QualityMeasurement	.....	878
8.127.2 BindingQualityMeasurement	.....	878
<b>8.128 RasterReadingParams</b>	.....	879
<b>8.129 RegisterMark</b>	.....	880
<b>8.130 RenderingParams</b>	.....	881
8.130.1 TIFFFormatParams	.....	882
8.130.2 TIFFtag	.....	884
8.130.3 TIFFEmbeddedFile	.....	884
<b>8.131 ResourceDefinitionParams</b>	.....	884
8.131.1 ResourceParam	.....	885
<b>8.132 RingBindingParams</b>	.....	885
<b>8.133 RollStand</b>	.....	887
<b>8.134 RunList</b>	.....	887
8.134.1 Reordering the Processing of Resources	.....	898
8.134.2 ByteMap	.....	899
8.134.3 Band	.....	900
8.134.4 DynamicInput	.....	900
<b>8.135 SaddleStitchingParams</b>	.....	903
<b>8.136 ScanParams</b>	.....	903
<b>8.137 ScavengerArea</b>	.....	904
<b>8.138 ScreeningParams</b>	.....	905
<b>8.139 SeparationControlParams</b>	.....	906
<b>8.140 Shape</b>	.....	906
<b>8.141 ShapeCuttingParams</b>	.....	907

<b>8.142 ShapeDef .....</b>	<b>908</b>
8.142.1 CutLines.....	910
<b>8.143 ShapeDefProductionParams .....</b>	<b>910</b>
8.143.1 ObjectModel.....	911
8.143.2 ShapeTemplate.....	911
8.143.3 ShapeDimension.....	912
<b>8.144 Sheet .....</b>	<b>914</b>
<b>8.145 SheetOptimizingParams .....</b>	<b>914</b>
8.145.1 GangElement.....	914
8.145.2 SeparationListBack .....	917
8.145.3 SeparationListFront.....	918
<b>8.146 ShrinkingParams .....</b>	<b>918</b>
<b>8.147 SideSewingParams .....</b>	<b>918</b>
<b>8.148 SpinePreparationParams .....</b>	<b>918</b>
<b>8.149 SpineTapingParams .....</b>	<b>920</b>
<b>8.150 StackingParams .....</b>	<b>921</b>
<b>8.151 StaticBlockingParams .....</b>	<b>925</b>
<b>8.152 StitchingParams .....</b>	<b>925</b>
<b>8.153 Strap .....</b>	<b>929</b>
<b>8.154 StrappingParams .....</b>	<b>930</b>
<b>8.155 StripBindingParams .....</b>	<b>931</b>
<b>8.156 StrippingParams .....</b>	<b>932</b>
8.156.1 ExternallImpositionTemplate .....	936
8.156.2 Position .....	937
8.156.3 StripCellParams.....	938
8.156.4 StripMark.....	941
<b>8.157 Surface .....</b>	<b>946</b>
<b>8.158 ThreadSealingParams .....</b>	<b>946</b>
<b>8.159 ThreadSewingParams .....</b>	<b>946</b>
<b>8.160 Tile .....</b>	<b>948</b>
<b>8.161 Tool .....</b>	<b>949</b>
<b>8.162 TransferCurve .....</b>	<b>950</b>
<b>8.163 TransferCurvePool .....</b>	<b>951</b>
8.163.1 TransferCurveSet.....	952
<b>8.164 TransferFunctionControl .....</b>	<b>952</b>

<b>8.165 TrappingDetails . . . . .</b>	<b>953</b>
8.165.1 TrappingOrder.....	954
<b>8.166 TrappingParams . . . . .</b>	<b>954</b>
8.166.1 ColorantZoneDetails .....	958
<b>8.167 TrapRegion . . . . .</b>	<b>958</b>
<b>8.168 TrimmingParams . . . . .</b>	<b>959</b>
<b>8.169 UsageCounter . . . . .</b>	<b>960</b>
<b>8.170 VarnishingParams . . . . .</b>	<b>961</b>
<b>8.171 VerificationParams . . . . .</b>	<b>962</b>
<b>8.172 WebInlineFinishingParams . . . . .</b>	<b>963</b>
8.172.1 FolderProduction.....	964
<b>8.173 WindingParams . . . . .</b>	<b>964</b>
<b>8.174 WireCombBindingParams . . . . .</b>	<b>965</b>
<b>8.175 WrappingParams . . . . .</b>	<b>966</b>
<b>Chapter 9 Device Capabilities . . . . .</b>	<b>969</b>
<b>9.1 Device Capability Definitions . . . . .</b>	<b>969</b>
9.1.1 DeviceCap .....	969
9.1.1.1 Structure Diagram of DeviceCap.....	973
9.1.2 ActionPool.....	974
9.1.2.1 Action.....	975
9.1.3 DevCapPool.....	975
9.1.4 StatePool .....	975
9.1.5 ModulePool.....	976
9.1.5.1 ModuleCap.....	976
9.1.6 DevCaps .....	976
9.1.6.1 Loc .....	979
9.1.7 DevCap .....	980
9.1.8 State.....	981
9.1.8.1 Abstract State Element.....	983
9.1.8.2 State Elements.....	986
9.1.8.2.1 Structure Diagram of Specific State .....	986
9.1.8.2.2 BooleanState .....	988
9.1.8.2.2.1 ValueLoc .....	989
9.1.8.2.3 DateTimeState .....	989
9.1.8.2.4 DurationState .....	991
9.1.8.2.5 ElementState .....	993
9.1.8.2.6 EnumerationState .....	994
9.1.8.2.7 IntegerState .....	995
9.1.8.2.8 MatrixState .....	998
9.1.8.2.8.1 Value .....	1000

## Table of Contents

9.1.8.2.9 NameState .....	1001
9.1.8.2.10 NumberState .....	1002
9.1.8.2.11 PDFPathState .....	1004
9.1.8.2.11.1 Value .....	1005
9.1.8.2.12 RectangleState .....	1005
9.1.8.2.13 ShapeState .....	1007
9.1.8.2.14 StringState .....	1009
9.1.8.2.14.1 Value .....	1011
9.1.8.2.15 XYPairState .....	1012
<b>9.1.9 DisplayGroupPool .....</b>	<b>1014</b>
9.1.9.1 DisplayGroup .....	1014
<b>9.1.10 FeaturePool .....</b>	<b>1014</b>
<b>9.1.11 MacroPool .....</b>	<b>1015</b>
9.1.11.1 macro .....	1016
9.1.11.2 choice .....	1016
9.1.11.3 otherwise .....	1017
9.1.11.4 when .....	1017
9.1.11.5 set .....	1017
9.1.11.6 FeatureAttribute .....	1017
9.1.11.7 call .....	1018
<b>9.1.12 Performance .....</b>	<b>1018</b>
<b>9.1.13 TestPool .....</b>	<b>1019</b>
9.1.13.1 Test .....	1019
<b>9.1.14 Term .....</b>	<b>1019</b>
9.1.14.1 Abstract Term .....	1019
9.1.14.2 Term Elements .....	1020
9.1.14.2.1 Structure Diagram of Term .....	1021
9.1.14.3 and .....	1022
9.1.14.4 or .....	1022
9.1.14.5 xor .....	1023
9.1.14.6 not .....	1023
9.1.14.7 TestRef .....	1023
9.1.14.8 Evaluation .....	1023
9.1.14.8.1 Abstract Evaluation .....	1024
9.1.14.8.2 Evaluation Elements .....	1025
9.1.14.8.2.1 Structure Diagram of Evaluation .....	1026
9.1.14.8.2.2 BooleanEvaluation .....	1027
9.1.14.8.2.3 DateTimeEvaluation .....	1028
9.1.14.8.2.4 DurationEvaluation .....	1028
9.1.14.8.2.5 EnumerationEvaluation .....	1028
9.1.14.8.2.6 IntegerEvaluation .....	1029
9.1.14.8.2.7 IsPresentEvaluation .....	1029
9.1.14.8.2.8 MatrixEvaluation .....	1029
9.1.14.8.2.8.1 Value .....	1030
9.1.14.8.2.9 NameEvaluation .....	1030
9.1.14.8.2.10 NumberEvaluation .....	1031
9.1.14.8.2.11 PDFPathEvaluation .....	1031
9.1.14.8.2.11.1 Value .....	1031

9.1.14.8.2.12 RectangleEvaluation .....	1031
9.1.14.8.2.13 ShapeEvaluation.....	1032
9.1.14.8.2.14 StringEvaluation.....	1032
9.1.14.8.2.14.1 Value .....	1033
9.1.14.8.2.15 XYPairEvaluation .....	1033
<b>9.1.15 Examples of Device Capabilities.....</b>	<b>1033</b>
9.1.15.1 Device Description of a Scanner.....	1033
9.1.15.2 Device Description of a Scanner #2.....	1037
<b>9.2 Concept of the Preflight Process .. . . . .</b>	<b>1042</b>
9.2.1 Object Classes.....	1042
9.2.1.1 Properties Implemented by each Class of Object .....	1043
9.2.1.2 Checking for the Presence of a Property.....	1044
9.2.1.3 Basic tests on set of objects .....	1045
9.2.2 Properties.....	1045
9.2.2.1 Annotation Properties .....	1046
9.2.2.2 Box Properties.....	1047
9.2.2.3 Class Properties.....	1047
9.2.2.4 Colorant Properties .....	1048
9.2.2.5 Document Properties.....	1049
9.2.2.6 Fill Properties.....	1053
9.2.2.7 Font Properties .....	1054
9.2.2.8 Graphic Properties .....	1055
9.2.2.9 Image Properties .....	1056
9.2.2.10 Logical Properties .....	1059
9.2.2.11 PageBox Properties .....	1059
9.2.2.12 Pages Properties .....	1059
9.2.2.13 PDLObject Properties .....	1060
9.2.2.14 Reference Properties .....	1061
9.2.2.15 Shading Properties .....	1061
9.2.2.16 Stroke Properties.....	1062
9.2.2.17 Text Properties .....	1062
9.2.2.18 Vector Properties .....	1063
<b>Chapter 10 Subelements .. . . . .</b>	<b>1065</b>
<b>10.1 Address .. . . . .</b>	<b>1065</b>
<b>10.2 ApprovalPerson .. . . . .</b>	<b>1065</b>
<b>10.3 AutomatedOverPrintParams .. . . . .</b>	<b>1066</b>
<b>10.4 BarcodeCompParams .. . . . .</b>	<b>1067</b>
<b>10.5 BarcodeReproParams .. . . . .</b>	<b>1067</b>
<b>10.6 ColorantAlias .. . . . .</b>	<b>1068</b>
<b>10.7 ColorCorrectionOp .. . . . .</b>	<b>1069</b>
<b>10.8 ColorMeasurementConditions .. . . . .</b>	<b>1070</b>

<b>10.9 ColorSpaceConversionOp</b> .....	<b>1071</b>
<b>10.10 ComChannel</b> .....	<b>1079</b>
<b>10.11 ConvertingConfig</b> .....	<b>1081</b>
<b>10.12 CostCenter</b> .....	<b>1081</b>
<b>10.13 Crease</b> .....	<b>1082</b>
<b>10.14 Cut</b> .....	<b>1083</b>
<b>10.15 DeviceMark</b> .....	<b>1084</b>
<b>10.16 DeviceNSpace</b> .....	<b>1087</b>
<b>10.17 Disjointing</b> .....	<b>1088</b>
<b>10.18 Disposition</b> .....	<b>1090</b>
<b>10.19 FitPolicy</b> .....	<b>1090</b>
<b>10.20 Fold</b> .....	<b>1092</b>
<b>10.21 GlueLine</b> .....	<b>1093</b>
<b>10.22 HolePattern</b> .....	<b>1094</b>
<b>10.23 HoleLine</b> .....	<b>1096</b>
<b>10.24 InsertSheet</b> .....	<b>1097</b>
<b>10.25 JobField</b> .....	<b>1101</b>
<b>10.26 MarkColor</b> .....	<b>1102</b>
<b>10.27 MediaLayers</b> .....	<b>1102</b>
<b>10.28 MetadataMap</b> .....	<b>1102</b>
10.28.1 Expr.....	1105
<b>10.29 MISDetails</b> .....	<b>1108</b>
<b>10.30 ObjectResolution</b> .....	<b>1109</b>
<b>10.31 OCGControl</b> .....	<b>1110</b>
<b>10.32 Perforate</b> .....	<b>1110</b>
<b>10.33 Person</b> .....	<b>1111</b>
<b>10.34 RefAnchor</b> .....	<b>1112</b>
<b>10.35 RegisterRibbon</b> .....	<b>1113</b>
<b>10.36 ScreenSelector</b> .....	<b>1114</b>
<b>10.37 SeparationSpec</b> .....	<b>1116</b>
<b>Chapter 11 Building a System Around JDF XJDF</b> .....	<b>1119</b>
<b>11.1 Implementation Considerations and Guidelines</b> .....	<b>1119</b>

<b>11.2 Status Transitions . . . . .</b>	<b>1119</b>
<b>11.3 Execution Model . . . . .</b>	<b>1120</b>
11.3.1 Serial Processing . . . . .	1120
11.3.2 Partial Processing of Nodes with Partitioned Resources . . . . .	1121
11.3.3 Parallel Processing . . . . .	1121
11.3.4 Overlapping Processing . . . . .	1121
11.3.4.1 Dynamic Pipes . . . . .	1124
11.3.4.2 Example JMFPush Sequence . . . . .	1125
11.3.4.3 Comparison of Non-Dynamic and Dynamic Pipes . . . . .	1126
11.3.4.4 Metadata in Pipe Messages . . . . .	1126
11.3.5 Approval, Proofing, Quality Control and Verification . . . . .	1126
11.3.6 Error Handling . . . . .	1126
11.3.7 Classification of Notifications . . . . .	1126
11.3.8 Event Description . . . . .	1127
11.3.9 Error Logging in the JDF File . . . . .	1127
11.3.10 Error Handling via Messaging (XJMF) . . . . .	1127
<b>11.4 JDF XJDF and JMF XJMF Interchange Protocol . . . . .</b>	<b>1127</b>
11.4.1 File-Based Protocol (JDF) . . . . .	1127
11.4.2 HTTP-Based Protocol (JDF + JMF) . . . . .	1127
11.4.2.1 Protocol Implementation Details . . . . .	1127
11.4.3 HTTP Port . . . . .	1127
11.4.4 HTTP Request Method . . . . .	1127
11.4.5 HTTPS-Based Protocol – SSL with two-way authentication . . . . .	1128
11.4.5.1 Purpose . . . . .	1128
11.4.5.2 Certificates . . . . .	1128
11.4.5.2.1 Verification of Certificates . . . . .	1129
11.4.5.2.3 Exchange of Certificates . . . . .	1129
11.4.5.4 Standards . . . . .	1131
11.4.5.5 Implementation . . . . .	1131
11.4.5.5.1 Discovery Messages . . . . .	1131
11.4.5.5.2 Example of Java Keytool Usage . . . . .	1131
<b>11.5 XJMF Handshaking . . . . .</b>	<b>1131</b>
11.5.1 Single Query/Command Response Communication . . . . .	1131
11.5.1.1 XJMF Error Handling . . . . .	1131
11.5.2 Subscribing for Signals . . . . .	1132
11.5.3 Managing Persistent Channels . . . . .	1133
11.5.4 Signal Handshaking . . . . .	1133
11.5.5 Reliable Signalling . . . . .	1133
11.5.5.1 12.3.4.1 Sequence of Signals . . . . .	1133
11.5.6 Deleting Persistent Channels . . . . .	1134
11.5.7 XJMF Bootstrapping . . . . .	1134
11.5.8 Device / Controller Selection . . . . .	1134

<b>11.6 JDF XJDF Packaging .....</b>	<b>1134</b>
11.6.1 MIME Basics.....	1135
11.6.2 MIME Types and File Extensions .....	1135
11.6.3 ZIP Packaging.....	1135
11.6.3.1 Identifying the Root XJMF.....	1136
11.6.3.2 Referencing Assets within a ZIP Package.....	1136
11.6.3.3 MIME Headers .....	1136
11.6.3.3.1 Content-Type Header .....	1136
11.6.3.3.2 Content-ID Header .....	1136
11.6.3.3.3 Content-Transfer-Encoding .....	1136
11.6.3.3.4 Content-Disposition Header .....	1137
11.6.3.4 CID URL Scheme.....	1137
11.6.3.5 Ordering of Body Parts in MIME Multipart/Related.....	1138
<b>11.7 MIS Requirements .....</b>	<b>1139</b>
<b>11.8 Job Modification .....</b>	<b>1139</b>
11.8.1 Rescheduling with ModifyQueueEntry .....	1140
11.8.2 Modifying Jobs .....	1140
<b>11.9 Interoperability Conformance Specifications .....</b>	<b>1140</b>
<b>11.10 Use of XML Schema for Capability Descriptions .....</b>	<b>1141</b>
<b>Appendix A Encoding.....</b>	<b>1143</b>
<b>A.1 Notes About Encoding .....</b>	<b>1143</b>
A.1.1 List, Range and Range List Data Types.....	1143
A.1.2 Whitespace.....	1143
A.1.3 Infinity Limits.....	1143
<b>A.2 Simple Types — Attribute Values .....</b>	<b>1143</b>
A.2.1 boolean.....	1143
A.2.2 CMYKColor.....	1143
A.2.3 date.....	1144
A.2.4 dateTime.....	1144
A.2.5 DateTimeRange .....	1144
A.2.6 DateTimeRangeList.....	1145
A.2.7 double.....	1145
A.2.8 DoubleList.....	1145
A.2.9 DoubleRange.....	1145
A.2.10 DoubleRangeList.....	1146
A.2.11 duration.....	1146
A.2.12 DurationRange .....	1146
A.2.13 DurationRangeList.....	1146
A.2.14 gYearMonth.....	1147

---

A.2.15 hexBinary.....	1147
A.2.16 ID .....	1147
A.2.17 IDREF .....	1147
A.2.18 IDREFS .....	1147
A.2.19 integer.....	1148
A.2.20 IntegerList.....	1148
A.2.21 IntegerRange.....	1148
A.2.22 IntegerRangeList.....	1148
A.2.23 LabColor.....	1149
A.2.24 language.....	1149
A.2.25 languages.....	1149
A.2.26 matrix.....	1149
A.2.27 NameRange .....	1150
A.2.28 NameRangeList.....	1150
A.2.29 NMTOKEN.....	1150
A.2.30 NMTOKENS .....	1150
A.2.31 PDFPath.....	1151
A.2.32 rectangle.....	1151
A.2.33 RectangleRange.....	1151
A.2.34 RectangleRangeList.....	1151
A.2.35 regExp .....	1152
A.2.36 shape.....	1152
A.2.37 ShapeRange.....	1152
A.2.38 ShapeRangeList.....	1152
A.2.39 sRGBColor .....	1153
A.2.40 string.....	1153
A.2.41 TimeRange .....	1153
A.2.42 TransferFunction .....	1153
A.2.43 URI .....	1154
A.2.44 URL .....	1154
A.2.45 XPath.....	1155
A.2.46 XYPair .....	1155
A.2.47 XYPairRange.....	1155
A.2.48 XYPairRangeList .....	1155
<b>A.3 Enumerations and Lists . . . . .</b>	<b>1156</b>
A.3.1 enumeration.....	1156
A.3.2 enumerations.....	1156
A.3.3 Defined JDF XJDF enumeration Data Types .....	1156
A.3.3.1 Anchor.....	1156
A.3.3.2 JDFJMVersion.....	1156

## Table of Contents

A.3.3.3 NamedColor .....	1157
A.3.3.4 Orientation .....	1157
A.3.3.5 Sides .....	1158
A.3.3.6 Scope .....	1158
A.3.3.7 WorkStyle .....	1158
A.3.4 XYRelation.....	1159
<b>A.4 JDF XJDF File Formats .....</b>	<b>1159</b>
A.4.1 PNG Image Format .....	1159
<b>Appendix B Schema .....</b>	<b>1161</b>
<b>B.1 Using xsi:type .....</b>	<b>1161</b>
B.1.1 Using xsi:type with JDF XJDF Nodes.....	1161
B.1.2 Using xsi:type with JMF XJMF Messages.....	1162
<b>Appendix C Supported String and NMOKEN values.....</b>	<b>1165</b>
<b>C.1 StatusDetails Supported Strings .....</b>	<b>1165</b>
<b>C.2 ModuleType Supported Strings .....</b>	<b>1170</b>
<b>C.3 NotificationDetails .....</b>	<b>1174</b>
C.3.1 Abstract NotificationDetails .....	1174
C.3.2 NotificationDetails.....	1174
C.3.2.1 Barcode .....	1175
C.3.2.2 FCNKey .....	1175
C.3.2.3 SystemTimeSet .....	1175
C.3.2.4 CounterReset .....	1175
C.3.2.5 Error .....	1175
C.3.2.5.1 ErrorCode .....	1176
C.3.2.6 Event .....	1176
C.3.2.7 Milestone.....	1177
<b>C.4 Milestone Values .....</b>	<b>1177</b>
<b>C.5 Input Tray and Output Bin Names .....</b>	<b>1179</b>
<b>Appendix D Supported Error Codes in JMF XJMF and Notification Elements .....</b>	<b>1183</b>
<b>Appendix E Color Adjustment Attribute Description and Usage ..</b>	<b>1187</b>
<b>E.1 Adjustment Using Direct Attributes .....</b>	<b>1187</b>
<b>E.2 Adjustment using ICC Profile Attributes .....</b>	<b>1188</b>
<b>E.3 Adjustment using an ICC Abstract Profile Attribute .....</b>	<b>1188</b>
<b>E.4 Adjustment using an ICC DeviceLink Profile Attribute .....</b>	<b>1188</b>
<b>Appendix F North American and Japanese Media Weight Explained ..</b>	

**1189**

<b>F.1 North American Media Weight .....</b>	<b>1189</b>
<b>F.2 Japanese Media Weight .....</b>	<b>1190</b>
<b>Appendix G Media Sizes .....</b>	<b>1193</b>
<b>Appendix HMimeType andMimeTypeVersion Attributes .....</b>	<b>1197</b>
<b>Appendix I Generating strings with Format and Template .....</b>	<b>1203</b>
<b>Appendix J Pagination Catalog .....</b>	<b>1207</b>
<b>J.1 How to interpret the diagrams .....</b>	<b>1207</b>
J.1.1 Legend .....	1207
J.1.2 Meaning of a Pagination Scheme .....	1208
J.1.3 Settings that Modify the Pagination Schemes.....	1208
J.1.3.1 BindingOrientation.....	1208
J.1.3.2 Binding and Jog Sides .....	1209
J.1.4 Getting a Specific Pagination Scheme.....	1209
J.1.4.1 Using the Settings to Find the Needed Scheme Transformation .....	1209
J.1.4.2 Scheme Transformations .....	1210
J.1.5 Examples .....	1212
J.1.5.1 Signature with Horizontal Binding Edges.....	1212
J.1.5.2 Signature with Vertical Binding Edges .....	1213
<b>J.2 Pagination Diagrams .....</b>	<b>1214</b>
<b>Appendix K Resolving RunList/@Directory and FileSpec/@URL URI References .....</b>	<b>1255</b>
<b>K.1 Semantics of the RunList/@Directory Attribute .....</b>	<b>1255</b>
<b>Appendix L References .....</b>	<b>1257</b>
<b>Appendix M JDF XJDF/CIP4 Hole Pattern Catalog .....</b>	<b>1271</b>
<b>Appendix N FileSpec Attributes and Container Subelement .....</b>	<b>1281</b>
<b>N.1 Examples of Attribute Values of FileSpec .....</b>	<b>1281</b>
<b>N.2 Corresponding XML examples .....</b>	<b>1282</b>
<b>N.3 Additional examples showing Partitioning of FileSpec .....</b>	<b>1284</b>
<b>N.4 Example of an Intent Job Ticket with a doubly nested ZIP packaging file .</b>	<b>1290</b>
<b>N.5 AppOS and OSVersion Attributes .....</b>	<b>1291</b>

<b>Appendix O Examples .....</b>	<b>1293</b>
<b>O.1 Brief Example .....</b>	<b>1293</b>
O.1.1 Before and After Processing .....	1293
<b>O.2 Product JDF XJDF .....</b>	<b>1295</b>
<b>O.3 Spawning and Merging .....</b>	<b>1297</b>
<b>O.4 RunList .....</b>	<b>1304</b>
<b>O.5 Messages .....</b>	<b>1306</b>
O.5.1 Simple KnownMessages.....	1306
O.5.2 Simple persistent channel.....	1307
O.5.3 JMF XJMF Pipe Messages.....	1308
O.5.3.1 Example Printer JDF XJDF .....	1308
O.5.3.2 Example Finisher JDF XJDF .....	1309
O.5.3.3 Initiation of PipePush sequence .....	1309
O.5.3.4 Continuation of PipePush sequence.....	1310
O.5.3.5 Paper Jam in finisher - PipePause .....	1312
O.5.3.6 Paper jam cleanup in finisher - PipePull.....	1312
O.5.3.7 Continued PipePush .....	1312
O.5.3.8 Paper jam in printer - PipePause .....	1314
O.5.3.9 Optional PipePause from the Finisher .....	1314
O.5.3.10 Optional PipePull from the Finisher .....	1314
O.5.3.11 Paper jam cleanup in printer - PipePush .....	1315
O.5.3.12 Job done - PipeClose.....	1315
<b>O.6 Stripping .....</b>	<b>1316</b>
<b>O.7 DigitalDelivery Examples .....</b>	<b>1323</b>
<b>O.8 Automated Imposition .....</b>	<b>1330</b>
<b>Appendix P Deprecated Elements, JMF Messages, Processes and Resources .....</b>	<b>1337</b>
<b>P.1 Deprecated Structures of JDF Nodes and Jobs .....</b>	<b>1337</b>
P.1.1 PlaceHolder Resource.....	1337
P.1.2 ResourceUpdate.....	1337
P.1.3 StatusPool .....	1338
P.1.3.1 PartStatus .....	1338
<b>P.2 Life Cycle of JDF .....</b>	<b>1339</b>
P.2.1 Case 5: Spawning and Merging of Independent Jobs.....	1339
<b>P.3 JMF Messaging Elements .....</b>	<b>1341</b>
P.3.1 Signal.....	1341
P.3.1.1 Trigger .....	1341
P.3.1.2 Added.....	1341
P.3.1.3 ChangedAttribute.....	1341

P.3.1.4 Removed .....	1342
P.3.2 Events.....	1342
P.3.2.1 NotificationDef .....	1343
P.3.3 KnownControllers .....	1343
P.3.3.1 ControllerFilter .....	1344
P.3.3.2 JDFController .....	1344
P.3.4 RepeatMessages.....	1345
P.3.4.1 MsgFilter .....	1345
P.3.5 NodeInfo .....	1346
P.3.5.1 NodeInfo Query .....	1346
P.3.5.1.1 NodeInfoQuParams .....	1347
P.3.5.2 NodeInfo Command .....	1347
P.3.5.2.1 NodeInfoCmdParams .....	1347
P.3.5.2.2 NodeInfoResp .....	1348
P.3.6 KnownJDFServices .....	1349
P.3.6.1 JDFService.....	1349
P.3.7 Occupation .....	1350
P.3.7.1 EmployeeDef .....	1350
P.3.7.2 Occupation.....	1351
P.3.8 Track.....	1352
P.3.8.1 TrackFilter .....	1352
P.3.8.2 TrackResult.....	1352
P.3.9 QueueEntryStatus .....	1353
P.3.9.1 QueueEntryDefList.....	1353
<b>P.4 Deprecated Processes .....</b>	<b>1354</b>
P.4.1 DBDocTemplateLayout .....	1354
P.4.2 DBTemplateMerging.....	1354
P.4.3 FormatConversion .....	1354
P.4.4 Ordering.....	1355
P.4.5 Packing.....	1355
P.4.6 FilmToPlateCopying .....	1356
P.4.7 PreflightAnalysis .....	1356
P.4.7.1 PreflightDetail .....	1357
P.4.7.2 PreflightInstance .....	1357
P.4.7.3 PreflightInstanceDetail .....	1358
P.4.8 PreflightInventory.....	1358
P.4.9 PreflightProfile .....	1359
P.4.9.1 PreflightConstraint.....	1360
P.4.10 Proofing .....	1360
P.4.11 SoftProofing.....	1361
P.4.12 IDPrinting.....	1362
P.4.13 AdhesiveBinding.....	1363
P.4.14 Dividing.....	1364

P.4.15 LongitudinalRibbonOperations .....	1364
P.4.16 Numbering .....	1364
P.4.17 SaddleStitching.....	1365
P.4.18 SideSewing.....	1365
<b>P.5 Deprecated Intents .. . . . .</b>	<b>1366</b>
P.5.1 BindingIntent Deprecated Subelements .....	1366
P.5.1.1 AdhesiveBinding .....	1366
P.5.1.2 BookCase.....	1366
P.5.2 DeliveryIntent Deprecated Subelements .....	1367
P.5.2.1 Pricing.....	1367
P.5.2.2 Payment .....	1367
P.5.2.3 CreditCard .....	1367
P.5.3 NumberingIntent.....	1368
P.5.3.1 NumberItem.....	1369
P.5.4 SizeIntent.....	1369
<b>P.6 Deprecated Parameters .. . . . .</b>	<b>1370</b>
P.6.1 AdhesiveBindingParams .....	1370
P.6.2 BoxFoldingParams Deprecated Subelements.....	1371
P.6.2.1 BoxApplication.....	1371
P.6.3 CustomerMessage .....	1372
P.6.4 DBMergeParams .....	1372
P.6.5 DBRules .....	1373
P.6.6 DBSchema .....	1373
P.6.7 DBSelection.....	1374
P.6.8 DividingParams .....	1374
P.6.9 FormatConversionParams.....	1374
P.6.10 IDPrintingParams .....	1375
P.6.10.1 Cover .....	1377
P.6.10.2 IDPFinishing.....	1378
P.6.10.3 IDPFolding .....	1379
P.6.10.4 IDPHoleMaking.....	1379
P.6.10.5 IDPLayout .....	1380
P.6.10.6 IDPStitching .....	1381
P.6.10.7 IDPTrimming.....	1383
P.6.10.8 ImageShift .....	1383
P.6.10.9 JobSheet.....	1384
P.6.11 Layout Deprecated Subelement .....	1386
P.6.11.1 Signature .....	1386
P.6.12 LongitudinalRibbonOperationParams.....	1387
P.6.12.1 LROperation .....	1387
P.6.12.2 LongFold .....	1388
P.6.12.3 LongGlue .....	1388

---

P.6.12.4 LongPerforate .....	1388
P.6.12.5 LongSlit .....	1388
P.6.13 MediaSource .....	1388
P.6.14 NumberingParams .....	1389
P.6.15 NumberingParam .....	1389
P.6.16 OrderingParams .....	1390
P.6.17 PackingParams .....	1390
P.6.18 PlaceHolderResource .....	1391
P.6.19 PlateCopyParams .....	1392
P.6.20 ProofingParams .....	1392
P.6.21 RunList Deprecated Subelements .....	1394
P.6.21.1 DynamicInput .....	1394
P.6.22 SaddleStitchingParams .....	1394
P.6.23 Sheet .....	1395
P.6.24 SideSewingParams .....	1396
P.6.25 Surface .....	1397
<b>Appendix Q List of Figures .....</b>	<b>1399</b>
<b>Appendix R List of Tables .....</b>	<b>1403</b>
<b>Appendix S List of Examples .....</b>	<b>1427</b>
Legal Notice i	
Table of Contents iii	
JDF Preface and User Overview lxxix	
Introduction 1	
Background on XJDF 1	
Design Criteria for XJDF 1	
Simplify and reduce variations 2	
Reduce the barrier of entry 2	
Replace abstract data types with explicit elements and children 2	
Remove ResourceLinks 2	
Enable dynamic changes 2	
Remove schema defaults. 2	
Retain the semantic structures 2	
Remove implementation specific details 2	
Spawning and Merging 3	
Enhance Compatibility with standard XML and XML Tools 3	
Partitioning and Inheritance 3	
Removal of Partition SignatureName 3	
Device Capabilities 3	
Background on JDF 3	
Document References 4	
Conventions Used in This Specification 4	

## Table of Contents

Text Styles	4
XPath Notation Used in this Specification	5
Modification Notes	6
Location of Modification Notes	6
Specification of Cardinality	6
Template for Narrative Description of Resources	7
Template for Tables that Describe Elements	8
Glossary	9
Conformance Terminology	16
Conformance Requirements for JDF XJDF Entities	17
Conformance Requirements for Support of Attributes and Attribute Values	17
Conformance Requirements for Support of Elements	18
Conformance Requirements for Support of Processes	18
Conformance Requirements for Support of Combined Processes	18
Conformance to Settings Policy	19
Interoperability Conformance Specifications	19
Data Structures	19
Units	22
Counting in JDF XJDF	23
Overview of JDF XJDF	25
System Components	25
Job Components	25
Jobs and Nodes	25
Elements	25
Attributes	25
Relationships	25
Links	26
Referencing External Data	26
Identifying Sections of XJDF from External Sources	26
Identifying Sections of XJDF from within the Same XJDF	26
Workflow Component Roles	26
Machines	<b>27</b>
Devices	27
Agents	27
Queue	27
Controllers	28
Management Information Systems—MIS	28
System Interaction	28
JDF XJDF Workflow	30
Product Intent and Processes	31
Job Structure	31
Hierarchical Tree Structure and Networks in JDF	33
Role of Messaging in JDF XJDF	35
Coordinate Systems in JDF XJDF	35
Introduction	35
Source Coordinate Systems	37

---

Coordinates and Transformations	37
Coordinate Systems of Resources and Processes	38
Coordinate Systems of Combined Processes	38
Coordinate System Transformations	38
Product Example: Simple Brochure	40
General Rules	45
Homogeneous Coordinates	45
Structure of XJDF JDF Nodes and Jobs	47
Modification Notes	48
Generic Contents of All Elements	48
Structure Diagram	49
JDF XJDF Node	50
Modification Notes	50
XJDF Node	51
Structure Diagram of XJDF JDF Node	58
Common Elements	60
Comment	60
GeneralID	63
Common Node Types	64
Product Intent Nodes	65
Process Group Nodes	66
Use of the Types Attribute in Process Group Nodes – Gray Boxes	66
Process Nodes	67
Use of NamedFeature in Product and Process Group Nodes	67
Specifying NamedFeatures with GeneralID	67
ResourceLink Structure in Process Group Nodes	67
Combined Process Nodes	69
Combined Process Nodes with Multiple Processes of the Same Type	69
Specifying non-linear dependencies in a Combined Process Node	70
Process Nodes	72
AncestorPool <b>72</b>	
Ancestor	72
CustomerInfo	74
NodeInfo	74
StatusPool	74
ResourcePool and its Resource Children	74
ResourcePool	74
Resource	74
Abstract Resource	75
SourceResource	79
Structure Diagram	79
ProductList	80
ResourceSet	81
Structure Diagram of ResourceSet	82
Dependent	83
Subelements of Resource	84

## Table of Contents

Location	84
Part	85
Partitioned Subsets of ResourceSets	89
Selecting a Partition	89
Referencing Multiple Resources of the Same Type	90
Multiple Part Elements in One Resource	90
AmountPool	90
Structure Diagram of AmountPool	91
PartAmount	91
Resource Classes	<b>93</b>
Parameter Resource	93
Abstract Parameter Resource	93
Intent Resource	93
ImplementationResource	93
Consumable Resource	93
Quantity Resource	94
Handling Resource	94
PhysicalResource	94
Abstract PhysicalResource	94
Location	95
PlaceHolder Resource	96
Position of Resources within JDF Nodes	96
Pipe Resources	96
ResourceUpdate	96
ResourceLinkPool and ResourceLink	97
ResourceLinkPool	97
ResourceLink	97
Structure Diagram	100
AmountPool and PartAmount	106
AmountPool	107
PartAmount	107
Resource Amount	111
Specifying Amount for a Partially-Completed Process	111
Identification of PhysicalResources	111
Lot	111
ResourcePool and ResourceLinkPool – Deep Structure	113
ResourceElement – Subelement of a Resource	113
ResourceElement	113
Abstract ResourceElement	113
ResourceRef – Element for Inter-Resource Linking and refelement	113
ResourceRef	113
Abstract ResourceRef	113
ResourceRef Elements in the AncestorPool/Ancestor Element	114
Status of a Resource that Contains an rRef Reference	115
Alignment of ResourceLink and ResourceRef	115
Set of Resources and Partitioned Subsets Thereof	116

---

Resource Amount 116
Evaluating and Updating Amount-Related Attributes in a Device 117
Specifying Amount for a Partially-Completed Process 117
Description of Partitioned Resources 120
Subelements in Partitioned Resources 120
Amount in Partitioned Resources 121
Relating PartIDKeys and Partitions 121
Incomplete Partitions 122
Number of Partition Keys per Partitioned Leaf or Node 122
Degenerate Partitions 123
Partitioning of Resource Subelements 123
Logical Partitions and the Identical Element 125
Identical 125
Restrictions when using Identical Elements 126
PartIDKeys Attribute and Partition Keys 127
Partitionable Resource 127
Part 129
Options in Intent Resources 139
Locations of PhysicalResources 139
Linking to Resources 140
Linking to Subsets of Resources 141
Reordering the Processing of Resources 141
Handling Amount in a ResourceLink to a Partitioned Resource 141
Implicit, Sparse and Explicit PartUsage in Partitioned Resources 142
Referencing Multiple Resources of the Same Type 143
Splitting and Combining Resources 145
AuditPool and Audit <b>146</b>
AuditPool 146
Structure Diagram 148
Audit 149
Structure Diagram of Audit Elements 150
Created 151
Deleted 152
Merged 152
Modified 153
AuditNotification 153
Notification 153
PhaseTime 156
AuditStatus 156
Activity 159
ModulePhase 159
ProcessRun 161
AuditResource 162
ResourceAudit 162
Logging Machine Data by Using the ResourceAudit 165
Logging Changes in Product Descriptions by Using the ResourceAudit 166

Spawned	167
XJDF Extensibility	167
JDF Extensibility	167
Namespaces in XML	168
JDF XJDF Namespace	168
JDF Extension Namespace	168
Foreign Namespaces	168
Creating Extension Assets:	168
Extending Process Types	169
Rules about Process Extension	169
Extending the NodeInfo and CustomerInfo Nodes	169
Extending Existing Resources	169
Extending NMTOKEN Lists	170
Creating New Resources	170
Future JDF XJDF Extensions	170
Maintaining Extensions	171
Processing Unknown Extensions	171
Derivation of Types in XML Schema	171
JDF Versioning	171
JDF Versioning Requirements	171
JDF Version Definition	172
JDF Version Policies	172
JDF Specification Version Policies	172
JDF Schema Version Policies	172
JDF Application Version Policies	173
JDF Agent Version Policies	173
JDF Device/Controller Version Policies	173
Life Cycle of JDF XJDF	175
Creation and Modification	175
Product Intent Constructs	<b>175</b>
Representation of Product Intent	176
Representation of Product Binding	176
Specification of Delivery of End Products	176
Specification of Process Specifics for Product Intent Nodes	176
Process Routing	178
Determining Executable Nodes	178
Distributing Processing to Work Centers or Devices	179
Device / Controller Selection	180
Execution Model	180
Serial Processing	180
Partial Processing of Nodes with Partitioned Resources	182
Overlapping Processing Using Pipes	<b>183</b>
Dynamic Pipes	185
Pipes of Partitionable Resources	187
Example JMFPush Sequence	187
Comparison of Non-Dynamic and Dynamic Pipes	188

---

Parallel Processing	188
Iterative Processing	188
Informal Iterative Processing	189
Formal Iterative Processing	189
Approval, Quality Control and Verification	189
Spawning and Merging	189
Case 1: Standard Spawning and Merging	191
Case 2: Spawning and Merging with Resource Copying	192
Spawning of Resources with Inter-Resource Links	192
Case 3: Parallel Spawning and Merging of Partitioned Resources	193
Case 4: Nested Spawning and Merging in Reverse Sequence	194
Case 5: Spawning and Merging of Independent Jobs	194
Case 6: Simultaneous Spawning and Merging of Multiple Nodes	194
Node and Resource IDs	195
Error Handling	195
Classification of Notifications	195
Event Description	195
Error Logging in the JDF File	196
Error Handling via Messaging (JMF)	196
Test Running	196
Resource Status During a Test Run	196
Capability and Constraint Definitions	197
JMF XJMF Messaging with the Job Messaging Format	199
JMF XJMF Root	200
Message	202
Message	202
Structure Diagram	203
List of All JMF XJMF Messages	205
JMF XJMF Message Families	208
Query	208
Subscription	210
Command	212
Signal	214
Trigger	215
ChangedPath	216
Response	216
Acknowledge	218
Registration	220
JMF Handshaking	221
Single Query/Command Response Communication	221
Signal and Acknowledge Handshaking	221
Reliable Signalling	221
Persistent Channels	222
Persistent Channels for Signals	222
Persistent Channels for Commands	222
Subscription	222

## Table of Contents

ObservationTarget 223  
Scope of Subscriptions 224  
Deleting Persistent Channels 224  
JMF Messaging Levels 224  
Error and Event Messages 225  
Message Template 225  
Object Type Column 226  
QueryTypeObj 226  
CommandTypeObj 226  
ResponseTypeObj 227  
Messages for Events and Capabilities 227  
Events 228  
KnownControllers 228  
KnownDevices 228  
QueryKnownDevices 229  
DeviceFilter 229  
DeviceFilter 229  
ResponseKnownDevices 230  
DeviceList 231  
DeviceList 231  
SignalKnownDevices 231  
KnownJDFServices 232  
KnownMessages 232  
QueryKnownMessages 232  
KnownMsgQuParams 232  
KnownMsgQuParams 232  
ResponseKnownMessages 233  
MessageService 233  
MessageService 233  
SignalKnownMessages 235  
KnownSubscriptions 236  
QueryKnownSubscriptions 236  
SubscriptionFilter 236  
SubscriptionFilter 236  
ResponseKnownSubscriptions 237  
SubscriptionInfo 238  
SubscriptionInfo 238  
SignalKnownSubscriptions 239  
Notification 239  
QueryNotification 240  
NotificationFilter 240  
NotificationFilter 240  
ResponseNotification 241  
SignalNotification 242  
Notification 242  
Error 244

Event 245  
Milestone 245  
RepeatMessages 245  
RequestForAuthentication 245  
RequestForAuthentication Command 246  
AuthenticationCmdParams 246  
Certificate 247  
AuthenticationResp 248  
RequestForAuthentication Query 248  
AuthenticationQuParams 248  
StopPersistentChannel 250  
CommandStopPersistentChannel 250  
StopPersChParams 250  
StopPersChParams 250  
ResponseStopPersistentChannel 251  
Messages to Query/Command a Job, Device or Controller Relating to Jobs and Devices 252  
FlushResources 253  
FlushResources Command 253  
CommandFlushResources 253  
FlushResources Query 254  
QueryFlushResources 254  
FlushResourceParams 255  
ResponseFlushResources 255  
FlushedResources 255  
SignalFlushResources 256  
ModifyNode 256  
ModifyNode Command 256  
ModifyNode Signal 256  
ModifyNodeCmdParams 256  
NewComment 257  
NewJDF 258  
NewJDF Query 258  
NewJDFQuParams 258  
NewJDF Command 258  
NewJDFCmdParams 259  
IDInfo 259  
NodeInfo 260  
Occupation 260  
Resource 260  
Resource Query 260  
QueryResource 260  
ResourceQuParams 261  
Resource Command 265  
CommandResource 265  
ResourceCmdParams 267  
ResponseResource 270

## Table of Contents

ResourceInfo	270
SignalResource	275
ResourcePull	275
ResourcePullParams	276
ShutDown	277
CommandShutDown	278
ShutDownCmdParams	278
ShutDownCmdParams	278
ResponseShutDown	279
Status	279
QueryStatus	279
StatusQuParams	280
StatusQuParams	280
ResponseStatus	282
DeviceInfo	282
DeviceInfo	282
Activity	285
JobPhase	285
ModuleStatus	288
SignalStatus	289
Track	290
UpdateJDF	290
UpdateJDF Command	290
UpdateJDF Signal	291
UpdateJDFCmdParams	291
CreateLink	292
CreateResource	292
MoveResource	292
RemoveLink	292
WakeUp	293
CommandWakeUp	294
WakeUpCmdParams	294
WakeUpCmdParams	294
ResponseWakeUp	294
Messages for Pipe Control	295
PipeControl	295
CommandPipeControl	296
PipeParams	296
Common PipeControl Element	296
PipeParams	296
<i>@Operation = "Close"</i>	298
PipeClose	298
<i>@Operation = "Pull"</i>	298
PipePull	298
<i>@Operation = "Push"</i>	299
PipePush	299

@Operation = "Pause" 300  
PipePause 300  
ResponsePipeControl 301  
Queue Support 301  
Queue Entry ID Generation 301  
Messages for Queue Entry Handling 302  
AbortQueueEntry 308  
AbortQueueEntryParams 308  
HoldQueueEntry 309  
HoldQueueEntryParams 309  
ModifyQueueEntry 309  
CommandModifyQueueEntry 309  
ModifyQueueEntryParams 310  
ResponseModifyQueueEntry 311  
RemoveQueueEntry 312  
RemoveQueueEntryParams 312  
RequestQueueEntry 312  
CommandRequestQueueEntry 313  
RequestQueueEntryParams 313  
RequestQueueEntryParams 313  
ResponseRequestQueueEntry 314  
ResubmitQueueEntry 314  
CommandResubmitQueueEntry 315  
ResubmissionParams 315  
ResubmissionParams 315  
Referencing values for incremental update 315  
Finding the correct XJDF node to update 316  
Finding the correct Resource to update 316  
Updating values 316  
Removing values 316  
ResponseResubmitQueueEntry 316  
ResumeQueueEntry 317  
ResumeQueueEntryParams 317  
ReturnQueueEntry 318  
CommandReturnQueueEntry 318  
ReturnQueueEntryParams 318  
ReturnQueueEntryParams 318  
ResponseReturnQueueEntry 319  
SetQueueEntryPosition 319  
QueueEntryPosParams 320  
SetQueueEntryPriority 320  
QueueEntryPriParams 320  
SubmitQueueEntry 321  
CommandSubmitQueueEntry 321  
QueueSubmissionParams 322  
QueueSubmissionParams 322

ResponseSubmitQueueEntry	324
SuspendQueueEntry	325
SuspendQueueEntryParams	325
Messages for Global Handling of Queues	326
CloseQueue	327
FlushQueue	327
FlushQueue Command	327
FlushQueueParams	328
FlushQueue Query	328
FlushQueueInfo	329
HoldQueue	329
OpenQueue	329
QueueEntryStatus	329
QueueStatus	329
QueryQueueStatus	330
QueueStatusParams	330
ResponseQueueStatus	331
SignalQueueStatus	331
ResumeQueue	332
SubmissionMethods	332
SubmissionMethods	332
Elements for Queues	333
Queue	333
QueueEntry	335
QueueEntryDef	337
QueueFilter	338
Gang Jobs	340
ForceGang	340
CommandForceGang	340
GangCmdFilter	341
GangCmdFilter	341
ResponseForceGang	341
GangStatus	341
CommandGangStatus	342
GangQuFilter	342
GangQuFilter	342
ResponseGangStatus	342
GangInfo	343
GangInfo	343
Extending Messages	343
IfraTrack Support	344
Processes	345
Combining Individual Process Steps	345
Nodes with Multiple Processes of the Same Type	345
Process Template	345
General Processes	347

Approval	347
Buffer	348
Combine	349
Delivery	349
ManualLabor	349
Ordering	350
Packing	350
QualityControl	350
ResourceDefinition	351
Split	351
Verification	351
Prepress Processes	352
AssetListCreation	352
Bending	353
ColorCorrection	353
ColorSpaceConversion	354
ContactCopying	355
ContoneCalibration	355
CylinderLayoutPreparation	356
DBDocTemplateLayout	356
DBTemplateMerging	356
DieDesign	357
DieLayoutProduction	357
DigitalDelivery	360
FilmToPlateCopying	360
FormatConversion	360
ImageEnhancement	360
ImageReplacement	361
ImageSetting	361
Imposition	362
Glossary for Automated Imposition	363
Variables for Automated Imposition	366
Execution Model for Automated Imposition	368
Configuration for Various Automated Impositions	371
Using Logical Stacks	371
Imposition for Cut and Stack	372
Imposition for Signatures with Saddle Stitching	373
Selecting from Multiple Imposition Templates When Processing an unstructured PDL	374
Imposition for Start of a Chapter	374
Imposition for Regenerating Sheet Surfaces	374
Imposition for Document-Major Processing of a VDP Structured PDL	375
InkZoneCalculation	375
Interpreting	376
LayoutElementProduction	376
LayoutPreparation	377
LayoutShifting	377

## Table of Contents

PageAssigning	378
PDFToPSConversion	378
PDLCreation	379
Preflight	379
PreviewGeneration	380
Proofing	382
PSToPDFConversion	382
RasterReading	383
Rendering	383
RIPing	384
Scanning	385
Screening	385
Separation	386
SheetOptimizing	386
SoftProofing	387
Stripping	387
Pagination in Stripping	387
Tiling	389
Trapping	390
Press Processes	390
ConventionalPrinting	391
DigitalPrinting	393
Varnishing	395
IDPrinting	396
Postpress Processes	396
AdhesiveBinding	396
BlockPreparation	396
BoxFolding	396
BoxPacking	397
Bundling	398
CaseMaking	398
CasingIn	399
ChannelBinding	399
CoilBinding	400
Collecting	400
CoverApplication	401
Creasing	402
Cutting	402
DieMaking	403
Dividing	403
Embossing	403
EndSheetGluing	404
Feeding	404
Folding	406
Gathering	406
Gluing	407

HeadBandApplication	407
HoleMaking	408
Inserting	408
Jacketing	409
Labeling	409
Laminating	409
LongitudinalRibbonOperations	410
LooseBinding	410
Loose-Leaf Binding Methods	410
Mechanical Binding Methods	410
Numbering	411
Palletizing	411
Perforating	412
PlasticCombBinding	412
PrintRolling	413
RingBinding	413
SaddleStitching	414
ShapeCutting	414
ShapeDefProduction	414
Shrinking	415
SideSewing	415
SpinePreparation	415
SpineTaping	416
Stacking	416
StaticBlocking	417
Stitching	417
Strapping	418
StripBinding	418
ThreadSealing	419
ThreadSewing	419
Trimming	419
WebInlineFinishing	420
Winding	420
WireCombBinding	421
Wrapping	421
Postpress Processes Structure	422
Block Production	422
Block Compiling	422
Block Joining	422
Binding Methods	422
Single-Leaf Binding Methods	422
Loose-Leaf Binding Method	423
Mechanical Binding Methods	423
HoleMaking	423
Laminating	423
Numbering	423

## Table of Contents

Packaging Processes	423
Processes in Hardcover Book Production	424
Sheet Processes	424
Tip-on/in	425
Trimming	425
Web Processes	425
Product Intents	427
Product Description	427
Representation of Product Binding	427
Product	427
Intent	429
Product Intent	429
Structure Diagram of ProductList	430
Product Intent Descriptions	430
Intent Properties Template	431
Abstract Span Element	432
Span Elements	433
DurationSpan	434
EnumerationSpan	434
IntegerSpan	435
NameSpan	435
Specifying New Values in a NameSpan Subelement	435
NumberSpan	435
OptionSpan	436
ShapeSpan	436
StringSpan	437
TimeSpan	437
XYPairSpan	437
ArtDeliveryIntent	438
ArtDelivery	440
AssemblingIntent	443
AssemblyItem	444
BindIn	444
BlowIn	444
StickOn	445
BindingIntent	445
AdhesiveNote	449
BindList	449
BindItem	449
AdhesiveBinding	450
BookCase	451
ChannelBinding	451
CoilBinding	451
EdgeGluing	451
HardCoverBinding	452
LooseBinding	455

PlasticCombBinding 456  
RingBinding 457  
SaddleStitching 458  
SideSewing 458  
SideStitching 458  
SoftCoverBinding 458  
StripBinding 460  
Tabs 460  
Tape 461  
ThreadSealing 461  
ThreadSewing 461  
WireCombBinding 462  
ColorIntent 462  
SurfaceColor 464  
ColorsUsed 467  
ContentCheckIntent 467  
PreflightItem 467  
ProofItem 468  
DeliveryIntent 469  
DropItemIntent 475  
Pricing 475  
Payment 476  
CreditCard 476  
EmbossingIntent 476  
EmbossingItem 476  
FoldingIntent 478  
HoleMakingIntent 479  
InsertingIntent 480  
InsertList 481  
Insert 481  
LaminatingIntent 482  
LayoutIntent 483  
MediaIntent 486  
NumberingIntent 494  
PackingIntent 494  
ProductionIntent 495  
ProofingIntent 496  
PreflightItem 497  
ProofItem 497  
PublishingIntent 499  
ScreeningIntent 499  
ShapeCuttingIntent 500  
ShapeCut 500  
SizeIntent 501  
VariableIntent 501  
Resources 503

## Table of Contents

Resource	503
Location	505
Specific Resourcer	505
AdhesiveBindingParams	505
ApprovalParams	505
ApprovalPerson	506
ApprovalSuccess	506
ApprovalDetails	506
ApprovalDetails	507
Assembly	508
AssemblySection	509
PageAssignedList	510
AssetListCreationParams	512
BendingParams	512
BinderySignature	513
Pagination for BinderySignatureType Fold	513
On the use of Bleed	518
On the use of Trim	518
SignatureCell	522
BlockPreparationParams	526
BoxFoldingParams	527
BoxApplication	529
BoxFoldAction	529
BoxPackingParams	533
BufferParams	535
Bundle	536
BundleItem	537
BundlingParams	538
ByteMap	539
Band	540
PixelColorant	541
CaseMakingParams	541
CasingInParams	543
ChannelBindingParams	544
CoilBindingParams	545
CollectingParams	546
Color	547
DeviceNColor	552
Diecutting Data (DDES3)	552
PrintConditionColor	553
ColorantControl	557
ColorantAlias	563
ColorantConvertProcess	563
ColorantOrder	563
ColorantParams	564
DeviceColorantOrder	564

ColorSpaceSubstitute 564  
DeviceNSpace 566  
ColorCorrectionParams 567  
ColorCorrectionOp 568  
ColorPool 569  
ColorSpaceConversionParams 570  
ColorSpaceConversionOp 572  
Component 579  
Contact 586  
ComChannel 588  
Company 590  
Person 590  
ContactCopyParams 591  
ContentList 591  
Content 591  
ContentData 592  
BarcodeProductionParams 594  
ContentMetadata 595  
PositionObj 595  
ConventionalPrintingParams 599  
CoverApplicationParams 602  
Score 602  
CreasingParams 604  
CustomerInfo 605  
CustomerMessage 606  
CutBlock 606  
CutMark 607  
CuttingParams 608  
CutBlock 609  
CylinderLayout 610  
CylinderPosition 610  
CylinderLayoutPreparationParams 614  
DBMergeParams 614  
DBRules 614  
DBSchema 614  
DBSelection 614  
DeliveryParams 614  
Drop 618  
DropItem 620  
DevelopingParams 621  
Device 621  
IconList 625  
Icon 625  
Module 625  
DieLayout 626  
RuleLength 627

Station	628
DieLayoutProductionParams	628
RepeatDesc	628
DigitalDeliveryParams	633
DigitalMedia	634
DigitalPrintingParams	635
Coordinate systems in DigitalPrinting	635
DividingParams	640
ElementColorParams	640
EmbossingParams	641
Emboss	642
Employee	644
EndSheetGluingParams	645
EndSheet	645
ExposedMedia	646
ExternalImpositionTemplate	648
FeedingParams	648
Feeder	649
FeederQualityParams	650
CollatingItem	651
FileSpec	652
Container	659
Disposition	659
FileAlias	660
FoldingParams	661
FontParams	666
FontPolicy	666
FormatConversionParams	667
GatheringParams	667
GlueApplication	668
GluingParams	669
Glue	670
HeadBandApplicationParams	670
HoleList	672
HoleMakingParams	672
IdentificationField	674
BarcodeDetails	678
ExtraValues	679
Usage of barcode Attributes	679
IDPrintingParams	681
ImageCompressionParams	682
ImageCompression	682
CCITTFaxParams	685
DCTParams	685
FlateParams	687
JBIG2Params	687

JPEG2000Params	688
LZWParams	688
ImageEnhancementParams	689
ImageEnhancementOp	689
ImageReplacementParams	690
ImageSetterParams	692
Ink	694
InkZoneCalculationParams	696
InkZoneProfile	697
InsertingParams	697
InterpretedPDLData	700
InterpretingParams	700
InterpretingDetails	702
PDFInterpretingParams	703
OCGControl	704
ReferenceXObjParams	705
PDLResourceAlias	705
More about PDFInterpretingParams	706
PDF Optional Content Groups	706
JacketingParams	706
LabelingParams	707
LaminatingParams	708
Layout	709
ColorControlStrip	715
CIELABMeasuringField	716
DensityMeasuringField	717
DeviceMark	718
LayerList	722
LayerDetails	722
LogicalStackParams	723
Stack	723
PageCondition	724
SheetCondition	726
PlacedObject	727
PlacedObject	727
Abstract PlacedObject	727
ContentObject	730
MarkObject	735
CutMark	741
FillMark	742
MarkActivation	743
Dynamic Marks	744
DynamicField	744
More about Layout	745
Migrating from a Pre-JDF 1.3 Layout to a Partitioned Layout	745
Partition Key restrictions:	746

Position of PlacedObject Elements in Layout	746
CTM Definitions	747
Finding the Trim Box of an Object	747
Using Ord to Reference Elements in RunList Resources	748
Using Expressions in the OrdExpression Attribute	749
Signature	750
LayoutElement	750
Dependencies	754
LayoutElementProductionParams	754
LayoutElementPart	756
BarcodeProductionParams	757
PositionObj	758
LayoutPreparationParams	763
PageCell	773
ImageShift	775
LayoutShift	779
ShiftPoint	779
LongitudinalRibbonOperationParams	780
LooseBindingParams	780
ChannelBindingDetails	783
CoilBindingDetails	783
CombBindingDetails	784
RingBindingDetails	784
ManualLaborParams	785
Media	785
TabDimensions	798
More about Media	801
Inside Loss and Outside Gain	801
Corrugated Media:	802
Self adhesive Media	803
Flexo Plate Media	803
Flexo Sleeve Media	803
MediaSource	804
MiscConsumable	804
NodeInfo	805
NumberingParams	809
OrderingParams	809
PackingParams	809
PageAssignParams	809
PageList	810
PageData	811
PageElement	814
Pallet	815
PalletizingParams	816
PDFToPSConversionParams	816
PDLCreationParams	820

---

FontParams 820  
PDFToPSConversionParams 821  
PSCreationDetails 821  
PSToPDFConversionParams 824  
PDFCreationDetails 824  
AdvancedParams 826  
PDFXParams 828  
ThinPDFParams 830  
PDLResourceAlias 830  
PerforatingParams 830  
PlaceHolderResource 831  
PlasticCombBindingParams 831  
PlateCopyParams 832  
PreflightAnalysis 832  
PreflightInventory 832  
PreflightParams 832  
PreflightTest 833  
PreflightAction 834  
BasicPreflightTest 834  
PreflightArgument 835  
BoxArgument 836  
BoxToBoxDifference 837  
PreflightProfile 837  
PreflightReport 837  
PreflightCheck 838  
PRItem 839  
PRError 839  
PRGroup 840  
Abstract PRGroupOccurrenceBase 842  
PRGroupOccurrenceBase 842  
ArgumentValue 842  
PRGroupOccurrence 843  
StringListValue 843  
PROccurrence 843  
PreflightReportRulePool 843  
PRRule 844  
PRRuleAttr 844  
Preview 846  
PreviewGenerationParams 848  
PrintCondition 850  
PrintRollingParams 851  
ProductionPath 852  
FolderSuperstructureWebPath 853  
PostPressComponentPath 853  
PrintingUnitWebPath 853  
ProofingParams 854

PSToPDFConversionParams	854
AdvancedParams	856
PDFXParams	858
ThinPDFParams	860
QualityControlParams	861
BindingQualityParams	861
QualityControlResult	861
QualityMeasurement	862
BindingQualityMeasurement	862
RasterReadingParams	863
RegisterMark	864
RenderingParams	865
TIFFFormatParams	866
TIFFtag	868
TIFFEmergedFile	868
ResourceDefinitionParams	868
ResourceParam	869
RingBindingParams	869
RollStand	871
RunList	871
Referencing pages of a RunList from a Layout	872
Filtering parts of a RunList	872
Reordering the Processing of Resources	881
ByteMap	882
Band	882
DynamicInput	883
SaddleStitchingParams	885
ScanParams	885
ScavengerArea	887
ScreeningParams	887
SeparationControlParams	888
Shape	888
ShapeCuttingParams	889
ShapeDef	890
CutLines	892
ShapeDefProductionParams	892
ObjectModel	893
ShapeTemplate	893
ShapeDimension	893
Sheet	896
SheetOptimizingParams	896
GangElement	896
SeparationListBack	899
SeparationListFront	899
ShrinkingParams	900
SideSewingParams	900

SpinePreparationParams 900  
SpineTapingParams 902  
StackingParams 903  
StaticBlockingParams 907  
StitchingParams 907  
Strap 911  
StrappingParams 912  
StripBindingParams 913  
StrippingParams 914  
ExternalImpositionTemplate 918  
Position 919  
StripCellParams 920  
StripMark 922  
Surface 928  
ThreadSealingParams 928  
ThreadSewingParams 928  
Tile 930  
Tool 931  
TransferCurve 932  
TransferCurvePool 933  
TransferCurveSet 934  
TransferFunctionControl 934  
TrappingDetails 935  
TrappingOrder 936  
TrappingParams 936  
ColorantZoneDetails 940  
TrapRegion 940  
TrimmingParams 941  
UsageCounter 942  
VarnishingParams 943  
VerificationParams 944  
WebInlineFinishingParams 945  
FolderProduction 946  
WindingParams 946  
WireCombBindingParams 947  
WrappingParams 948  
Device Capabilities 949  
Device Capability Definitions 949  
DeviceCap 949  
ActionPool 953  
Action 954  
DevCapPool 954  
ModulePool 954  
ModuleCap 955  
DevCaps 955  
Loc 958

## Table of Contents

DevCap 959  
State 960  
Abstract State Element 962  
State Elements 964  
BooleanState 965  
ValueLoc 966  
DateTimeState 967  
DurationState 968  
EnumerationState 970  
IntegerState 971  
MatrixState 973  
Value 975  
NameState 976  
NumberState 976  
PDFPathState 978  
Value 979  
RectangleState 980  
ShapeState 981  
StringState 983  
Value 985  
XYPairState 985  
DisplayGroupPool 987  
DisplayGroup 988  
FeaturePool 988  
MacroPool 989  
macro 989  
choice 990  
otherwise 990  
when 990  
set 991  
FeatureAttribute 991  
call 991  
Performance 991  
TestPool 992  
Test 992  
Term 993  
Abstract Term 993  
Term Elements 994  
and 995  
or 995  
xor 995  
not 996  
TestRef 996  
Evaluation 996  
Abstract Evaluation 997  
Evaluation Elements 998

BooleanEvaluation	999
DateTimeEvaluation	1000
DurationEvaluation	1000
EnumerationEvaluation	1000
IntegerEvaluation	1000
IsPresentEvaluation	1001
MatrixEvaluation	1001
Value	1002
NameEvaluation	1002
NumberEvaluation	1002
PDFPathEvaluation	1003
Value	1003
RectangleEvaluation	1003
ShapeEvaluation	1003
StringEvaluation	1004
Value	1004
XYPairEvaluation	1004
Examples of Device Capabilities	1005
Device Description of a Scanner	1005
Device Description of a Scanner #2	1008
Concept of the Preflight Process	1013
Object Classes	1014
Properties Implemented by each Class of Object	1014
Checking for the Presence of a Property	1015
Basic tests on set of objects	1016
Properties	1017
Annotation Properties	1017
Box Properties	1018
Class Properties	1019
Colorant Properties	1019
Document Properties	1020
Fill Properties	1024
Font Properties	1025
Graphic Properties	1026
Image Properties	1027
Logical Properties	1030
PageBox Properties	1030
Pages Properties	1030
PDLObject Properties	1031
Reference Properties	1032
Shading Properties	1032
Stroke Properties	1033
Text Properties	1033
Vector Properties	1034
Subelements	1035
Address	1035

## Table of Contents

ApprovalPerson	1035
AutomatedOverPrintParams	1036
BarcodeCompParams	1037
BarcodeReproParams	1037
Certification	1038
ColorantAlias	1038
ColorCorrectionOp	1039
ColorMeasurementConditions	1041
ColorSpaceConversionOp	1042
ComChannel	1049
ConvertingConfig	1051
CostCenter	1052
Crease	1052
Cut	1053
DeviceMark	1054
DeviceNSpace	1058
Disjointing	1059
Disposition	1061
FitPolicy	1061
Fold	1063
Glue	1064
GlueLine	1064
HolePattern	1065
HoleLine	1067
InsertSheet	1068
JobField	1072
MarkColor	1073
MediaLayers	1073
MetadataMap	1074
Expr	1076
MISDetails	1079
ObjectResolution	1080
OCGControl	1081
Perforate	1081
Person	1082
RefAnchor	1083
RegisterRibbon	1084
ScreenSelector	1084
SeparationSpec	1087
Building a System Around JDFXJDF	1089
Implementation Considerations and Guidelines	1089
Status Transitions	1089
Execution Model	1090
Serial Processing	1090
Partial Processing of Nodes with Partitioned Resources	1090
Parallel Processing	1090

---

Overlapping Processing 1090  
Dynamic Pipes 1092  
Example JMFPush Sequence 1093  
Comparison of Non-Dynamic and Dynamic Pipes 1094  
Metadata in Pipe Messages 1094  
Approval, Proofing, Quality Control and Verification 1094  
Error Handling 1095  
Classification of Notifications 1095  
Event Description 1095  
Error Logging in the JDF File 1095  
Error Handling via Messaging (XJMF) 1095  
JDF XJDF and JMF XJMF Interchange Protocol 1095  
File-Based Protocol (JDF) 1095  
HTTP-Based Protocol (JDF + JMF) 1096  
Protocol Implementation Details 1096  
HTTP Port 1096  
HTTP Request Method 1096  
HTTPS-Based Protocol – TLS SSL with two-way authentication 1096  
Purpose 1096  
Certificates 1097  
Verification of Certificates 1097  
Exchange of Certificates 1097  
Standards 1099  
Implementation 1099  
Discovery Messages 1099  
Example of Java Keytool Usage 1099  
XJMF Handshaking 1099  
Single Query/Command Response Communication 1099  
XJMF Error Handling 1099  
Subscribing for Signals 1100  
Managing Persistent Channels. 1101  
Signal Handshaking 1101  
Reliable Signalling 1101  
12.3.4.1 Sequence of Signals 1101  
Deleting Persistent Channels 1102  
XJMF Bootstrapping 1102  
Device / Controller Selection 1102  
JDF XJDF Packaging 1102  
MIME Basics 1103  
MIME Types and File Extensions 1103  
ZIP Packaging 1103  
Identifying the Root XJMF. 1104  
Referencing Assets within a ZIP Package. 1104  
MIME Headers 1104  
Content-Type Header 1104  
Content-ID Header 1104

## Table of Contents

Content-Transfer-Encoding	1104
Content-Disposition Header	1105
CID URL Scheme	1105
Ordering of Body Parts in MIME Multipart/Related	1106
MIS Requirements	1107
Job Modification	1107
Rescheduling with ModifyQueueEntry	1108
Modifying Jobs	1108
Interoperability Conformance Specifications	1108
Use of XML Schema for Capability Descriptions	1109
Encoding	1111
Notes About Encoding	1111
List, Range and Range List Data Types	1111
Whitespace	1111
Infinity Limits	1111
Simple Types — Attribute Values	1111
boolean	1111
CMYKColor	1111
date	1112
dateTime	1112
DateTimeRange	1112
DateTimeRangeList	1113
double	1113
DoubleList	1113
DoubleRange	1113
DoubleRangeList	1114
duration	1114
DurationRange	1114
DurationRangeList	1114
gYearMonth	1115
hexBinary	1115
ID	1115
IDREF	1115
IDREFS	1115
integer	1116
IntegerList	1116
IntegerRange	1116
IntegerRangeList	1117
LabColor	1117
language	1117
languages	1117
matrix	1118
NameRange	1118
NameRangeList	1118
NMTOKEN	1118
NMTOKENS	1119

PDFPath 1119  
rectangle 1119  
RectangleRange 1120  
RectangleRangeList 1120  
regExp 1120  
shape 1120  
ShapeRange 1120  
ShapeRangeList 1121  
sRGBColor 1121  
string 1121  
TimeRange 1121  
TransferFunction 1121  
URI 1122  
URL 1122  
XPath 1123  
XYPair 1123  
XYPairRange 1123  
XYPairRangeList 1124  
Enumerations and Lists 1124  
enumeration 1124  
enumerations 1124  
Defined JDF XJDF enumeration Data Types 1124  
Anchor 1125  
JDFJMVersion 1125  
NamedColor 1125  
Orientation 1126  
Sides 1126  
Scope 1127  
WorkStyle 1127  
XYRelation 1127  
JDF XJDF File Formats 1128  
PNG Image Format 1128  
Schema 1129  
Using xsi:type 1129  
Using xsi:type with JDF XJDF Nodes 1129  
Using xsi:type with JMF XJMF Messages 1130  
Supported String and NMTOKEN values 1133  
StatusDetails Supported Strings 1133  
ModuleType Supported Strings 1138  
NotificationDetails 1142  
Abstract NotificationDetails 1142  
NotificationDetails 1142  
Barcode 1143  
FCNKey 1143  
SystemTimeSet 1143  
CounterReset 1143

Error	1143
ErrorData	1144
Event	1144
Milestone	1145
Milestone Values	1145
Input Tray and Output Bin Names	1147
Supported Error Codes in JMF XJMF and Notification Elements	1151
Color Adjustment Attribute Description and Usage	1155
Adjustment Using Direct Attributes	1155
Adjustment using ICC Profile Attributes	1156
Adjustment using an ICC Abstract Profile Attribute	1156
Adjustment using an ICC DeviceLink Profile Attribute	1156
North American and Japanese Media Weight Explained	1157
North American Media Weight	1157
Japanese Media Weight	1158
Media Sizes	1161
MimeType and MimeTypeVersion Attributes	1165
Generating strings with Format and Template	1171
Pagination Catalog	1175
How to interpret the diagrams	1175
Legend	1175
Meaning of a Pagination Scheme	1176
Settings that Modify the Pagination Schemes	1176
BindingOrientation	1176
Binding and Jog Sides	1177
Getting a Specific Pagination Scheme	1177
Using the Settings to Find the Needed Scheme Transformation	1177
Scheme Transformations	1178
Examples	1180
Signature with Horizontal Binding Edges	1180
Signature with Vertical Binding Edges	1181
Pagination Diagrams	1182
Resolving RunList/@Directory and FileSpec/@URL URI References	1223
Semantics of the RunList/@Directory Attribute	1223
References	1225
JDF XJDF/CIP4 Hole Pattern Catalog	1239
FileSpec Attributes and Container Subelement	1249
Examples of Attribute Values of FileSpec	1249
Corresponding XML examples	1250
Additional examples showing Partitioning of FileSpec	1252
Example of an Intent Job Ticket with a doubly nested ZIP packaging file	1258
AppOS and OSVersion Attributes	1259
Examples	1261
Brief Example	1261
Before and After Processing	1261
Product JDF XJDF	1263

---

Spawning and Merging 1265  
RunList 1272  
Messages 1274  
Simple KnownMessages 1274  
Simple persistent channel 1275  
JMF XJMF Pipe Messages 1276  
Example Printer JDF XJDF 1276  
Example Finisher JDF XJDF 1277  
Initiation of PipePush sequence 1277  
Continuation of PipePush sequence 1278  
Paper Jam in finisher - PipePause 1280  
Paper jam cleanup in finisher - PipePull 1280  
Continued PipePush 1280  
Paper jam in printer - PipePause 1281  
Optional PipePause from the Finisher 1282  
Optional PipePull from the Finisher 1282  
Paper jam cleanup in printer - PipePush 1282  
Job done - PipeClose 1283  
Stripping 1283  
DigitalDelivery Examples 1291  
Automated Imposition 1298  
Deprecated Elements, JMF Messages, Processes and Resources 1307  
Deprecated Structures of JDF Nodes and Jobs 1307  
PlaceHolder Resource 1307  
ResourceUpdate 1307  
StatusPool 1308  
PartStatus 1308  
Life Cycle of JDF 1309  
Case 5: Spawning and Merging of Independent Jobs 1309  
JMF Messaging Elements 1311  
Signal 1311  
Trigger 1311  
Added 1311  
ChangedAttribute 1311  
Removed 1312  
Events 1312  
NotificationDef 1313  
KnownControllers 1313  
ControllerFilter 1314  
JDFController 1314  
RepeatMessages 1315  
MsgFilter 1315  
NodeInfo 1316  
NodeInfo Query 1316  
NodeInfoQuParams 1317  
NodeInfo Command 1317

## Table of Contents

NodeInfoCmdParams	1317
NodeInfoResp	1318
KnownJDFServices	1319
JDFService	1319
Occupation	1320
EmployeeDef	1320
Occupation	1321
Track	1322
TrackFilter	1322
TrackResult	1322
QueueEntryStatus	1323
QueueEntryDefList	1323
Deprecated Processes	1324
DBDocTemplateLayout	1324
DBTemplateMerging	1324
FormatConversion	1324
Ordering	1325
Packing	1325
FilmToPlateCopying	1326
PreflightAnalysis	1326
PreflightDetail	1327
PreflightInstance	1327
PreflightInstanceDetail	1328
PreflightInventory	1328
PreflightProfile	1329
PreflightConstraint	1330
Proofing	1330
SoftProofing	1331
IDPrinting	1332
AdhesiveBinding	1333
Dividing	1334
LongitudinalRibbonOperations	1334
Numbering	1334
SaddleStitching	1335
SideSewing	1335
Deprecated Intents	1336
BindingIntent Deprecated Subelements	1336
AdhesiveBinding	1336
BookCase	1336
DeliveryIntent Deprecated Subelements	1337
Pricing	1337
Payment	1337
CreditCard	1337
NumberingIntent	1338
NumberItem	1339
SizeIntent	1339

Deprecated Parameters 1340  
AdhesiveBindingParams 1340  
BoxFoldingParams Deprecated Subelements 1341  
BoxApplication 1341  
CustomerMessage 1342  
DBMergeParams 1342  
DBRules 1343  
DBSchema 1343  
DBSelection 1344  
DividingParams 1344  
FormatConversionParams 1344  
IDPrintingParams 1345  
Cover 1347  
IDPFinishing 1348  
IDPFolding 1349  
IDPHoleMaking 1349  
IDPLayout 1350  
IDPStitching 1351  
IDPTrimming 1353  
ImageShift 1353  
JobSheet 1354  
Layout Deprecated Subelement 1356  
Signature 1356  
LongitudinalRibbonOperationParams 1357  
LROperation 1357  
LongFold 1358  
LongGlue 1358  
LongPerforate 1358  
LongSlit 1358  
MediaSource 1358  
NumberingParams 1359  
NumberingParam 1359  
OrderingParams 1360  
PackingParams 1360  
PlaceHolderResource 1361  
PlateCopyParams 1362  
ProofingParams 1362  
RunList Deprecated Subelements 1364  
DynamicInput 1364  
SaddleStitchingParams 1364  
Sheet 1365  
SideSewingParams 1366  
Surface 1367  
List of Figures 1369  
List of Tables 1373  
List of Examples 1397

## Table of Contents

## JDF Preface and User Overview

This specification is immense ... there is little doubt about that ... but it is also a keystone standard for the future of graphic communications. The members of CIP4 believe that users and developers alike need to have a clear understanding of what the objectives of the Job Definition Format (JDF) are as well as an understanding of its value and purpose. To that end we thought you would find a “non-standard” preface and user overview helpful.

Before we get into the overview, we remind you that JDF is a living specification. We would value your comments and input. There are several ways to contact the International Cooperation for the Integration of Processes in Prepress, Press and Postpress (CIP4) and to receive ongoing information about CIP4 activities. To get a list of contacts, join the JDF developers form, or sign up for Email updates, visit the contact page at <http://www.cip4.org/>. (Of course, we'd love to have you as a CIP4 member too! Be sure to review the membership page when you visit the CIP4 Website.)

You will also find callouts throughout this document that are identified by three different icons. These callouts, provided for your convenience, are not normative parts of the standard (i.e., they're not technically a part of the *standard*). They provide references to external sources, executive summaries of complex technical concepts, and some thoughts or strategies to consider as you formulate your JDF implementation plan. Look for these callout icons

**Table 0-1: Callout Icon Usage**

Icon	Callout Type
	External references to online resources, related standards, tutorials and helpful information.
	Executive-style summaries of technical concepts in easy-to-understand language.
	Thoughts to ponder and strategy ideas for formulating JDF implementation programs.

**Value.** This revision of **JDF** is significant because it builds upon the fifth version of JDF (v.1.4) to deliver a fully functional and mature standard. As such, this revision includes elements from which executives, shop managers and technicians will all benefit equally, though in different ways. In the next few years it is our belief that this specification will positively effect everyone involved in the creation and production of printing; regardless of form (offset, digital, flexographic and so on) or function (direct mail, periodical publication, packaging and so on). Furthermore, **JDF** will be of value to companies both large and small. Some of the benefits that **JDF** provides include:

- A common language for describing a print job across enterprises, departments and software and systems;
- A tool for verifying the accuracy and completeness of job tools;
- A systems interface language that can be used to benchmark the performance of new equipment (hardware and software) and that can reduce the cost of expensive custom integration for printers, prepress services and others;
- A basis for total workflow automation that incorporates all aspects of production: human, machine and computer;

### Implementation Strategy



As you read this standard, consider how to make JDF a part of your equipment evaluation and purchasing procedures. Do you add JDF enabled systems slowly with equipment replacement and upgrades, or aggressively as part of a plant re-engineering process? What's your desired competitive position?

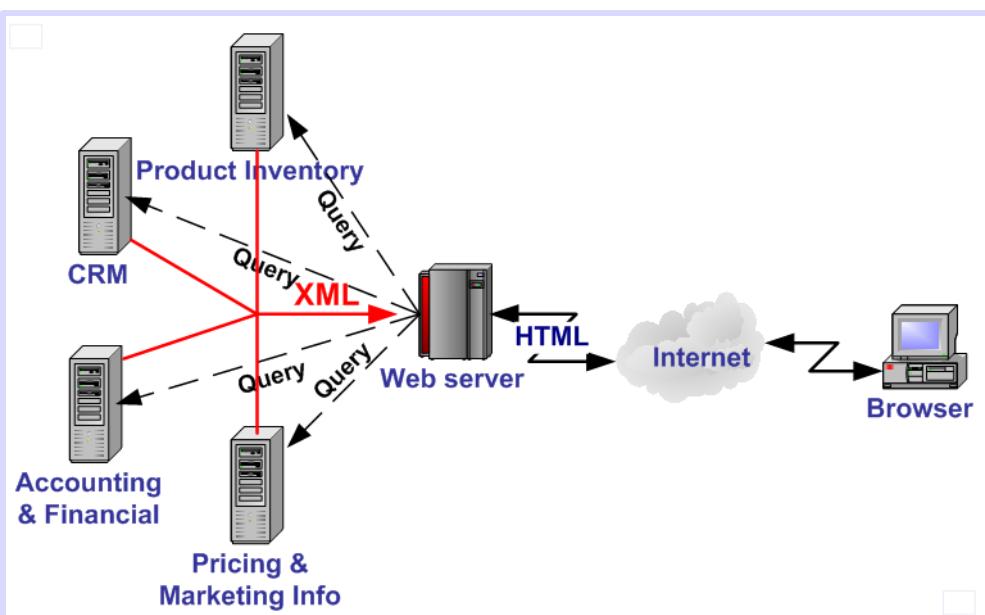
- A standard that can be applied to eliminate wasteful re-keying and redundancy of information; and
- A common computer language for printing and related industries as well as a platform for more effective communication.

Most importantly, **JDF** provides an opportunity for users of graphic arts equipment to get a better return on their technology investment and an opportunity to create a print production and distribution workflow that is more competitive with broadcast media in terms of time-to-market.

**XML and Schema: Why?** The Extensible Markup Language (XML) is the standard language that is employed by **JDF**. **JDF** is also constructed to the World Wide Web Consortium's (W3C) recommendation for the construction of schema. Why is this important and, in layman's terms, what does it do for you?

First of all, it is helpful to understand how MIS professionals around the world use XML today. Although there are some systems that manage and process XML directly, it is primarily used as an exchange language or "middle-ware" element to create the "glue" that ties integrated systems together.

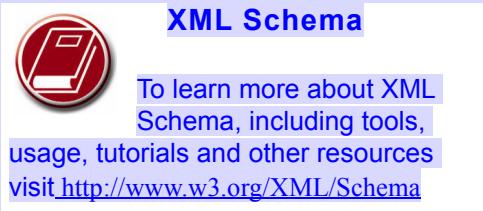
For instance, complex systems such as enterprise resource planning (ERP), data warehousing or E-commerce systems often tap into numerous legacy databases and application environments. A manager might wish to have a "view" of corporate information that is actually an aggregate of information that might come from various sources such as billing and invoicing, sales management, inventory and other



systems. Rather than merge these systems into a single, monstrous and centralized system, an operator queries the legacy systems and the results are wrapped in XML. This allows programmers to deal with one exchange language or data format instead of a multitude of proprietary data formats.

XML is not a *functional* computer language like JAVA, C++ or FORTRAN—it is incapable of manipulating data in anyway; rather, it is a *descriptive* computer language that can be used to describe your information including its structure, interrelationships, and to some extent, its intended usage. For this reason, modern program languages such as JAVA provide intrinsic support for XML processing. Most modern database applications also provide methods for receiving and delivering XML.

Early XML, based solely upon the XML 1.0 specification, had a few limitations that prevented it from being used widely as a transactional data format *across* enterprises, as opposed to *within* enterprises (where it found its niche as described above). For example, there is probably a database behind each of your major systems and applications. If your database has reserved a fixed space a data particular field and a supplier provides a transaction with a data element larger than that field, you have a problem. The data limitations of XML 1.0 cannot effectively deal with this. The XML Schema specification solved this problem and others.



**The Plusses of Parsing.** Schemas also provide one other feature that is perhaps the greatest benefit. Tagged documents or transactions (called “instances” in XML parlance) are *parsible*. Schemas, such as JDF, establish rules for structuring your information. A parser is a software application that reads those rules, checks documents and transactions, and then validates that they conform to the rules as established in your schema … sort of like preflighting but for XML instances rather than your layout pages.

Parsers can play many roles. Like preflighting software, parsers can be run as stand-alone applications, but they can also be found embedded into other applications. Some of the roles parsers can play in your JDF-enabled workflow include:

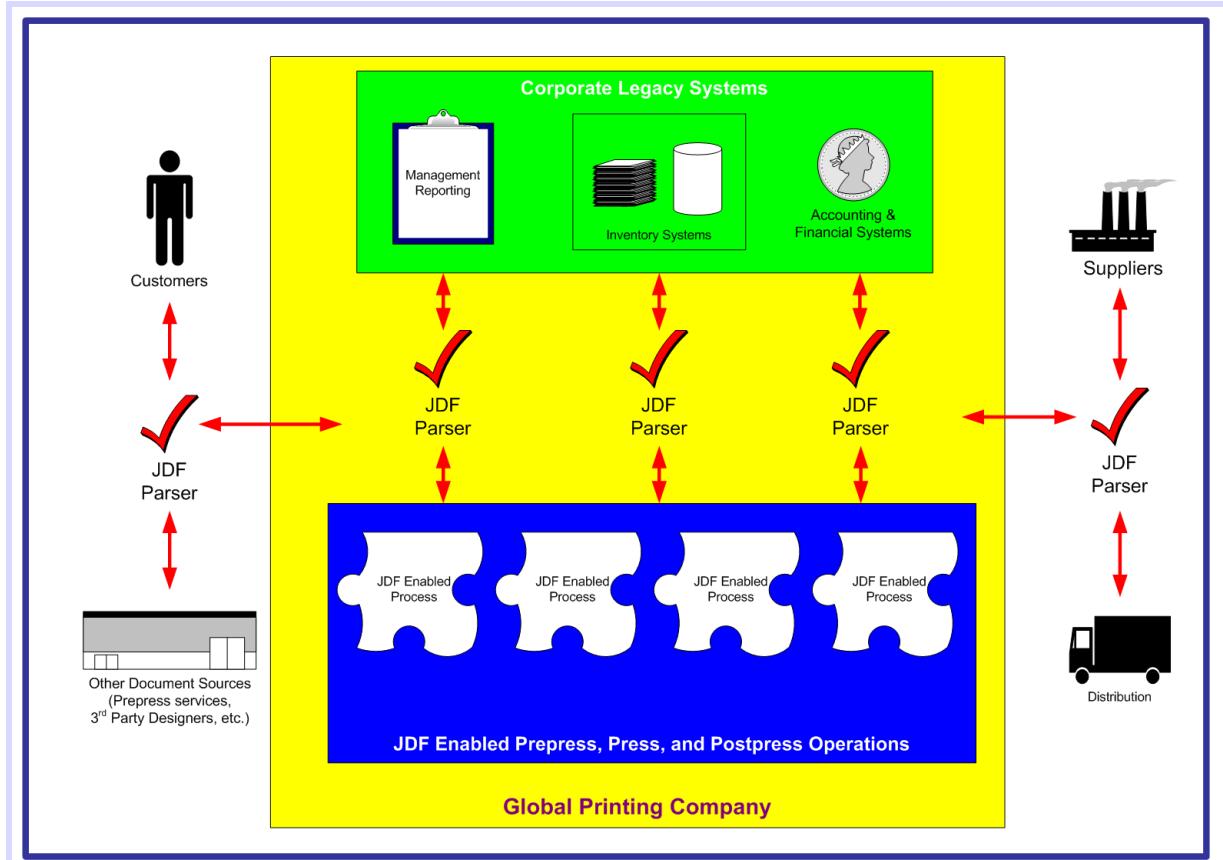
- 1 Acceptance checking of client job tickets;
- 2 Validation of JDF prior to or following transformation of data into and out of databases;
- 3 Ensuring that source job information is collected as a document is created (embedded in document layout software);
- 4 Determining if equipment reads and writes Job Messaging Format (JMF) commands, a subset of JDF, as part of equipment benchmarking and testing software;
- 5 Controlling the movement of workflow information and controls within workflow software from process to process and as a specific JDF job ticket requires; and
- 6 Working as a middleware component to communicate between JDF-enabled software and systems and your legacy Management Information System (MIS) and corporate applications environments.

It is worth mentioning that parsing can be time consuming and computer intensive. But parsers don’t have to be the gatekeepers everywhere in a JDF-enabled workflow. Equipment that is JDF-enabled and part of a company’s internal production operations need not parse every communication. It can be limited to equipment evaluation and problem solving applications. The role of JDF parser-enabled software in a printing plant that uses tightly coupled JDF-enabled print production equipment might look like this:



### Free Parsers

The JDF schema was validated with the Xerces parser. This parser, as well as other XML tools, is available for free from The Apache Software Foundation open source software community at <http://xml.apache.org/>



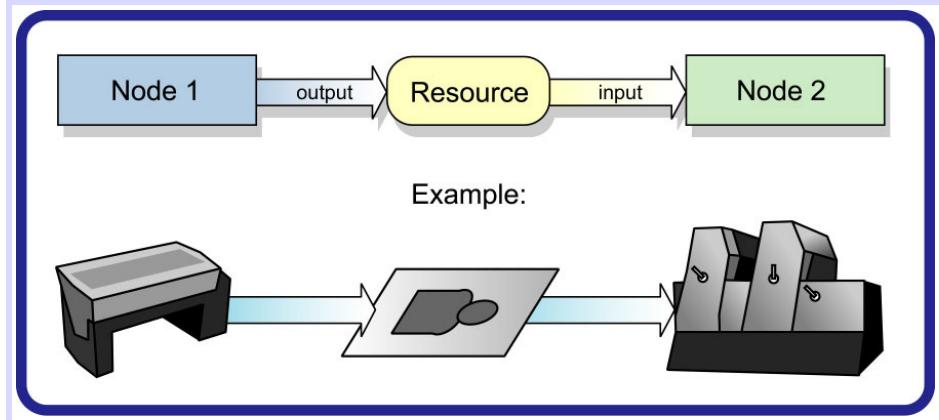
**The JDFConcept.** The **JDF** specification is quite complex and detailed—something best left to programmers and XML experts. But the concepts behind **JDF** are quite simple and straightforward. It provides an explanation of each of the components of **JDF**, its meaning and intended usage. You will want to use the components of **JDF** that fit best with your workflow and the needs of your customers. To start, a basic understanding of the concepts behind **JDF** is in order. There are four primary components that comprise the **JDF** environment:

- 1 **JDF** itself,
- 2 **The Job Messaging Format (JMF)**
- 3 **JDF Capabilities and**
- 4 **ICS Documents**

**JDF** is an exchange format for instructions and job parameters. You can use PDF or its standard variant (PDF/X), to relay content data files from one platform to another. You can do the same with **JDF** to relay job parameters and instructions. **JDF** can be used to describe a printing job logically, as you would in exchanging a job description with a client within an estimate. It can also be used to describe a job in terms of individual production processes and the materials or other process inputs needed to complete a job.

There is no such thing as a standard print workflow. In fact, printing is the ultimate form of *flexible manufacturing*. This makes process automation quite a challenge for our industry. What you'll find in this standard are XML element definitions that describe all the production processes and material types you're likely to encounter, regardless of your workflow. These are the building blocks that you can use to emulate your workflow with **JDF**. Every process in the print production workflow requires input *resources* starting with the client's files or artwork and ending with the final bound, packaged and labeled print product. For example, before you can print, you need paper, ink and plates, and before you can send a document to a bindery line, you need printed and cut signatures.

Process *nodes* and *resources* are the basic elements within JDF. They can be strung together to meet the requirements of each job. The output of one process becomes the input of the following process, and a process doesn't begin until its input resources are available:



This specification provides details on how to use these building blocks to describe concurrent processes, spawned processes, dynamic processes and so on. To realize the capabilities of JDF, there are two other things you will need: a way of controlling the flow of process and a way of communicating commands to equipment on the shop floor. **JMF** is a subset of **JDF** that handles communication with equipment on the shop floor. This might include major equipment, such as platesetters or subsystems, such as in-line color measurement devices. **JMF** can be used to establish a queue, discover the capabilities of a **JDF**-enabled device, determine the status of a device (e.g., "RIPing," "Idle" and so on).

Although, theoretically, you can string together equipment that supports **JMF** directly to one another, in almost all cases you will want your production equipment to communicate with your MIS or Production Control system. This way it is the MIS system that controls the scheduling, execution and control of work in progress. The role of the MIS system is described within this standard, but it isn't highly defined. In fact, the **JDF** standard does not dictate how a **JDF** system is to be built. Many printers, prepress services and other graphic arts shops will already have MIS systems in place. **JDF** enabled workflow and MIS systems, custom-tailored to print production requirements, will soon be available on the market. However, many printers already have MIS and workflow systems that have been customized or developed for their own environments. In most cases these legacy systems can be modified to work with the new **JDF** workflows and **JDF** enabled equipment.

## Changes to JDF 1.5

JDF 1.5 includes both some wholly new material, as well as many improvements and refinements to JDF 1.4. A complete catalog of changes can be found in Appendix P, "New, Deprecated & Modified Items" on page 1297. You will also find New in JDF 1.5, Deprecated in JDF 1.5 and Modified in JDF 1.5 flags throughout this document.

The following list gives a high level overview of the areas that have experienced major revisions:

- Job Ganging and ***SheetOptimizing***
- **ResourceLink** Elements are now identical for all resources and contain the sum of all traits of the previously defined **ResourceLink** sub-classes. Note that this does not invalidate any previously valid **ResourceLink** instances. See Section 3.14.2, "ResourceLink" on page 97.
- Enhanced control of variable finishing devices using barcodes, (**IdentificationField** Elements) or JMF Pipe messages (See Section 4.3.3, "Overlapping Processing Using Pipes" on page 183).
- The normative language has been adjusted to match the style of ISO specifications. Thus, all normative requirements have been renamed from "MUST" to "SHALL". See Section 1.6.1, "Conformance Terminology".



## JMF

The Job Messaging Format (JMF) functions as a standard interface between your equipment and your information systems or other equipment already on the shop floor. By buying only equipment that supports JMF you will reduce the cost and complexity of integrating new equipment into your production operations, and you will improve the flexibility and adaptability of your shop.

- The Chapter that describes individual Resources (Chapter 7 in previous versions of the specification) has been split into the 5 new Chapters 7-11.
- A new Activity Element, added to DeviceInfo and JobPhase in JMF and PhaseTime Audit
- A new **Winding** Process

## ICS Documents and Certification

The concept of Interoperability Conformance Specification of “ICS” documents is introduced. No single device (i.e., printer, press, imagesetter, etc.) is likely to implement all that the **JDF** specification provides for. For instance, if you are in the digital printing business, you might not care to process data used for case binding. A RIP is not a requirement for facilitating **JDF** preflighting. A Stitcher probably doesn't need to handle image rendering data.

To specify exactly what individual classes of devices need to do with **JDF CIP4** members are developing ICS document that will provide the minimum expectations for individual classes of devices. ICS documents will later be used as the basis for certification testing. Once the certification program begins, you will start seeing products that are marked as “**JDF Certified**” and this will be certification to identified levels of one or more specific ICS documents. An initial set of ICS documents is freely available to the public, and we expect that they will become part of your buying practices. ICS documents for additional classes of devices are currently under development.

---

# Chapter 1 Introduction

This document defines the technical specification for the Job Definition Format (**JDF**) and its counterpart, the Job Messaging Format (**JMF**).

**XJDF** is a technology that allows systems from many different vendors to interoperate in automated workflows. While technically it is an XML software specification, it is more importantly a means to connect multiple vendor solutions to a workflow solution for automation.

**XJDF** is the first major version update of JDF. It is such a major update that we decided to provide a new root node name: **XJDF**. Whereas the minor revisions were at least nominally backwards compatible, **XJDF** is a major redesign that takes more than a decade of experience into account.

We will describe the components of **JDF**, both internal and external, and explain how to integrate the format components to create a viable workflow. Ancillary aspects are also introduced, such as how to convert PJTF or PPF to **JDF**, and how **JDF** relates to IfraTrack. This document is intended for use by programmers and systems integrators. It provides both the syntactical requirements for the elements and attributes of **XJDF** and **XJMF** as well as requirements for devices and controllers to enact upon the data. for operations addressed by the International Cooperation for Integration of Processes in Prepress, Press and Postpress (CIP4). In this first chapter, we present the concept of **JDF**, and its relationship to JDF and other industry standards. and how to use this document and some basic document navigational aids.

## 1.1 Background on XJDF

**XJDF** is an extensible, XML-based data interchange format built upon more than 15 years of experience with **JDF** [JDF15].

**XJDF** is an interchange data format that can be used by a system of controllers, devices and MIS, which together produce printed products. It provides the means to describe print jobs in terms of the products eventually to be created, as well as in terms of the work steps needed to create those products. **XJDF** provides a syntax to explicitly specify the details of processes, which might be specific to the devices that execute the processes.

**XJDF** is aligned with a communication format known as the Job Messaging Format or **XJMF**. **XJMF** provides the means for production components of an **XJDF** workflow to communicate with controllers such as MIS. It gives MIS and other controllers the ability to receive information from devices or other controllers about the status of jobs and devices. **XJDF** and **XJMF** are maintained and developed by CIP4 (<http://www.cip4.org>).

## 1.2 Design Criteria for XJDF

The major conceptual change is that **XJDF** no longer attempts to model the entire job as one large “job ticket” but rather specifies an interchange format between 2 applications that are assumed to have an internal data model that is not necessarily based on **XJDF**. Thus each **XJDF** ticket specifies a single transaction between two parties. A single job may be modelled as one or more **XJDF** transactions.

The following criteria were taken into account in this redesign:

- **XJDF** should be simple to use.
- The number of methods to describe similar traits should be as limited as possible, ideally one.
- **XJDF** should be compatible with developments of XML enabling tools as “out of the box” as possible.
  - Simple Xpath expression to reference **XJDF** traits.
  - Direct use of ID-IDREF pairs for referencing distributed data within an XML document.
  - Use of XML schema rather than proprietary data structures to describe device capabilities.
- The semantics of **JDF** 1.x should be retained and mapping between **JDF** 1.x and **XJDF** should be simple.
- Change orders (Modifications of submitted jobs) should be easy to describe

These requirements lead to some significant modifications that are not syntactically backwards compatible, but can easily be converted using a JDF 1.x aware middleware.

### 1.2.1 Simplify and reduce variations

JDF 1.x allowed shorthands for some simple cases. What seemed reasonable actually made things more complex, since both shorthand and the long version had to be implemented. For instance, amount related attributes could be found either directly in a ResourceLink or in a ResourceLink/AmountPool/PartAmount. XJDF removes much of this variability.

#### 1.2.1.1 Reduce the barrier of entry

Simple tasks should be simple to describe. In the simple (non-partitioned job metadata cases) the XJDF should be describable as a series of simple XPaths.

#### 1.2.1.2 Replace abstract data types with explicit elements and children

Abstract elements are more concise to write, but inherited traits also tend to be overlooked by newcomers to a specification. If elements are designed to be final with sub-elements, each specification entry can be found by searching for the explicit element name.

#### 1.2.1.3 Remove ResourceLinks

The Process / Resource model has been conceptually retained. But since there is only one XJDF element per XJDF transaction, reuse of resources is no longer an issue and ResourceLinks have been merged with their respective Resources. Thus data that belongs together is also stored in the same region of the XML.

For each refElement (i.e., choice of resourceRef or inline element), exactly one choice was made. Thus the variability is reduced and implementation is simplified.

### 1.2.2 Enable dynamic changes

The monolithic model of JDF 1.x lent itself well to a plan and execute philosophy but had its limitations when changes were made after a job had been submitted. Since a Job may be modelled as a set of transactions in XJDF, the idea of multiple transactions and thus also job changes is inherently built into the standard. The simplest method of initiating a change transaction is to send an XJDF that contains only the modified values. Only the explicitly stated values will then be modified.

#### 1.2.2.1 Remove schema defaults.

Since XJDF allows submission of incomplete XJDF tickets and also updates to preexisting tickets, all attributes except very few that are required for bookkeeping (e.g., @ID) have been made optional and all schema defaults have been removed.

### 1.2.3 Retain the semantic structures

A lot of work was put into the definition of individual messages, processes and resources. The detailed semantics of JMF messages and resources have been retained. Thus detailed element and attribute names and their definitions have been retained. Thus translation between JDF 1.x and XJDF is straight forward. All deprecated traits have been removed completely.

### 1.2.4 Remove implementation specific details

JDF 1.x exposes many implementation details that are not necessarily easily obtained by the writers of JDF. XJDF is designed as a pure interface specification that encapsulates internal data as much as possible.

### 1.2.4.1 Spawning and Merging

Since XJDF is only an interface, the specification of serializing from the internal data model and deserializing to the internal data model is outside the scope of this specification and has been removed.

### 1.2.5 Enhance Compatibility with standard XML and XML Tools

XML and XML related tools and technologies such as XPath, XSL transforms, Schema, class generators etc. have evolved and matured significantly since the turn of the century. Some of the choices in JDF 1.x, although compliant with XML have proved difficult to implement using standard tools.

#### 1.2.5.1 Partitioning and Inheritance

The general concept of partitioning (i.e., the notion of resource sets with multiple individual parts) is retained but the encoding has been simplified. While inheritance of elements and attributes in partitioned resources potentially can reduce redundancy of the data encoded in XJDF, it also greatly increases the flexibility and variability of specifying similar data. This causes potential for reader/writer mismatch. Inheritance and the corresponding definition of cardinality (e.g., “SHALL occur somewhere in the inherited hierarchy”) is also difficult to encode as XPath or in an XML schema. XJDF therefore removes inheritance at the cost of redundant specification of traits in partitioned resources. For details of partitioning, see Section 3.13.2.2, Selecting a Partition.

##### 1.2.5.1.1 Removal of Partition SignatureName

*@SignatureName* in JDF was used to describe a set of multiple printed sheets, which is contrary to the usage of Signature in traditional printing. Since most systems refer directly to sheets, the *@SignatureName* partition key was removed.

### 1.2.6 Device Capabilities

JDF provided proprietary methods to describe device limitations. XML schema is a standard technology that is also designed for this purpose albeit with some limitations such as the lack of a mechanism to describe constraints dependencies. Nonetheless we decided to define device limitations using XML schema in order to make use of the existing tool base for XML schema.

## 1.3 Background on JDF

JDF is an extensible, XML-based format built upon the existing technologies of CIP3’s Print Production Format [PPF] and Adobe’s Portable Job Ticket Format [PJTF]. It provides three primary benefits to the printing industry:

- 1 The ability to unify the prepress, press and postpress aspects of any printing Job, unlike any previous format;
- 2 The means to bridge the communication gap between production services and Management Information Systems (MIS); and
- 3 The ability to carry out both of these functions no matter what system architecture is already in place and no matter what tools are being used to complete the **Job**. In short, **JDF** is extremely versatile and comprehensive.

JDF is an interchange data format to be used by a system of administrative and implementation-oriented components, which together produce printed products. It provides the means to describe print Jobs in terms of the products eventually to be created, as well as in terms of the Processes needed to create those products. The format provides a mechanism to explicitly specify the controls needed by each Process, which might be specific to the Devices that will execute the Processes.

JDF works in tandem with a counterpart format known as the Job Messaging Format or JMF. JMF provides the means for production components of a JDF workflow to communicate with system controllers and administrative components. It relays information about the progress of JDF Jobs and gives MIS the active ability to query Devices about the status of Processes being executed or getting ready to be executed. JMF will provide the complete Job

tracking functionality that is defined by IfraTrack messaging standard. Depending on the system architecture, JMF might also provide the means to control certain aspects of these Processes directly.

JDF and JMF are maintained and developed by CIP4 (<http://www.cip4.org>). They were originally developed by four companies prominent in the graphic arts industry—Adobe, Agfa, Heidelberg and MAN Roland—with significant contributions provided by CIP3, the IfraTrack working group, Fraunhofer IGD and the PrintTalk consortium.

## 1.4 Document References

Throughout this specification references to other documents are indicated by short symbolic names inside square brackets (e.g., [ICC.1]). Implementers ought to read and conform to such referenced documents when implementing a part of this specification with such a reference. The reader is directed to Appendix L, “References” on page 1225 to find the complete set of JDF XJDF references and the full title, date, source and availability of all such references. In addition, this specification assumes that the reader has a basic awareness of or access to, the following documents.

**Table 1-1: Basic References**

Term	Definition
[XML]	<i>Extensible Markup Language (XML) 1.0 (Fifth Edition)</i> <i>Version (W3C Recommendation of 26 November 2008)</i> Date: 26 November 2008 Produced by: World Wide Web Consortium (W3C) Available at: <a href="http://www.w3.org/TR/2008/REC-xml-20081126/">http://www.w3.org/TR/2008/REC-xml-20081126/</a>
[XMLNS]	<i>Namespaces in XML 1.0 (Third Edition)</i> <i>Version (W3C Recommendation of 8 December 2009)</i> Date: 8 December 2009 Produced by: World Wide Web Consortium (W3C) Available at: <a href="http://www.w3.org/TR/2009/REC-xml-names-20091208/">http://www.w3.org/TR/2009/REC-xml-names-20091208/</a>
[XPath]	<i>XML Path Language (XPath) 2.0 (Second Edition)</i> <i>Version W3C Recommendation 14 December 2010</i> Date: 14 December 2010 Produced by: World Wide Web Consortium (W3C) Available at: <a href="http://www.w3.org/TR/2010/REC-xpath20-20101214/">http://www.w3.org/TR/2010/REC-xpath20-20101214/</a> .
[XMLSchema]	<i>XML Schema Part 0+1+2: Primer, Structures and Datatypes</i> <i>Version (W3C Recommendation of 28 Oct 2004)</i> Date: 28 October 2004 Produced by: World Wide Web Consortium (W3C) XML Schema working group Available at: <a href="http://www.w3.org/TR/2004/REC-xmlschema-0-20041028/">http://www.w3.org/TR/2004/REC-xmlschema-0-20041028/</a> , <a href="http://www.w3.org/TR/2004/REC-xmlschema-1-20041028/">http://www.w3.org/TR/2004/REC-xmlschema-1-20041028/</a> and <a href="http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/">http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/</a> .

## 1.5 Conventions Used in This Specification

This section contains conventions and notations used within this document.

### 1.5.1 Text Styles

The following text styles are used to identify the components of a JDF an XJDF Job.

- Elements are written in sans serif. Examples are **Comment**, **BundleItem** and **ResourceLink****Resource** Elements.
- Attributes are written in italic sans serif. Examples are **@Status**, **@ResourceID** and **@ID**.
- Resources are written in bold sans serif. Examples are **Ink**, **Layout** and **ExposedMedia**.
- Process types are written in bold-italic sans serif. Examples are **ColorSpaceConversion** and **Rendering**.
- Enumerative and Boolean values of Attributes are written in italics. Examples are "*true*", "*Waiting*", "*Completed*" and "*Stopped*".
- Standard bold text is used to highlight; glossary items, defined items inside a table and definitions of local terms.
- Internal cross-reference links are denoted by gray text.
- External hyperlinks are denoted by blue underlined text. An example is <http://www.cip4.org>.

## 1.5.2 XPath Notation Used in this Specification

[New in JDF 1.2](#)

A simple subset of the XPath Language [XPath] is used throughout this specification in the description of an Element, Attribute or value to identify other Elements, Attributes and/or values. XPath gets its name from its use of a path notation (as in URLs) for navigating through the hierarchical structure of an XML document. The simple subset of XPath used is:

- Element Subelement hierarchy is indicated by a slash (e.g., “Element/Element”).
- Element Attribute hierarchy is indicated by a slash and an at (@) symbol (ex., “Element/@Attribute”), and
- The text styles above in Section 1.3.1 are used to indicate whether an Element is a Resource, Process or other Element, or if the subject is an Attribute or a value (ex., enumeration, string, etc.).
- Paths beginning with a single slash: “/” indicate root Elements: (ex. /**JDF XJDF** indicates the root **JDF Node Element**).
- Paths beginning with a double slash “//” indicate **Attributes** or **Elements with that reside in** any parent (ex. //**GeneralID** indicates a **GeneralID Element** in any Element).
- Paths containing square brackets that enclose a predicate describe an Element that is restricted by the predicate. This document uses three types of predicates as described in the next 3 items:

E[@A = V] – the XPath specifies an Element E whose Attribute A has the value V (e.g., **Component[@ComponentType = "FinalProduct"]** specifies a **Component** whose **@ComponentType** has the value of "FinalProduct"). The predicate can be used outside the context of an Element (e.g., **@ComponentType = "FinalProduct"** (or without the "@": **ComponentType = "FinalProduct"**) means that the **@ComponentType** value equals "FinalProduct").

E[contains(@A = V)] – the XPath specifies an Element E whose Attribute A has some value that contains V, A's value is either an enumerations or NMOKENS and V is an enumeration or NMOKEN. For example, **Contact[contains(@ContactTypes = "Delivery")]/Address** specifies the **Address** of a **Contact** whose **@ContactTypes** value contains "Delivery" and possibly other NMOKEN values. The predicate can be used outside the context of an Element (e.g., **contains(@ContactTypes = "Delivery")** means that **@ContactTypes** value contains "Delivery").

E[@A] – the XPath specifies an Element E in which Attribute A is present (e.g., **Layout[@Side]** specifies a **Layout** in which the **@Side** Attribute is present).

### Example 1-1: XPath Expression

The XPath expression:



### Extended Backus-Naur Form

The Extended Backus-Naur Form (EBNF) provides a compact notation that is commonly used in the specifications of programming languages. The official EBNF standard, [ISO14977:1996], is available from ISO.

- **Layout/MarkObject/DynamicField/@Format = "Replacement Text for %s and %s go in here at %s on %s"...**

Means:

- The value "Replacement Text for %s and %s go in here at %s on %s" of the **@Format** Attribute of the **DynamicField** Subelement of the **MarkObject** Element of the **Layout** Resource Element.

Locally, (and within context), just the basic Attribute dependency is noted (for instance — **DynamicField/@Format**) where the discussion occurs within the section describing the Element (e.g., **DynamicField** in our example) Elements or the Element's immediate parent (e.g., **MarkObject** in our example).

### 1.5.3 Modification Notes

#### New in JDF 1.2

To help the reader familiar with earlier versions of **JDF XJDF**, future versions of this specification will indicate additions, deprecations and clarifications using the callouts described in Table 1-2. **Modifications with respect to JDF 1.x are NOT called out explicitly.** Please note that not all changes are identified with modified callout flags. When modification occurs in multiple versions, only the most recent version is indicated. A few changes have been made globally and are explained in the body of the document and only significant changes have been flagged with callouts, as determined by CIP4 Working Groups.

**Table 1-2: Modification Notes**

Example	Callout Meaning
<u>New in JDF 1.x</u> <u>New in XJDF 2.x</u>	New sections, Attributes/Elements and Attribute Values.
<u>Deprecated in JDF 1.x</u> <u>Deprecated in XJDF 2.x</u>	Deprecated sections, Attributes/Elements and Attribute Values. Usually there is a deprecation note describing the mechanism that replaces the deprecated item.
<u>Modified in JDF 1.x</u> <u>Modified in XJDF 2.x</u>	Changed syntax or semantics of sections or Attributes/Elements. Might include clarification as well. Frequently there is a modification note describing the change.

#### 1.5.3.1 Location of Modification Notes

##### New in JDF 1.4

A callout occurs after one of the following document elements.

- **Section head:** applies to entire section and the contained table (if any).
- **Attribute/Element name:** applies to entire row for the designated attribute/element.
- **Attribute value:** applies to attribute value.

### 1.5.4 Specification of Cardinality

The cardinality of **JDF XJDF** Attributes and Elements is expressed using a simple Extended Backus-Naur Form (EBNF) notation.

The symbol **T** in the table below represents an Attribute or Element. The symbol **T** consists of either a single name, such as “**RunList**” or an Element name followed by a parenthesized name, such as “**RunList (Document)**”. The name in parentheses “**Document**” identifies a particular Element instance when several of the same type exist in some context. For further details, see Section 6.2, “**Process Template**” and Section 1.5.6, “**Template for Tables that Describe Elements**”.

**Table 1-3: Cardinality Symbols**

Notation	Description
T	T SHALL occur exactly once and represents an attribute or element.
T ?	T MAY occur zero or once, and represents an attribute or element. The description field MAY explain some circumstances that if met SHALL result in T occurring exactly once. T is OPTIONAL or is REQUIRED only in the circumstances explained in the description field. T represents an Attribute or Element. If T is an attribute, a default that is specified in the description will not be inserted into the XML by a schema aware parser if no value is explicitly specified.
T +	T occurs one or more times, and represents an Element.
T *	T occurs zero or more times, and represents an Element.
T = "V"	T is an OPTIONAL Attribute, but has the specified default value V when T is not supplied. T MAY be set to other values other than the default. A default that is specified as T = "V" indicates a JDF default which SHALL be inserted into the XML by the JDF validator if no value is explicitly specified. If no schema is used in validation, it is up to the application to apply these defaults. See Section 1.6.2.1, “Conformance Requirements for Support of Attributes and Attribute Values” on page 17. This notation is only valid for XML attributes, not XML elements.

### 1.5.5 Template for Narrative Description of Resources

Each section for a Resource begins with a brief narrative description of the Resource. Following that is a list containing details about the properties of the Resource, as shown below.

#### Resource Properties

<b>Resource Class:</b>	Defines the Resource Class or specifies ResourceElement if the Element only exists as a Resource Subelement.
<b>Resource referenced by:</b>	List of parent Resources Elements that MAY contain Elements or references to Elements (IDREF or IDREFS Attributes) of this type.
<b>Example Partition:</b>	List of RECOMMENDED Partition Keys: For a complete list of Partition Keys, see the description of <i>@PartIDKeys</i> in Table 3-32, ‘Partitionable Resource Element’ on page 128. Note that Resources MAY be Partitioned by keys that are not specified in this list.
<b>Input of Processes:</b>	List of JDF XJDF/@Types values Node types that use the Resource as an Input Resource
<b>Output of Processes:</b>	List of JDF XJDF/@Types values Node types that create the Resource as an Output Resource

The first item in the above list provides the Class of the Resource. As was described in Section 3.13.4, “Resource Classes”, all Resources are derived from one of the following seven superclasses: *Intent*, *Parameter*, *Implementation*, *Consumable*, *Quantity*, *Handling* and *PlaceHolder*. All Resources inherit additional contents (i.e., zero or more Attributes or zero or more Elements) from their respective superclasses, and those Attributes and Elements are not repeated in this section. Thus those Attributes associated with a Resource of Class *Parameter*, for example, can be found in Table 3-10, “Abstract Resource Element” on page 75. Note that this inheritance is only valid for atomic Resources (i.e., Resources that reside directly in a ResourcePool).

Resource Elements are listed in separate sections if they can be referenced by more than one Resource. For an example, see the Resource Element **SeparationSpec**. If the Resource is not referenced by multiple Resources, it is described inside the Resource section of the Resource to which it belongs. For example, see the Structure of the **BundleItem** Element of the **Bundle** Resource. If an Element inside a Resource section of the Resource is needed to be referenced by multiple Resources in a revision of JDF, then that Element is promoted to its own section. For example, **ColorSpaceConversionOp** was a Subelement of **ColorSpaceConversionParams** in JDF/1.1. The Resource Class of an atomic Resource also defines the superclasses from which the Resource inherits additional con-

tents. The Consumable Resource, Quantity Resource and Handling Resource inherit from the PhysicalResource Element, which in turn inherits from the Resource Element. The Parameter Resource and ImplementationResource Elements inherit from the Resource Element directly. Non-atomic Resources (i.e., Resource Subelements) do not inherit contents from Resource superclasses.

Examples for Resources that can be used as atomic Resources or Resource Elements are: **Employee**, **InsertSheet**, **LayoutElement** and **Media**.

After the list describing the Resource properties, each section contains tables that outline the structure of each Resource and, when applicable, the **abstract** or Subelement information that pertains to the Resource structure. The first column contains the name of the Attribute or Element. In some cases, a Resource will contain multiple Elements of the same type. If this is the case, the Element name is listed as often as it appears, along with a term in parentheses that identifies the occurrence. For an example, see Section 8.57, “EndSheetGluingParams”. The following sections provide templates of the tables.

### 1.5.6 Template for Tables that Describe Elements

Resources and Elements are defined by their attributes and sub-elements.

**Note:** for tables that describe Resources or Elements:

- the *italicized* text describes the actual text that would be in its place in an actual Resource definition
- *Cardinality* in the Name column refers to a cardinality symbol, which is either empty or consists of a symbol, such as “?”. Examples described by the Name column include: “**Media\***” and “**Component (Proof)?**”. For further details, see Section 1.5.4, “Specification of Cardinality”.
- The text following a “**Note:**” in a table field gives further information about the specified table row.

**Table 1-4: Template for Element Descriptions (Sheet 1 of 2)**

Name	Data Type	Description
<i>Attribute-Name</i> <i>Cardinality</i>	<i>Attribute-data-type</i>	<i>Information about the Attribute.</i>
<i>Attribute-Name</i> <i>Cardinality</i>	IDREF/IDREFS	If the data type of an attribute is IDREF or IDREFS and the element is a Resource, then the referenced ID or set of IDs SHALL be specified in the respective container <b>ResourceResource</b> .
<i>Element-Name</i> <i>Cardinality</i>	element	<i>Information about the Element.</i> <b>Note:</b> the “element” data type means that the specified Element SHALL be an in-line Subelement within the <b>ResourceResource</b> .
<i>Element-Name</i> <i>Cardinality</i>	refelement	<i>Information about the Element</i> <b>Note:</b> the “refelement” data type means that the specified Element is based on other atomic Resources or Resource Elements. The specified Element SHALL be either an in-line Element or an instance of a ResourceRef Element (see Section 3.15.2, “ResourceRef – Element for Inter-Resource Linking and refelement”). In case of a ResourceRef Element, a “Ref” SHALL be appended to the name specified in the table column entitled “Name”.
<b>FileSpec</b> ( <i>someValue</i> ) <i>Cardinality</i>	refelement <b>element</b>	<i>Information about the FileSpec Resource</i> <b>Note:</b> <b>FileSpec/@ResourceUsage</b> SHALL match the “ <i>someValue</i> ” value specified in the parentheses. When a Resource potentially contains multiple <b>FileSpec</b> children, the value of <b>FileSpec@ResourceUsage</b> distinguishes the <b>FileSpec</b> Resources.

**Table 1-4: Template for Element Descriptions (Sheet 2 of 2)**

Name	Data Type	Description
<i>Resource-Name (someValue) Cardinality</i>	refelement	<p><i>Information about the Resource and the Attribute whose value is "someValue".</i></p> <p><b>Note:</b> Some specified Attribute in the specified Resource SHALL match the "someValue" value specified in the parentheses. When a Resource potentially contains multiple children of the same Resource type, the value of some Attribute distinguishes the Resources.</p>

## 1.6 Glossary

The following terms are defined as they are used throughout this specification. For more detail on Job and workflow components, see Section 2.1, “System Components”.

**Table 1-5: Glossary (Sheet 1 of 8)**

Term	Definition
<b>Abstract</b>	<b>Abstract</b> is used as a modifier for Elements and Resources Element (e.g., Abstract Element, Abstract Resource and Abstract PhysicalResource).
<b>Abstract Element</b>	An <b>Abstract Element</b> is an abstract data type with Attributes and Elements that are inherited by subclass concrete Elements. For example, PlacedObject is an <b>Abstract Element</b> member of a <b>Layout</b> . MarkObject and ContentObject Elements are concrete Elements of PlacedObject that are potential members of <b>Layout</b>
<b>Abstract Resource</b>	An <b>Abstract Resource</b> is an abstract data type with Attributes and Elements that are inherited by all Resources. For example, <b>Media</b> , as a Resource inherits all the Attributes and Elements of the <b>Abstract Resource</b> . <b>Abstract Resource</b> has subclasses, such as Abstract PhysicalResource and Abstract ImplementationResource. See <b>Resource</b> .
<b>Acknowledge Message</b>	An <b>Acknowledge Message</b> is a JMF Message that is delayed response to a Command Message or Query Message.
<b>Agent</b>	The component of a <b>JDF</b> an <b>XJDF</b> -based workflow that writes <b>JDF XJDF</b> .
<b>Allowed values are</b>	The phrase “ <b>Allowed values are:</b> ” precedes the complete (closed) list of values for an Attribute whose values are enumeration or enumerations.
<b>Allowed values are from</b>	The phrase “ <b>Allowed values are from:</b> ” precedes a reference to the values. The reference may be an XPath to a value or a reference to a table of Attribute Values. The referenced values are as complete (closed) as the reference says they are.
<b>Attribute</b>	An XML syntactic construct describing an unstructured characteristic of an Element. See [XML] for details.
<b>Attribute Value</b>	The value of an <b>Attribute</b> .
<b>Binding Side</b>	The binding side of a <b>Signature</b> is defined as the last fold.
<b>Class</b>	<p>A set of complex data types with common content in an object-oriented sense. A complex data type consist of zero or more <b>Elements</b> and zero or more <b>Attributes</b>.</p> <p>Each <b>Resource</b> belongs to a <b>Class</b>: “<i>Consumable</i>”, “<i>Handling</i>”, “<i>Implementation</i>”, “<i>Intent</i>”, “<i>Parameter</i>”, “<i>PlaceHolder</i>”, “<i>Quantity</i>”. See <b>Consumable Resource Consumable Resource</b>, etc.</p> <p>Each <b>Notification Audit Element</b> belongs to a <b>Class</b>: “<i>Event</i>”, “<i>Information</i>”, “<i>Warning</i>”, “<i>Error</i>”, “<i>Fatal</i>”.</p>

**Table 1-5: Glossary (Sheet 2 of 8)**

Term	Definition
<b>Combined Process</b>	A Process which is described by multiple simpler JDF Processes. See <b>Process</b>
<b>Combined Process Node</b>	A Node that represents a Combined Process, which is described by multiple simpler JDF Processes. See <b>Combined Process</b> , <b>Node</b> and Section 3.5, “Common Node Types” on page 64.
<b>Command Message</b>	A <b>Command Message</b> is a <b>JMF Message</b> / <b>XJMF Message</b> that requests its recipient to change its state.
<b>Consumable Resource</b>	A <b>Consumable Resource</b> is consumed during a <b>Process</b> . See <b>Resource</b> , <b>PhysicalResource</b> and Section 3.13.4.4, “Consumable Resource”.
<b>Controller</b>	The component of a <b>JDF</b> an <b>XJDF</b> -based workflow that initiates <b>Devices</b> , routes <b>JDF</b> <b>XJDF</b> , and communicates status information. <b>MIS</b> is an example of a top level controller.
<b>Default</b>	Used to indicate the <b>Attribute Value</b> that a <b>JDF Consumer</b> SHALL use if an OPTIONAL <b>Attribute</b> (as indicated by a “?” or <b>@Attribute = "DefaultValue"</b> in this specification) has been omitted from a <b>JDF</b> instance. See Section 1.6.2.1, “Conformance Requirements for Support of Attributes and Attribute Values”.
<b>Default behavior</b>	The phrase “ <b>Default behavior:</b> ” precedes a description of the default behavior for an <b>Attribute</b> or <b>Span Element</b> .
<b>Default value is</b>	The phrase “ <b>Default value is:</b> ” precedes the default value for an <b>Attribute</b> .
<b>Default value is from</b>	The phrase “ <b>Default value is from:</b> ” precedes a reference to a default value – usually an XPath.
<b>Deprecated</b>	Indicates that a <b>JDF</b> an <b>XJDF</b> Element is being phased out of <b>JDF</b> <b>XJDF</b> usually in favor of newer <b>JDF</b> <b>XJDF</b> Element(s). It is RECOMMENDED that an Agent <b>##not include such a JDF an XJDF Element in a JDF an XJDF instance</b> . Such an indicated <b>JDF</b> <b>XJDF</b> Element might be removed from a future version of the <b>JDF</b> <b>XJDF</b> specification. <b>JDF Consumers</b> / <b>XJDF Consumers</b> SHOULD only <b>Support</b> such <b>JDF</b> <b>XJDF</b> Elements for backward compatibility with previous versions of <b>JDF</b> <b>XJDF</b> . <b>Deprecated</b> items are flagged with <b>Deprecated in JDF 1.x</b> / <b>Deprecated in XJDF 2.x</b> in this specification.
<b>Device</b>	The component of a <b>JDF</b> an <b>XJDF</b> workflow part that interprets <b>JDF</b> <b>XJDF</b> and executes the instructions. If a <b>Device</b> controls a <b>Machine</b> , it does so in a proprietary manner. For details, see Section 2.1.5.2, “Devices” about devices in workflow components.
<b>Document Set</b>	A set of <b>Instance Documents</b> presumed to be related.
<b>Element</b>	An XML-based syntactic construct describing structured data in <b>JDF</b> <b>XJDF</b> .
<b>Enumeration</b>	A data type that represents a closed set of values, which are specified in this document.

**Table 1-5: Glossary (Sheet 3 of 8)**

Term	Definition
<b>Finished Page</b>	<p>A page of a final product that normally has no folds inside. The folds of the finished product for packaging (e.g., folding letters into an envelope) or Z-fold of an oversized book, have no effect on the <b>Finished Page</b> definition. A <b>Sheet</b> of paper with no fold inside consists of two <b>Finished Pages</b> ("recto" and "verso" or front and back side). If there are folds seen in a <b>Sheet</b> in the final product, the number of <b>Finished Pages</b> of one <b>Sheet</b> is given by <math>2*(X+1)*(Y+1)</math>, where X denotes the number of folds in X direction and Y denotes the number of folds in Y direction, each seen in the completely opened <b>Sheet</b>. Examples: One <b>Sheet</b> in a book has two <b>Finished Pages</b>, one front, one back; a brochure with one fold inside has four <b>Finished Pages</b>.</p> <p><b>Finished Pages</b> are not all necessarily numbered. A 72-page book might have 68 pages that are numbered, which are referred to as either "<b>Folio pages</b>" or "<b>Folios</b>." It is also a common convention that the page count for a book does not include the cover pages. Hence, a book might be described as a "72-page book, plus four cover pages" or just "plus cover." Cover pages might be referenced as "cover 1" (front cover), "cover 2" (inside of front cover), "cover 3" (inside of back cover) and "cover 4" (back cover).</p> <p>Special arrangements, such as over-covers, wraps, and glue on pages applied to covers are treated as inserts and other furnished material that is bound, but not printed (e.g., treated as separate <b>Job Parts</b> until bindery).</p>
<b>Folio</b>	<p>A numbered <b>Finished Page</b> of a printed book or publication. (Pages are not all necessarily numbered. A 72-page book might have 68 pages that are numbered, which are referred to as either "<b>Folio pages</b>" or "<b>Folios</b>."</p>
<b>Form</b>	<p>A collection of imposed (ordered) <b>Finished Pages</b> set for printing or imaging to plate or film. See also <b>Signature</b>.</p>
<b>Gear Side</b>	<p><b>Gear Side</b> is the side of a <b>Machine</b>, where the drives and gear are mounted. <b>Gear Side</b> is opposite to <b>Operating Side</b>.</p>
<b>Gray Box</b>	<p><b>Gray Box</b> specifies a loose combination of several <b>Processes</b> with a specific goal. <b>Gray Box</b> does not specify all <b>Processes</b> or all <b>Resources</b> - except for <b>Output Resources</b>.</p> <p>In a JDF Instance, a <b>Process Group</b> with a <b>@Types Attribute</b> and no child <b>Nodes</b> represents a <b>Gray Box</b>.</p> <p><b>Gray Box</b> is an incomplete specification of a process. <b>Resource</b> is required for actual production <b>MAY</b> but <b>NEED NOT</b> be complete.</p>
<b>Handling Resource</b>	<p>A <b>Handling Resource</b> is used during a <b>Process</b>, but are not destroyed by that <b>Process</b>. See <b>Resource</b>, <b>PhysicalResource</b> and Section 3.13.4.6, "Handling Resource".</p>
<b>Implementation Resource</b>	<p>An <b>ImplementationResource</b> defines a <b>Device</b> or operator that executes a given <b>Node</b>. See <b>Resource</b> and Section 3.13.4.3, "ImplementationResource".</p>
<b>Input Resource</b>	<p>A <b>Resource</b> that is an input to a <b>Process</b>. See <b>ResourceResource</b>.</p>
<b>Instance Document</b>	<p>A document that is part of the output of a <b>Job</b>. This generally refers to personalized printing <b>Jobs</b>. Each of the individual documents produced from the same input template is referred to as an <b>Instance Document</b>. For example, in a credit card statement run, each statement is an <b>Instance Document</b>.</p>
<b>Intent Resource</b>	<p>An <b>Intent Resource</b> defines the details of products to be produced without defining the process to produce them. See <b>Resource</b> and Section 3.13.4.2, "Intent Resource".</p>
<b>Intent</b>	<p>An <b>Intent</b> is an Element that defines the details of Products to be produced without defining the process to produce them. Intent elements typically describe aspects of the end-customer view of a printed product.</p>
<b>JDF</b>	<p>Job Definition Format. The overall name of this specification. There is also an <b>XJDF</b> <b>JDF</b> Element, which is a top-level <b>Element</b> within <b>JDF</b> that encompasses a <b>Node</b> (see below).</p>

**Table 1-5: Glossary (Sheet 4 of 8)**

Term	Definition
<b>JDF Consumer</b>	A Device, Controller or Agent that consumes JDF instances.
<b>JDF Node</b>	See <b>Node</b> .
<b>JMF</b>	Job Messaging Format. Transfers information between <b>MIS</b> , <b>Controllers</b> and <b>Devices</b> . See Chapter 5, “JMF XJMF Messaging with the Job Messaging Format” on page 199.
<b>JMF Message</b>	A <b>JMF Message</b> is synonymous with <b>Message</b> . See <b>Message</b>
<b>Job</b>	<p>A hierarchical tree structure comprised of <b>Nodes</b>. Describes the output that is desired by a customer.</p> <p>A collection of one or more Job parts. Note that a Job does not necessarily have an XML representation.</p>
<b>Job Part</b>	<p>One or more <b>Nodes</b> which comprise the smallest level of control of interest to <b>MIS</b>.</p> <p>A granular task that is represented by a single <b>XJDF</b>.</p>
<b>Jog Edge</b>	The jog edge of a <b>Signature</b> is defined as the last fold that is perpendicular to the <b>Binding Side</b> . If there is no fold that is perpendicular to the <b>Binding Side</b> , then the jog edge is the edge on the bottom when the folded signature is not flipped after the final fold.
<b>Leaf</b>	Both the recto and verso <b>Finished Pages</b> on one piece of paper with “leaves” being the plural usage.
<b>Link</b>	A pointer to information that is located elsewhere in a <b>JDF XJDF</b> document or that is located in another document.
<b>Machine</b>	The part of a device that does not know <b>JDF XJDF</b> and is controlled by a <b>JDF XJDF</b> Device in a proprietary manner.
<b>Message</b>	The XML element that <b>Devices</b> and <b>Controller</b> use to exchange queries, commands, responses, etc. among themselves using HTTP as the underlying protocol and <b>JMF XJMF</b> as the XML format. See <b>JMF XJMF</b> and <b>Message Family</b> .
<b>Message Family</b>	A <b>Message Family</b> is a set of <b>Messages</b> . The <b>6 4 Message Families</b> are <b>Query Message</b> , <b>Command Message</b> , <b>Registration Message</b> , <b>Response Message</b> , <b>Acknowledge Message</b> and <b>Signal Message</b> .
<b>MIS</b>	Management Information System. The functional part of a <b>JDF XJDF</b> workflow that oversees all Processes and communication between system components and system control. MIS is assumed to be a role rather than an individual application. A single application may fulfill various roles of an MIS and various roles of an MIS may be implemented by multiple applications. Typical MIS roles include estimation, costing, scheduling, process planning and invoicing.
<b>Name</b>	The name of a <b>Resource</b> and is the value of <b>ResourceSet/@Name</b> (e.g., <b>ColorantControl</b> or <b>ExposedMedia</b> ).
<b>NamedFeature</b>	The term <b>NamedFeature</b> describes a value that is identified by a name using a <b>JDF/GeneralID[@DataType = "NamedFeature"]</b> . The value is specified by <b>GeneralID/@IDValue</b> , and the name is specified by <b>GeneralID/@IDUsage</b> . For example, the <b>GeneralID IDUsage="a1" IDValue="a2 b2" DataType="NamedFeature"</b> is a <b>NamedFeature</b> with a value "a2 b2" that is identified by the name "a1". <b>GeneralID/@IDValue</b> is defined as a string. Note that blanks are allowed in the value.
<b>Node</b>	The <b>JDF Element</b> type detailing the <b>Resources</b> and <b>Process</b> specification needed to produce a final or intermediate product or <b>Resource</b> . A <b>Node</b> is also called a <b>JDF Node</b> .
<b>Operating Side</b>	<b>Operating Side</b> is the side of a <b>Machine</b> , where the operator works. <b>Operating Side</b> is opposite to <b>Gear Side</b> .
<b>Output Resource</b>	A <b>Resource</b> that is an output from a <b>Process</b> . See <b>ResourceResource</b> .

**Table 1-5: Glossary (Sheet 5 of 8)**

Term	Definition
<b>Parameter Resource</b>	A <b>Parameter Resource</b> defines the details of Processes, as well as any non-physical computer data such as files used by a <b>Process</b> . See <b>Resource</b> and Section 3.13.4.1, “Parameter Resource”.
<b>Page</b>	When <b>Page</b> occurs by itself, not in the context of <b>Finished Page</b> or <b>Reader Page</b> , it means “ <b>Finished Page</b> .”
<b>Partition</b>	<p>A <b>Partition</b> is a node of a <b>Partitioned Resource</b> structure. A leaf node <b>Partition</b> represents a single <b>Resource</b>. A non-leaf node <b>Partition</b> represents a set of <b>Resources</b>. Values of the <b>@PartIDKeys Attribute</b> in the <b>Partitioned Resource</b> root specify the <b>Attributes</b> used to identify the individual <b>Resources</b> in the <b>Partitioned Resource</b>. Each <b>Partition</b> except the <b>Partitioned Resource</b> root has a <b>Partition Key Attribute</b> whose value identifies the <b>Partition</b>. See Table 3-32, “Partitionable Resource Element” on page 128.</p> <p>Any <b>Resource</b> that belongs to a set of <b>Resources</b> but describes one part of the <b>Resource</b> is referred to as a partition. <b>Resources</b> within <b>ResourceSets</b> are partitions.</p>
<b>Partition Key</b>	<p>A <b>Partition Key</b> is an enumeration value of the <b>@PartIDKeys Attribute</b> and a <b>Partition Key</b> is an <b>Attribute</b> that with can identify a <b>Partition</b> or can reference a <b>Partition</b> from within a <b>Part Element</b>. See Section 3.15.6, “PartIDKeys Attribute and Partition Keys”. A <b>Partition Key</b> is an <b>Attribute</b> that can identify a <b>Partition</b>. It selects the specific <b>Resource</b> from its parent <b>ResourceSet</b>. <b>Partition Keys</b> are <b>Attributes</b> within a <b>Part Element</b>. See Section 3.13.2.2, Selecting a Partition.</p>
<b>Partition, to</b>	The verb <b>to Partition</b> means to construct a <b>Partitioned Resource</b> from a set of <b>Resources</b> of the same <b>Class</b> . See Section 3.15.5.4, “Partitioning of Resource Subelements”.
<b>Partitionable Resource</b>	A <b>Resource</b> that can become a <b>Partitioned Resource</b> .
<b>Partitioned Resource</b>	A <b>Partitioned Resource</b> is a structured <b>Resource</b> that describes a set of <b>Resources</b> , all of the same <b>Class</b> and representing multiple physical or logical entities (e.g., a set of <b>ExposedMedia</b> that represent multiple separated plates).
<b>PDL</b>	Page Description Language. A generic term for any language that describes pages which might be printed. Examples are PDF®, PostScript® or PCL®.
<b>Phase</b>	A Phase is a distinct part of a <b>Workstep</b> such as setup, production or cleanup.
<b>PhysicalResource</b>	A <b>PhysicalResource</b> is a <b>Resource</b> whose <b>Class</b> is “ <i>Consumable</i> ”, “ <i>Quantity</i> ” or “ <i>Handling</i> ” is considered a <b>PhysicalResource</b> . See <b>Resource</b> and Section 3.13.4.7, “PhysicalResource”.
<b>Process</b>	An individual step in the workflow.
<b>Process Group</b>	A group of <b>Processes</b> . See <b>Process</b> and <b>Process Group Node</b>
<b>Process Group Node</b>	A <b>Node</b> that contains multiple child <b>Nodes</b> . See <b>Process Group</b> , <b>Node</b> and Section 3.5, “Common Node Types” on page 64.
<b>Process Node</b>	A <b>Node</b> that describes an individual <b>Process</b> . See <b>Node</b> and Section 3.5, “Common Node Types” on page 64.
<b>Product Intent</b>	Describes the end result that a customer is requesting. See <b>Product Intent Node Section 7</b> , <b>Product Intents</b> .
<b>Product Intent Node</b>	A <b>Node</b> that describes intent rather than specifying the <b>Process</b> . See <b>Node</b> , <b>Product Intent</b> and see Section 3.5, “Common Node Types” on page 64.

**Table 1-5: Glossary (Sheet 6 of 8)**

Term	Definition
<b>Quantity Resource</b>	A <b>Quantity Resource</b> has been created by a Process from either a <b>Consumable Resource</b> or an earlier <b>Quantity Resource</b> . See <b>Resource</b> , <b>PhysicalResource</b> and Section 3.13.4.5, “ <b>Quantity Resource</b> ”.
<b>Query Message</b>	A <b>Query Message</b> is an <b>JMF Message</b> <b>XJMF Message</b> that requests its recipient to provide information, but not change its state.
<b>Queue</b>	A Queue is a representation of a <b>Device</b> that receives, manipulates and stores multiple <b>Queue Entry</b> items for execution.
<b>Queue Entry</b>	A Queue Entry is a the representation of an individual XJDF process in a <b>Queue</b> . A Queue Entry MAY be comprised of multiple <b>Workstep</b> processes.
<b>Reader Page</b>	A logical page as perceived by a reader, for example one <b>RunList</b> entry. One <b>Reader Page</b> might span more than one <b>Finished Page</b> (e.g., a centerfold). One <b>Finished Page</b> might contain contents defined by multiple <b>Reader Pages</b> (e.g., NUp imposition. <b>Reader Pages</b> are defined independently of <b>Finished Pages</b> ).
<b>Receiver</b>	Device or Controller that responds to an <b>XJMF</b> request, e.g. by processing an HTTP post request. The sender is an HTTP server.
<b>Registration Message</b>	A <b>Registration Message</b> is a <b>JMF Message</b> that requests its recipient to send a <b>Command Message</b> to some other recipient.
<b>Resource</b>	A physical or conceptual entity that is modified or used by a <b>Node</b> . Examples include paper, images or <b>Process</b> parameters.  A <b>Resource</b> is an Element that defines a physical entity that is modified or used by an <b>XJDF Node</b> . Examples include paper, plates and ink. See Section 8.1, “ <b>Resource</b> ”.
<b>ResourceLink</b>	An Element that links to a <b>Resource</b> . See <b>Resource</b> and Section 3.14.2, “ <b>ResourceLink</b> ”.
<b>Response Message</b>	A <b>Response Message</b> is a <b>JMF Message</b> <b>XJMF Message</b> that functions as a synchronous response to a <b>Command Message</b> or <b>Query Message</b> .
<b>Roll</b>	A <b>Roll</b> is media that is mainly used in connection with <b>Web</b> Printing. In British English the name “reel” for “roll” is in widespread use. <b>Roll</b> is used as synonym of reel. Also, see the term <b>Web</b> in this glossary.
<b>Root Node</b>	The top most JDF Node. See <b>Node</b> .
<b>Sender</b>	Device or Controller that initiates an XJMF exchange, e.g. by sending an HTTP post request. The sender is an HTTP client.
<b>Sheet</b>	The printer’s <b>Roll</b> of paper or paper cut for press size, with “recto” and “verso” forms for identification of orientation through the press (facing up versus facing down at the feeder or off the <b>Roll</b> ).  <b>Sheets</b> are press sheets which may be comprised of multiple folding <b>Signatures</b> and might also have “recto” and “verso” forms for identification of orientation through the press (facing up versus facing down at the feeder or off the roll).  The term “cut sheet” refers to an individual <b>Sheet</b> , typically in a phrase, such as “separately cut <b>Sheets</b> of an opaque material”. The term “Sheet-Fed” is used to describe a press that consumes cut <b>Sheets</b> , typically in the phrase “Sheet-Fed Press”.
<b>Signal Message</b>	A <b>Signal Message</b> is a <b>JMF Message</b> <b>XJMF Message</b> that is sent asynchronously when some event occurs.

Table 1-5: Glossary (Sheet 7 of 8)

Term	Definition
<b>Signature</b>	A <b>Signature</b> is a <b>Sheet</b> that is folded or will set of printed <b>Sheets</b> that are folded or yet to be folded. Note that there are multiple usages of the word <b>Signature</b> in the industry. A <b>press Sheet</b> MAY contain multiple <b>signatures</b> . <b>BinderySignature Resources</b> that are the input to <b>Folding</b> . This is the standard usage in conventional printing, where multi-page <b>Sheets</b> are printed and potentially cut into multi-page imposition <b>Signatures</b> before folding. The <b>Layout Resource</b> , on the other hand, describes a <b>Signature</b> as a set of <b>Sheets</b> . This is appropriate for digital printing, where typically only one or two pages are printed per <b>Surface</b> and multiple <b>Sheets</b> are gathered prior to folding.
<b>Slave Controller</b>	The component of a <b>JDF XJDF</b> workflow that accepts <b>JDF XJDF</b> as a <b>Device</b> from other <b>Controllers</b> and/or <b>Slave Controllers</b> and sends <b>JDF XJDF</b> to other <b>Slave Controllers</b> and/or <b>Devices</b> .
<b>Subelement</b>	A child <b>Element</b> of some other <b>Element</b>
<b>Subnode</b>	A <b>Node</b> that is a child of some other <b>Node</b> . See <b>Node</b> .
<b>Support</b>	An <b>JDF ConsumerXJDF Consumer</b> <b>Supports</b> a <b>JDF XJDF</b> syntactic construct ( <b>Processes</b> , <b>Resources</b> , <b>Elements</b> , <b>Attributes</b> and <b>Attribute Values</b> ) if the <b>JDF ConsumerXJDF Consumer</b> performs the action defined in this specification for the <b>JDF XJDF</b> construct when consuming a <b>JDF an XJDF</b> instance that includes the <b>JDF XJDF</b> syntactic construct. If the <b>Machine</b> that a <b>Device</b> is representing <b>Supports</b> a feature which is represented by a <b>JDF an XJDF</b> construct, then the <b>Device</b> SHOULD <b>Support</b> that <b>JDF XJDF</b> syntactic construct.
<b>Surface</b>	A single side of a <b>Sheet</b> .
<b>Tag</b>	A syntactic XML construct that marks the start or end of an <b>Element</b> .
<b>Unique</b>	The word “Unique” without further scope details means “Unique within the job, message or file depending on the context”. <b>Possible scopes are:</b> <b>Unique within the machine</b> (e.g., <b>ProductionPath/@ProductionPathID</b> ). <b>Unique within the workflow</b> – This covers the whole scope at one installation (e.g., <b>StatusQuParams/@JobID</b> , <b>FileSpec/@UID</b> , <b>Device/@DeviceID</b> and <b>@CreationID</b> (in Document Properties)). <b>Unique within the site</b> – A site is a physical organization entity within a company (printing plant, finishing subcontractor) (e.g., <b>Employee/@PersonalID</b> ). It is NOT the <b>Contact/Company</b> used for customers! <b>Unique within the company</b> – identification of a company or contact SHALL be unique within the company’s database because it can be used on multi tenant systems like web approval) (e.g., <b>Contact[(@ContactTypes, "Approver")]/@ProductID @ExternalID</b> ).
<b>Values include</b>	The phrase “ <b>Values include:</b> ” precedes an open list of values for an <b>Attribute</b> whose values are <b>NMOKEN</b> , <b>NMOKENS</b> , <b>or</b> string, <b>NameSpan</b> or <b>StringSpan</b> . The list includes recommended values but does not include preclude potential vendor or customer extensions.
<b>Values include those from</b>	The phrase “ <b>Values include those from:</b> ” precedes a reference to the open list of values. The reference may be an XPath to a value or a table of <b>Attribute Values</b> . The referenced values do not include potential vendor or customer extensions.
<b>Web</b>	A <b>Web</b> is media that comes from a <b>Roll</b> and is mainly used in connection with <b>Web Printing</b> . This specification uses the word “ <b>Web-Fed</b> ” instead of “roll-fed”. It uses the phrase “ <b>Web Printing</b> ” and “ <b>Web Press</b> ” to describe printing presses that consumes media that comes from a <b>Roll</b> .

**Table 1-5: Glossary (Sheet 8 of 8)**

Term	Definition
<b>Work Center</b>	An organizational unit, such as a department or a subcontracting company, that can accomplish a task.
<b>Workstep</b>	A Workstep is an individual XJDF process that can be processed on a single device in one pass. A Workstep is comprised of one or multiple <b>Phase</b> parts such as setup, production or cleanup.
<b>XJDF</b>	Job Definition Format, version 2. The overall name of this specification is XJDF. There is also a <b>JDF Element</b> , which is a top-level <b>Element</b> within XJDF that encompasses a <b>XJDF Node</b> (see above).
<b>XJDF Consumer</b>	A Device or Controller that consumes XJDF instances.
<b>XJDF Node</b>	The <b>XJDF Element</b> type detailing the <b>Resources</b> and <b>Process</b> specification needed to produce a final or intermediate product or <b>Resource</b> .
<b>XJMF</b>	Job Messaging Format. Transfers information between <b>Controllers</b> and <b>Devices</b> . See Chapter 5, “JMF XJMF Messaging with the Job Messaging Format” on page 199.
<b>XJMF Message</b>	An <b>XJMF Message</b> is synonymous with <b>Message</b> . See <b>Message</b>

### 1.6.1 Conformance Terminology

The words “SHALL”, “SHALL NOT”, “REQUIRED”, “SHOULD”, “SHOULD NOT”, “RECOMMENDED”, “MAY”, and “NEED NOT” and “OPTIONAL” are used in this specification to define a requirement for **the indicated Agent** or the indicated **JDF Consumer**/**XJDF Consumer** as follows.

**Table 1-6: Conformance Terminology (Sheet 1 of 2)**

Term	Meaning
<b>SHALL or REQUIRED</b>	Means that the definition is an absolute requirement of the specification.
<b>SHALL NOT</b>	Means that the definition is an absolute prohibition of the specification.
<b>SHOULD or RECOMMENDED</b>	Means that there might exist valid reasons in particular circumstances for an implementer to ignore a particular item, but the implementer SHALL fully understand the implications and carefully weigh the alternatives before choosing a different course.
<b>SHOULD NOT or NOT RECOMMENDED</b>	Means that there might exist valid reasons in particular circumstances when the particular behavior is acceptable or even useful, but the implementer should fully understand the implications and then carefully weigh the alternatives before implementing any behavior described with this label.

**Table 1-6: Conformance Terminology (Sheet 2 of 2)**

Term	Meaning
MAY, or NEED NOT or OPTIONAL	Means that an item is truly optional. If a <b>JDF Consumer</b> is using a JDF parser, that parser will supply the default values indicated in this specification, if any, for optional <b>Attributes</b> that the <b>Agent</b> has omitted (indicated by <code>@Attribute = "DefaultValue"</code> in this specification). See Section 1.5.4, “Specification of Cardinality”.  For features that are optional for an <b>JDF Consumer XJDF Consumer</b> to Support, one vendor might choose to Support such an item because a particular marketplace requires it or because the vendor feels that it enhances the product, while another vendor might omit Support of that item. Similarly, one vendor of an <b>Agent###</b> might choose to supply such an item in a <b>JDF an XJDF</b> instance, while another vendor might omit the same item in a <b>JDF an XJDF</b> instance. A <b>JDF Consumer XJDF Consumer</b> implementation which does not include Support of a particular option (Element or Attribute) SHALL be prepared to interoperate with an <b>Agent###</b> implementation which does supply the option, though with reduced functionality. In the same vein, a <b>JDF Consumer XJDF Consumer</b> implementation which does include Support for a particular option SHALL be prepared to interoperate with an <b>Agent###</b> implementation which does not supply the option in the <b>JDF XJDF</b> instance.

## 1.6.2 Conformance Requirements for **JDF XJDF** Entities

The subsections of this section define the general conformance requirements for the **JDF XJDF** entities: 1) Attributes and Attribute Values, 2) Resources, and 3) Processes, and 4) Combined Processes.

### 1.6.2.1 Conformance Requirements for Support of Attributes and Attribute Values

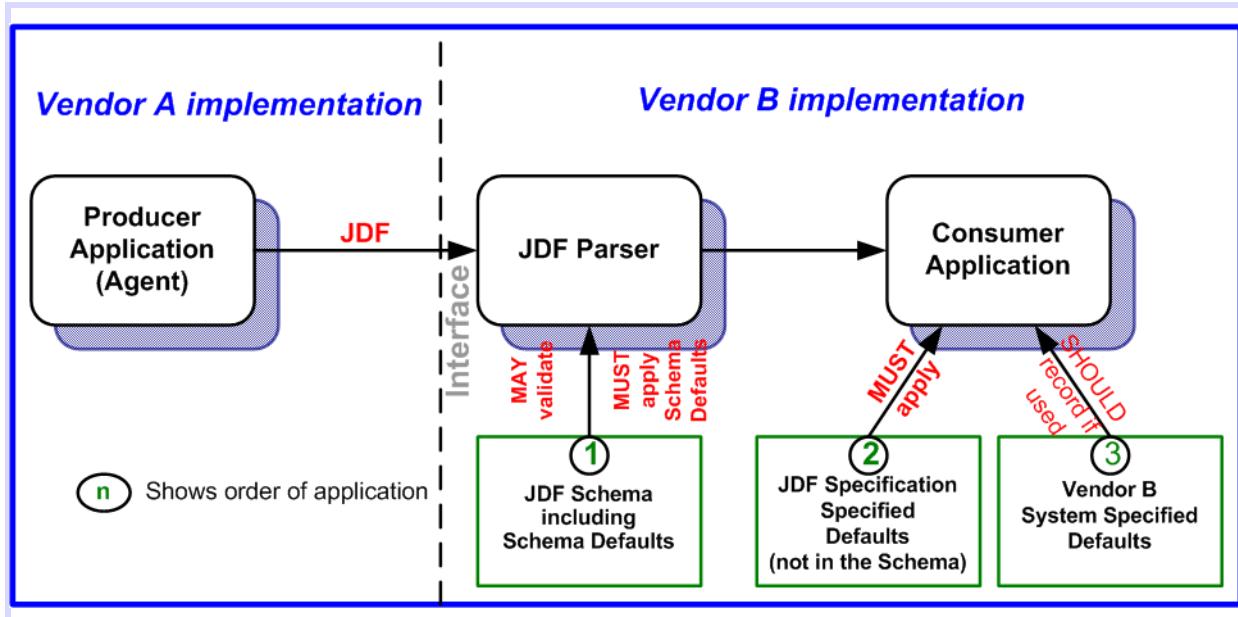
If an **JDF Consumer XJDF Consumer** supports an attribute, it SHALL support all of the values that this specification indicates are REQUIRED SHALL be specified for an **JDF Consumer XJDF Consumer** to support (whether or not the attribute is REQUIRED for SHALL be specified by the **Agent###** to supply in that context). If this specification is silent on which values are REQUIRED SHALL be specified for support of an attribute, then the **JDF Consumer XJDF Consumer** SHALL support at least one value in order to claim support for the attribute.

Attributes that are OPTIONAL for MAY be used by an **Agent###** to include in a **JDF an XJDF** instance are indicated by a “?” character following the attribute name or by the notation `@Attribute = "DefaultValue"` as indicated in Section 1.5.4, “Specification of Cardinality”.

**A Special Note on the Handling of Defaults.** Prior to JDF 1.2 many OPTIONAL Attributes included either explicit default values or the default value was indicated as “*system specified*” or the “*SystemSpecified*” enumeration or NMOKEN value. In JDF/1.2, the explicit default values are indicated as default values using the “=” followed by the “value” (See Section 1.5.4). The “*SystemSpecified*” enumeration and NMOKEN values have been removed and the Attribute remains as an OPTIONAL Attribute indicated with a “?” with no default value. The JDF consuming application SHALL supply the Default value when the Attribute is omitted from the JDF instance. Such an indicated default value SHALL have the same semantic meaning as if an **Agent** includes the Attribute in the JDF instance with the same value. If an OPTIONAL Attribute does not have a default value indicated in its description and the JDF instance does not include the Attribute, then the **JDF Consumer** can use a system-specified value.

See Figure 1-1 below. Such a system-specified Attribute Value can be configurable by a system administrator for the **JDF Consumer** or can depend on the values of other supplied Attributes and/or the current setting of the **JDF Consumer** Device or the actual **Machine** for which the Device is providing a JDF interface.

Figure 1-1: Handling of Default Values of JDF Attributes.



### 1.6.2.2 Conformance Requirements for Support of Elements

If an **JDF Consumer** supports an Element, it

- 1 SHALL support all of the attributes (see Section 1.6.2.1) defined for that element that an Agent **##is REQUIRED to include** **SHALL specify** in the element instance, i.e. attributes with either no marks or a “+” as defined in Section 1.5.4, Specification of Cardinality.
- 2 SHOULD support the **@SettingsPolicy**, **@BestEffortExceptions**, **@MustHonorExceptions** and **@OperatorInterventionExceptions** (see Section 3.2, “Generic Contents of All Elements”) Attributes and all of their defined values. These Attributes control the policy that a **JDF Consumer** SHALL follow when it encounters unsupported settings (i.e., Subelements, Attributes or Attribute Values in the Resource).

### 1.6.2.3 Conformance Requirements for Support of Processes

All Processes are OPTIONAL for a **JDF Consumer** to support. However, a Device SHALL support at least one Process or a **Combined Process**. If a **JDF Consumer** supports a Process, it

- 1 SHALL support all of the input and output **ResourceLink** Elements and refereed Resources as described in Section 1.6.2.2 that this specification defines for that Process,
- 2 MAY make its own assumptions regarding Attributes and Subelements of an **OPTIONAL Input Resource** (Resources with either a “?” or an “\*” – see Section 1.5.4) that an Agent has omitted from the Process in the JDF instance; therefore, default Attribute Values defined in this specification are not guaranteed when the Agent omits the Resource from the Process in the JDF instance (see Section 6.2, “Process Template”), and
- 3 SHOULD find the Processes that it supports in a JDF instance and SHALL ignore all other Processes, independent of the **@SettingsPolicy** Attribute for those other Processes.

### 1.6.2.4 Conformance Requirements for Support of Combined Processes

All **Combined Processes** are OPTIONAL for a **JDF Consumer** to support. The rules for Processes specified in Section 1.6.2.3 apply. If a **JDF Consumer** supports a **Combined Process**, it

- 1 SHALL support all of the **Input Resources** as defined in Section 1.6.2.2 that this specification defines for the **first Process in the Combined Process Node** (i.e., the first Process listed in the **@Types** Attribute),

- 2 SHALL support all of the **Output Resources** as defined in Section 1.6.2.2 that this specification defines for the *last Process in the Combined Process*,
- 3 MAY support Resources that are used as exchange Resources between Processes in the Process chain of the **Combined Process** (i.e., Resources that are both produced and consumed within the **Combined Process Node**),
- 4 SHALL support Resources in intermediate Process steps that are *not* used as exchange Resources between Processes in the Process chain of the **Combined Process**.

### 1.6.3 Conformance to Settings Policy

The `@SettingsPolicy`, `@BestEffortExceptions`, `@MustHonorExceptions` and `@OperatorInterventionExceptions` Attributes are defined in Table 3-1, “Any Element (generic content)” on page 48. They define the conformance policy of a Device. A **JDF Consumer** SHOULD support these Attributes and all of the defined values so that an **Agent** can depend on the **JDF Consumer** following the policy requested by the **Agent** in a JDF instance.

### 1.6.4 Interoperability Conformance Specifications

Interoperability Conformance Specifications (i.e., ICS documents) are developed by CIP4 working committees. They establish the minimum **XJDF** support requirements for Devices of a common class, including expected behavior. An ICS document can subset **XJDF** but can not expand upon **XJDF**. For instance, an ICS that covers desktop printers can either omit or prohibit all of the postpress Processes related to case binding. ICS documents can also establish minimum **XJMF** support requirements for a class of Devices.

Once published, ICS documents will form the basis for testing and certification by CIP4-sanctioned facilities. **XJDF**-enabled products that pass these tests will be deemed “**XJDF Certified**” to conform to an identified level of one or more ICS documents and will be permitted upon certification to use a “**XJDF Certified**” logo in connection with certified **XJDF**-enabled products.

The development of ICS documents are done in parallel, but not in synchronization, with the development of editions of the **XJDF** specification (e.g., an ICS is related to a specific edition of the **XJDF** Specification, but might be released at a later date). Once approved, all published ICS documents will be available at [http://www.cip4.org/document\\_archive/ics.php](http://www.cip4.org/document_archive/ics.php).

## 1.7 Data Structures

The following table describes the data structures as they are used in this specification.

Unless stated otherwise, this specification uses XML data types as defined by **[XMLSchema]**. For more details on **JDF XJDF** Schema and data types, see Appendix A, “Encoding” on page 1111.



### Data Types

An important reason for using a W3C Schema is to make use of user-defined data types. Even data types that are defined in the Schema specification have been more narrowly defined in JDF, including boolean (JDF doesn't permit 1, 0), double (JDF doesn't permit NaN), duration (JDF has INF & -INF) and string (JDF doesn't permit CR LF & FF). Be sure to check Appendix A, “Encoding” on page 1111 for all data type definitions.

In JDF 1.2, some data types have been enhanced to include unbounded values by defining the explicit tokens “**INF**” and “**-INF**”. For instance, the IntegerRange “**0 ~ INF**” specifies all positive integers including 0. A range value consist of one or more pairs of values. Each pair of values is a range. If the two values in a pair are the same, the pair represents a single value. Each values is separated by space character.

**Table 1-7: JDF XJDF Data Types (Sheet 1 of 3)**

Data Type	Description
Anchor	Describe the 9 anchor points of a rectangle. See Table A-1, “Anchor Enumeration Values” on page 1125 for a list values.
boolean	Binary-valued logic: (true   false).
CMYKColor	Represents a CMYK color specification.
date	Represents a time period that starts at midnight of a specified day and lasts for 24 hours.
dateTime	Represents a specific instant of time. It SHALL be a UTC time or a local time that includes the time zone.
DateTimeRange	Two <i>dateTime</i> values separated by a “~” (tilde) space character that defines the closed interval of the two. TimeRange corresponds semantically to the time interval (two time instants separated by a slash) defined in [ISO8601:2004].
DateTimeRangeList	Whitespace-separated list of <i>DateTimeRange</i> values.
double	Corresponds to [IEEE754] double-precision, 64-bit floating point type, including special tokens INF and -INF. This corresponds to the standard XML double with NaN removed. For details, see [XMLSchema]. <b>Note:</b> Prior to JDF 1.2 the data type <i>number</i> was used. The <i>double</i> and <i>number</i> data types are syntactically equivalent.
DoubleList  <u>New in JDF 1.2</u>	Whitespace-separated list of <i>double</i> values. <b>Note:</b> this data type was named <i>NumberList</i> before JDF 1.2.
DoubleRange  <u>New in JDF 1.2</u>	Two <i>double</i> values separated by a “~” (tilde) space character that define the closed interval of the two. <b>Note:</b> this data type was named <i>NumberRange</i> before JDF 1.2.
DoubleRangeList  <u>New in JDF 1.2</u>	Whitespace-separated list of <i>double</i> and <i>DoubleRange</i> values. <b>Note:</b> this data type was named <i>NumberRangeList</i> before JDF 1.2.
duration	Represents a duration of time.
DurationRange	Two <i>duration</i> values separated by whitespace. Describes a range of time durations. More specifically, it describes a time span that has a relative start and end.
DurationRangeList	Whitespace-separated list of <i>DurationRange</i> values.
element	Structured data. The specific data type is defined by the Element name.
enumeration	Limited set of <i>NMTOKEN</i> values (see below).
enumerations	Whitespace-separated list of <i>enumeration</i> values.
gYearMonth	Represents a specific Gregorian month in a specific Gregorian year.
hexBinary	Represents arbitrary hex encoded binary data.
hexBinaryList  <u>New in JDF 1.4</u>	Whitespace-separated list of <i>hexBinary</i> values.
ID	Unique identifier as defined by [XML] (see Section 1.4, “Document References”). SHALL be unique within the scope of the <b>JDF XJDF</b> document.
IDREF	Reference to an element holding the unique identifier as defined by [XML Specification 1.0].
IDREFS	List of references (IDREF values) separated by white spaces as defined by [XML].
integer	Represents numerical integer values, including the special tokens INF and -INF. This corresponds to the standard XML integer with INF and -INF added. Values greater than +/-2**31 are not expected to occur for this data type. For details, see [XMLSchema].
IntegerList	Whitespace-separated list of <i>integer</i> values.

**Table 1-7: JDFXJDF Data Types (Sheet 2 of 3)**

Data Type	Description
IntegerRange	Two <i>integer</i> values separated by a “~” (tilde) space character that define a closed interval.
IntegerRangeList	Whitespace-separated list of <i>integer</i> values and <i>IntegerRange</i> values.
JDFJMVersion	Version label of a <b>JDF</b> or <b>XJDF</b> or <b>JMF</b> instance. See Section 3.19, “JDF Versioning” for a discussion of versioning in <b>JDF</b> . See Table A-2, “JDFJMVersion Enumeration Values” on page 1125 for a list values.
JDFJMVersions	Whitespace separated list of <i>JDFJMVersion.values</i>
LabColor	Represents a Lab color specification.
language	Represents a language and country code (for example, en-US) for a natural language. Values SHALL conform to [RFC1766].
languages <i>New in JDF 1.4</i>	Whitespace-separated list of <i>language</i> values.
LongInteger	Represents numerical integer values, including the special tokens INF and -INF. This corresponds to the standard XML integer with INF and -INF added. Values greater than +/-2**31 are expected to occur for this data type. For details, see [XMLSchema].
matrix	Whitespace-separated list of six doubles representing a coordinate transformation matrix.
NamedColor	Represents a color definition by name. See Table A-3, “NamedColor Enumeration Values” on page 1125 for a list values. See <a href="http://www.w3.org/TR/html4/types.html#h-6.5">http://www.w3.org/TR/html4/types.html#h-6.5</a>
NameRange	Two <i>NMOKEN</i> values separated by a “~” (tilde) space character that define an interval of <i>NMOKEN</i> values.
NameRangeList	Whitespace-separated list of <i>NMOKEN</i> and <i>NameRange</i> values.
NMOKEN	A continuous sequence of special characters as defined by the [XML Specification 1.0].
NMOKENS	Whitespace-separated list of <i>NMOKEN</i> values.
Orientation <i>New in JDF 1.2</i>	Enumeration that specifies named orthogonal two-dimensional orientations. See Table A-4, “Orientation Enumeration Values” on page 1126 for a list values.
Orientations <i>New in JDF 1.2</i>	Whitespace separated list of <i>Orientation</i> enumeration values that specify named orthogonal two-dimensional orientations.
PDFPath	Whitespace-separated list of path operators as defined in PDF.
rectangle	Whitespace-separated list of four doubles representing a rectangle.
refelement	<b>ResourceElement</b> or a reference to an Element. Used to define candidates for inter-Resource linking in Resources.
regExp <i>New in JDF 1.2</i>	Regular expression as defined by [XMLSchema]
shape	Whitespace-separated list of three doubles representing a three-dimensional shape consisting of a width, height and length. Unless specified otherwise in the Attribute description, these three numbers are an X-dimension, a Y-dimension and a Z-dimension, respectively.
ShapeRange	Two <i>shape</i> values separated by a “~” (tilde) space character that defines a 3-dimensional box bounded by x1 y1 z1 ~ x2 y2 z2.
ShapeRangeList	Whitespace-separated list of <i>shape</i> values or <i>ShapeRange</i> values. A shape value is represented by 2 shape values that are identical.
Source	xjdf or xml.
string <i>Modified in JDF 1.2</i>	Character strings without tabs or line feeds. Corresponds to the standard XML normalized-String data type [XMLSchema].

**Table 1-7: JDF XJDF Data Types (Sheet 3 of 3)**

Data Type	Description
text	Text data contained in an XML element (between start and end tag). A few Elements, such as Comment, have text.
text element	Element that contains text between start and end tags. e.g. <Comment>example text</Comment>.
TimeRange	Two <i>dateTime</i> values separated by a “~” (tilde) space character that defines the closed interval of the two. TimeRange corresponds semantically to the time interval (two time instants separated by a slash) defined in [ISO8601:2004].
TransferFunction	Whitespace separated list of an even number of doubles representing a set of XY coordinates of a transfer function.
URI <a href="#">Modified in JDF 1.3</a>	URI-reference. Represents a Uniform Resource Identifier (URI) Reference as defined in Section 4 of [RFC3986]. For the “file :” URL scheme, see [RFC3987]. URI was modified in JDF 1.3 to includes Internationalized Resource Identifiers (IRI).
URL <a href="#">Modified in JDF 1.3</a>	URL-reference. Represents a Uniform Resource Locator (URL) Reference as defined in Section 4 of [RFC3986]. For the “file :” URL scheme, see [RFC3987]. URL was modified in JDF 1.3 to includes usage of Internationalized Resource Identifiers (IRI).
WorkStyle <a href="#">New in JDF 1.4</a>	Specifies work styles of a press run. See Table A-7, “WorkStyle Enumeration Values” on page 1127 for a list values.
XPath	Represents an XPath expression of an XML node set (Attributes or Elements), boolean, double or string.[XPath]
XYPair	Whitespace-separated list of two doubles. Unless specified otherwise in the Attribute Description, these two doubles are an X-dimension and a Y-dimension, respectively.
XYPairRange	Two XYPair values separated by a “~” (tilde) space character that defines a rectangle bounded by x1 y1 ~ x2 y2.
XYPairRangeList	Whitespace-separated list of XYPairRange values.
XYRelation <a href="#">New in JDF 1.2</a>	Defines the relationship between two ordered doubles. See Table A-8, “XYRelation Enumeration Values” on page 1127 for a list of NMOKEN values.

## 1.8 Units

JDF XJDF specifies most values in default units. That means that an implementation SHALL use the defined default units and SHALL NOT use alternate units. All measurable quantities are stated in double precision. Processors SHOULD NOT specify a unit unless no default exists, such as when new Resources are defined. Then the units SHALL be based on metric units. Overriding the default units that are defined in this table is non-standard and MAY lead to undefined behavior. Any exceptions are specified in the appropriate descriptive tables.

The following table lists the units used in JDF XJDF. The “Representation” column specifies the XML representation to indicate the units used in the following JDF XJDF attributes:

- 1 The [@Unit Attribute in Resources //ResourceSet/@Unit](#) (see Table 3-20, “Abstract PhysicalResource Element” on page 94Table 8.1, “Resource” on page 503).
- 2 [The @Unit Attribute in ResourceInfo](#) (see Table 5-82, “ResourceInfo Element” on page 270).
- 3 The [@CounterUnit Attribute in DeviceInfo //DeviceInfo/@CounterUnit](#) (see Table 5-94, “DeviceInfo Element” on page 283):

**Table 1-8: Units Used in JDF XJDF**

Measurement	Unit	Representation	Remarks
Length	point (1/72 inch)	pt	Used for all except microscopic lengths (see below)
	micron ( $\mu$ )	um	Used for microscopic lengths — where used (instead of points) it will be explicitly stated in the definition of the item. See <b>Media/@Thickness</b> .
Volume	liter	l	—
Weight	gram	g	—
Area	$m^2$	m2	Used for Media, (e.g., in wide format printing).
Resolution	dpi	dpi	The dots per inch (dpi) for print output and bitmap image (TIFF, BMP, etc.) file resolution.
Line Screen	lpi	lpi	The lines per inch (lpi) for conventionally screened halftone, screened grayscale and screened monotone bitmap images.
Screen Resolution	ppi	ppi	The pixels per inch (ppi) for screen display (e.g., soft-proof display and user interface display), scanner capture settings and digital camera settings.
Spot Resolution	spi	spi	For imaging Devices such as filmsetters, platesetters and proofers, the fundamental imaging unit (e.g., one “on” laser or imaging head imaged unit). Note: Many imaging Devices construct dots from multiple imaging spots, so dpi and spots per inch (spi) NEED NOT be equivalent.
Paper weight	$g/m^2$	g/m <sup>2</sup> gsm	Paper weight SHALL be provided in grams per square meter. See Appendix F, “North American and Japanese Media Weight Explained” on page 1157 for details of calculating non-gsm paper weights.
Speed	units/hour	*/h	Replace the “*” in the representation with the appropriate unit. Speed SHALL be specified in base units per hour. The base units that are used to represent speed SHALL be identical to the base unit.
Temperature	C° (Celsius)	C	degree centigrade
Angle	degrees°	degree	—
Countable Objects <a href="#">Modified in JDF 1.4</a>	1	count	Countable objects, such as Sheets, MAY be specified as “count”.

### 1.8.1 Counting in JDF XJDF

Zero-based indices SHALL be used in **JDF XJDF**. Thus the first index is 0, the second index is 1 etc. Note that this restriction applies to the **JDF XJDF** representation only. Display of values, for instance in a user interface, is implementation defined.



# Chapter 2 Overview of JDF XJDF

## Introduction

This chapter explains the basic aspects of **JDF XJDF**. It outlines the terminology that is used and is recognized by the format, and the components of a workflow necessary to execute a printing **Job** using **JDF XJDF**. Also provided is a brief discussion of **JDF XJDF** Process structure and the role of messaging in a **JDF** an **XJDF** Job.

## 2.1 System Components

This section defines unique terminology used in this specification for the **Job** and workflow components of **JDF XJDF**. Links to additional information is included for some terms.

The reader is assumed to have basic knowledge of XML syntax. Further information can be found at Table 1-1, “Basic References” on page 4.

### 2.1.1 Job Components

This terminology describes how JDF is described conceptually and hierarchically.

#### 2.1.1.1 Jobs and Nodes

A **Job** is the entirety of a JDF project. Each **Job** is organized in a tree structure containing all of the information needed to complete the intended project. The information is collected logically into what is called a **Node**. Each node in the tree structure represents an aspect of the **Job** to be executed.

The Nodes in a **Job** are organized in a hierarchical structure that resembles a pyramid. The Node at the top of the pyramid describes the overall intention of the **Job**. The intermediate Nodes describe increasingly process-oriented aspects of the **Job**, until the Nodes at the bottom of the pyramid each describe a single, simple **Process**. Depending on where in the **Job** structure a Node resides, it can represent a portion of the product to be created, one or many processing steps or other **Job** Parts. For more information about **Jobs** and **Nodes**, see Section 3, “Structure of XJDF JDF Nodes and Jobs”.

#### 2.1.1.2 Elements

An element is a standard XML syntactic construct [XML]. (See also: Section 2.1.1.3, “Attributes”.) Elements that are subparts of other elements are often referred to as subelements. JDF elements are represented by two kinds of data types: element and text element. For more information about elements, see Section 3.3, “JDF XJDF Node”.



#### XML Crash Course

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#### 2.1.1.3 Attributes

An attribute is a standard XML syntactic construct [XML]. (See also: Section 2.1.1.2, “Elements”.) Attributes are defined as various different data types, such as **string**, **enumeration**, **dateTime** and so on.

For more information about attributes, see Section 3.3, “JDF XJDF Node”. Note that an attribute with an empty (zero length) value string SHALL NOT be specified except when its data type allows an empty string (e.g., when not needed, OPTIONAL attributes are to be omitted rather than included as empty attributes).

#### 2.1.1.4 Relationships

The hierarchical JDF structure implies relationships between **Nodes** and **Elements** within a JDF tree structure. The terms used in this document to describe these relationships are defined below, and, in some cases, include a brief representation of the encoding that would express them.

- **Parent:** An Element that directly contains a child Element.  
`<Parent><Child/></Parent>`
- **Child:** An Element that resides directly in the parent Element.

- **Sibling:** An Element that resides in the same parent Element as another child Element.  
`<Any><Sibling/><Sibling/></Any>`
- **Descendent:** An Element that is a child or a child of a child, etc.
- **Ancestor:** An Element that is a parent or a parent's parent, etc.  
`<Ancestor>
 <Any>
 <Descendent/>
 <MoreAnys>
 <Descendent/>
 </MoreAnys>
 </Any>
</Ancestor>`
- **Root:** The single Element that contains all other Elements as descendants.
- **Leaf:** Element without further child Elements.
- **Branch:** An intermediate Node in a hierarchy that contains at least one child Node. A branch is never a leaf.

### 2.1.1.5 Links

There are two kinds of links in **JDF**: internal links and external links. Internal links are pointers to information that is located elsewhere in a **JDF** document. The data that is referenced by the link is located in a target Element. External links are used to reference objects that are outside of the **JDF** document itself, such as content files or color profiles. These objects are linked using standard URLs (Uniform Resource Locators).

**JDF** makes extensive use of links in order to reuse information that is relevant in more than one context of the **Job**. The same target can be referenced by multiple links. However, no link references more than one target. See [URI].

### 2.1.2 Referencing External Data

External data is referenced from XJDF using standard URLs (Uniform Resource Locators) [RFC1738].

### 2.1.3 Identifying Sections of XJDF from External Sources

Certain aspects of a **Job** need to be identified from multiple XJDF or XJMF instances. Examples include XJDF/@*JobID*, XJDF/@*JobPartID* and @*ExternalID*. These entities do NOT have a data type of ID and systems that use XJDF SHOULD maintain them.

### 2.1.4 Identifying Sections of XJDF from within the Same XJDF

Certain aspects of a **Job** need to be identified from within a single XJDF instance. XML provides an ID - IDREF mechanism where an ID SHALL only be defined once within an XML instance and MAY be referenced multiple times by an IDREF or IDREFS from within the same XJDF instance.

All attributes in XJDF with a data type of ID SHALL be named ID. The reference types MAY have names other than IDREF. IDs and IDREFS are only valid within the scope of a single XJDF instance and NEED NOT be maintained when a new XJDF is generated.

### 2.1.5 Workflow Component Roles

The four three components to create, modify, route, interpret and execute a **JDF** an **XJDF** **Job** are known as Agents, Controllers, Devices and Machines. Overseeing the workflow created by these components is The MIS or Management Information Systems is the top level controller in an XJDF workflow. These five aspects of a **JDF** workflow are described in the sections that follow.

By defining these terms, this specification does not intend to dictate to manufacturers how to design, build or implement a **JDF** an **XJDF/JMF** **XJMF** system. The intention is to name the component mechanisms needed for the interaction of actual components in a workflow during the course of a **JDF** an **XJDF** **Job**. In practice, it is very likely

that individual system components will include a mixture of the capabilities described in the following sections. For example, many Controllers are also Agents.

### 2.1.5.1 Machines

A Machine is any part of the workflow system designed to execute a process. Most often, this term refers to a piece of physical equipment, such as a press or a binder, but it can also refer to the software components used to run a particular Machine or perform a calculation. Computerized workstations, whether run through automated batch files or controlled by a human worker, are also considered Machines if they have no JDF XJDF interface.



### Agents, Controllers & Devices

"Agents", "Controllers" and "Devices" are special, logical descriptions. You probably won't ever buy one. An Agent (writes and reads JDF) can be any software tool that can parse JDF. Controllers communicate instructions that Devices act upon. They are functions that can be embedded into your software, production equipment or MIS sys-

### 2.1.5.2 Devices

The most basic function of a Device is to execute the information specified by an Agent and routed by a Controller. Devices SHALL be able to execute the instructions that are specified in JDF Nodes XJDF and initiate Machines that can perform the physical execution. The communication between Machines and Devices is by definition proprietary and therefore not defined in this specification. Devices MAY, however, support JMF/XJMF messaging in order to interact dynamically with a Controller.

### 2.1.5.3 Agents

Agents in a JDF workflow are responsible for writing JDF. An Agent has the ability to create or modify a JDF Node, a Job, to add Nodes to an existing Job, and to modify existing Nodes. Agents can be software processes, automated tools or even text editors. Anything that can be used in composing JDF can be considered an Agent.

Actual implementations of Devices or Controllers will most often be able to modify JDF. These system components have Agent properties in the terms of this specification.

### 2.1.5.4 Queue

Whereas Devices process XJDF to produce a result, Queues provide a method of ordering, prioritizing and scheduling QueueEntries that represent XJDF processes. Every Device that is capable of accepting XJDF via XJMF messaging SHALL provide exactly one Queue. This specification makes no assumptions on implementation limitations of a Queue. Thus a device that can only process a single QueueEntry and cannot store any waiting QueueEntry still implements an albeit minimalistic Queue.

### 2.1.5.5 Controllers

Agents create and modify JDF information; Controllers route it **XJDF** information to the appropriate Devices. The minimum requirement of a Controller is that it can initiate Processes on at least one Device, or at least one other slave Controller that will then initiate Processes on a Device. In other words, a Controller is not a Controller if it has nothing to control. In some cases, a pyramid-like hierarchy of Controllers can be built, with **Controllers a Controller** at the top of the pyramid controlling a series of lower-level Controllers at the bottom. The lowest-level Controllers in the pyramid, however, SHALL have Device capability. Therefore, Controllers SHALL be able to work in collaboration with other Controllers. In order to communicate with one another, and to communicate with Devices, Controllers SHALL

support the **JDF XJDF** file-exchange protocol and MAY support **JMF XJMF**. Controllers can also determine Process planning and scheduling data, such as Process times and planned production amounts.

### 2.1.5.6 Management Information Systems—MIS

The overseer of the relationships between all of the units highest level Controller in a workflow is known as a Management Information Systems or MIS. MIS is, in effect, a macrocosmic Controller. It is responsible for dictating and monitoring the execution of all of the diverse aspects of the workflow. To do this, it SHALL remain in contact with the actual production facilities. This can be accomplished This task is facilitated by access to production information, either in real time using **JMF XJMF** messaging or post facto using the audit records within a returned **JDF XJDF**.

To allow MIS to communicate effectively with the other workflow components, **JDF XJDF** supplies what is essentially a messenger service, in the form of **JMF XJMF**, to run between MIS and production. This format is equipped with a variety of Message types, ranging from simple, unidirectional notification to queries and even commands. System designers have a great deal of flexibility in terms of how they choose to use the messaging architecture, so that they can tailor the Processes to the capabilities of the existing workflow mechanism. The **Figure 2-1**  
**Figure 2-2** depicts how various communication threads can run between MIS and production.

**JDF XJDF** also provides system components the ability to collect performance data for each Node, which can then be passed on to a job-tracking system for use by the MIS system. These data can be derived from the Messages that the Controller receives or from the audit records in the Job. For more information on audits, see Section 3.16.3, “Audit”. Alternatively, the completed Job can be passed to the Job accounting system, which examines the audit records to determine the costs of all the Processes in the Job.

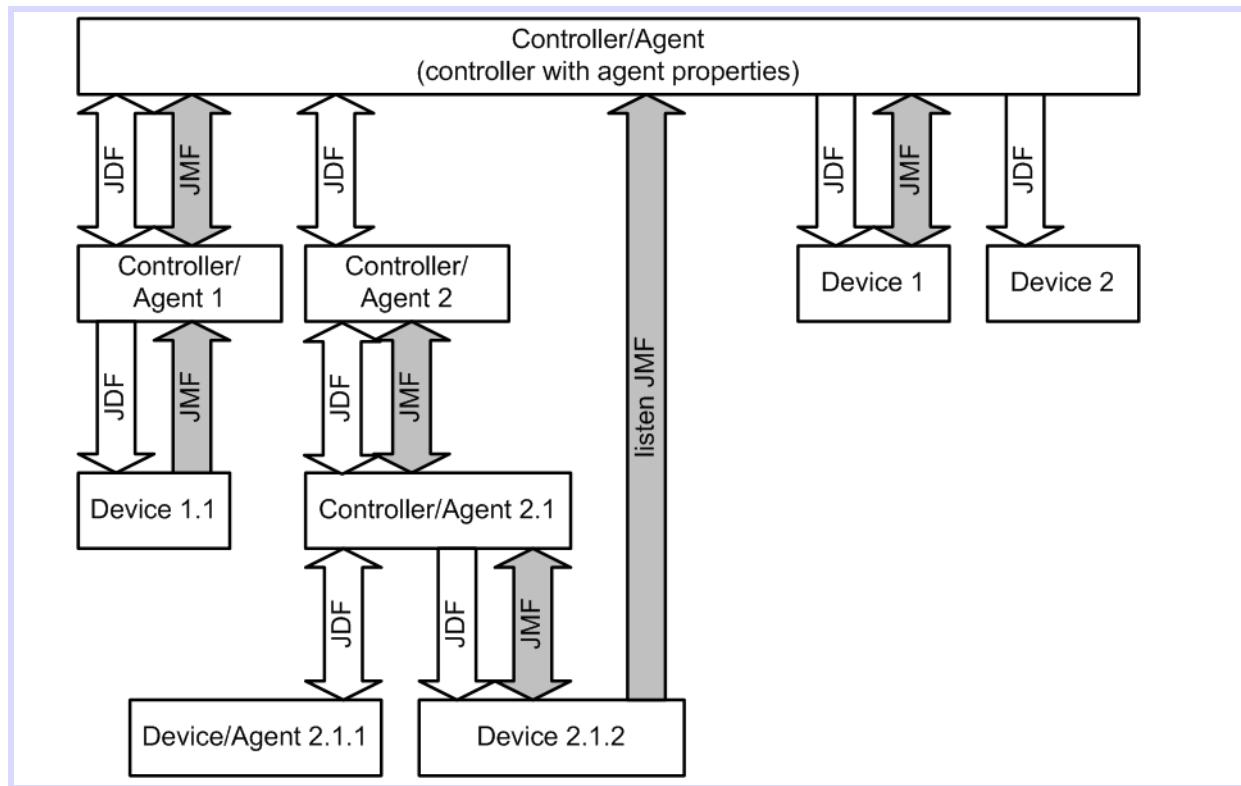
### 2.1.5.7 System Interaction

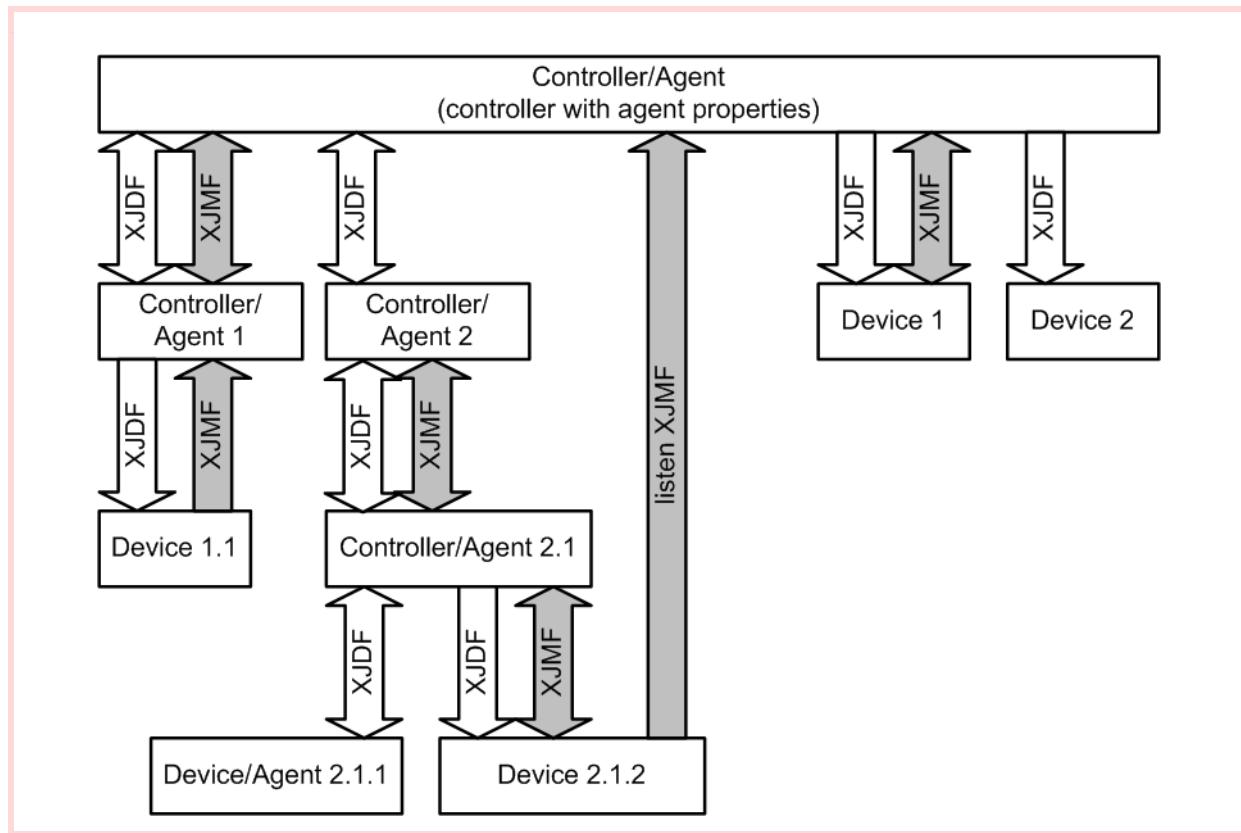
An example of the interaction and hierarchical structure of the components considered in the preceding sections is shown in the following figure. Single arrows indicate unidirectional communication channels and double arrows indicate bidirectional communication.



### Automating Data Flows

JDF-enabled workflow can require a tremendous amount of information. This could seem daunting to anyone who expects to have to enter information into a system, but it need not be the case. From the style information in a layout file, to automatically generated image file header information, to the color profiles tagged onto images automatically by digital cameras or image editing systems, a great deal of information can be captured and passed along from one JDF-enabled application to another. Furthermore, where, in the specification, there are many options, those options can be set to user-defined default values that represents typical Jobs in your particular workflow. For instance, JDF provides a variety of staple folds. If your plant only supports a crown fold, that becomes the default in your JDF-enabled system and is rarely manually specified or keyed.

**Figure 2-1: Example of JDF and JMF workflow interactions**

**Figure 2-2: Example of XJDF and XJMF workflow interactions**

## 2.2 JDF XJDF Workflow

JDF XJDF does not dictate that a workflow be constructed in any pre-specified way. On the contrary, its flexibility has allowed JDF to model existing custom solutions for the graphic arts, as well as those yet to be imagined. JDF XJDF is equally as effective with a simple system using a single Controller-Agent and Device as it is with a completely automated industrial press workflow with integrated pre- and postpress operations.

Because of workflow system construction in today's industry, the principal subsection procedures of a printing Job—prepress, press and postpress—remain largely disconnected from one another. JDF provides a solution for this lack of unity. With JDF, a print Job becomes an interconnected workflow that runs from job submission through trapping, RIPing, filmmaking, platemaking, inking, printing, cutting, binding, and sometimes even through shipping. JDF enables an architecture that defines the Process necessary to produce each intended result and identifies the Elements necessary to complete the Processes. All Processes are separated into Nodes, and the entire Job is represented by a tree of these Nodes. All of the Nodes taken together represent a desired printed product.

Each individual Node in JDF An XJDF is defined in terms of inputs and outputs. The inputs for a Node of an XJDF consist of the Resources materials it uses and the parameters that control it. For example, the inputs in a Node of an XJDF describing the Process parameters for imaging the cover of a brochure might include requirements for trapping, RIPing, and imposing the image. The output of such a Node our example XJDF might be a raster image.

A print Job will typically require more than one process step to produce the final product. Each process step is completely defined by an XJDF. The interdependencies of the process steps MAY be specified in XJDF if the receiving device requires this information. Otherwise these interdependencies SHOULD remain opaque and be processed in a proprietary manner by the Job Controller.

Unless they represent the absolutely final product, Resources that are produced by one Node are in turn modified or consumed by subsequent Nodes. For instance, the output of the Process described above—the raster image—

becomes one of the Input Resources for a Node describing the printing Process for the brochure. This Input Resource would be joined in the Node by other Input Resources such as inks, press Sheets, plates and a set of parameters that indicate how many Sheets to produce. The output would be a set of printed press Sheets that in turn would become the Input Resource for postpress operations such as folding and cutting. And so on until the brochure is completed.

This system of interlinked Nodes effectively unites the prepress, press and postpress Processes, and even extends the notion of where a **Job** begins. A **JDF**An **XJDF Job**, like any printing **Job**, is defined by the original intent for the end product. It is the task of the **MIS** to define the list of process that are most efficient for producing the desired product. The details of the process definition are implementation specific and not part of this specification. The difference between a **JDF Job** and a generic printing job, however, is that JDF allows the entire **Job**, from prepress through postpress, to be defined up front. All of the Resources and Processes necessary to produce an entire printed product can be identified and organized into Nodes before the first prepress Process is set in motion. Furthermore, the Product Intent specification can be extremely broad or extremely detailed, or anywhere in between. This means that a **Job** can be so well defined before production begins that the system administrator only has to set the wheels in motion and let the **Job** run its course. It might also mean that the person submitting the **Job** has only a general idea of what the final product will look like and that modifications to the intent will be made along the way, depending on the course of the **Job**.

For example, the person submitting the **Job** specification for the brochure described above might know that she wants 400 copies, that she wants it done on a four-color press with no spot colors, that the cover will be on a particular paper stock and the contents on another, that the binding will be stapled, and that she requires the **Job** in two weeks. Another person might know only that he wants the pages she's designed to be put into some sort of brochure form, although she doesn't know exactly what. Either person's request can be translated into a **JDF Product Intent**. Node that will eventually branch into a tree structure describing each Process needed to complete the brochure. In the first example, the prepress, press and postpress Processes will be well defined from the start. In the second example, information will be included as it is gathered. The following sections describe the way in which Nodes can combine to form a **Job**.

## 2.2.1 Product Intent and Processes

**XJDF** describes a **Job** from two points of view that are related but not identical.

- **Product Intent:** The customer or product designer will typically describe the desired final product without any knowledge of the manufacturing process. In **XJDF** this type of information is encoded in the **ProductList** and its child elements. Product intent is described in detail in Chapter 7, “Product Intents”
- **Process:** The devices that execute a processing step will typically receive processing instructions for that specific work as part of the manufacturing process for a product. In **XJDF** this type of information is encoded in **ResourceSet** and their child elements. Process resources are described in detail in Chapter 8, “Resources”.

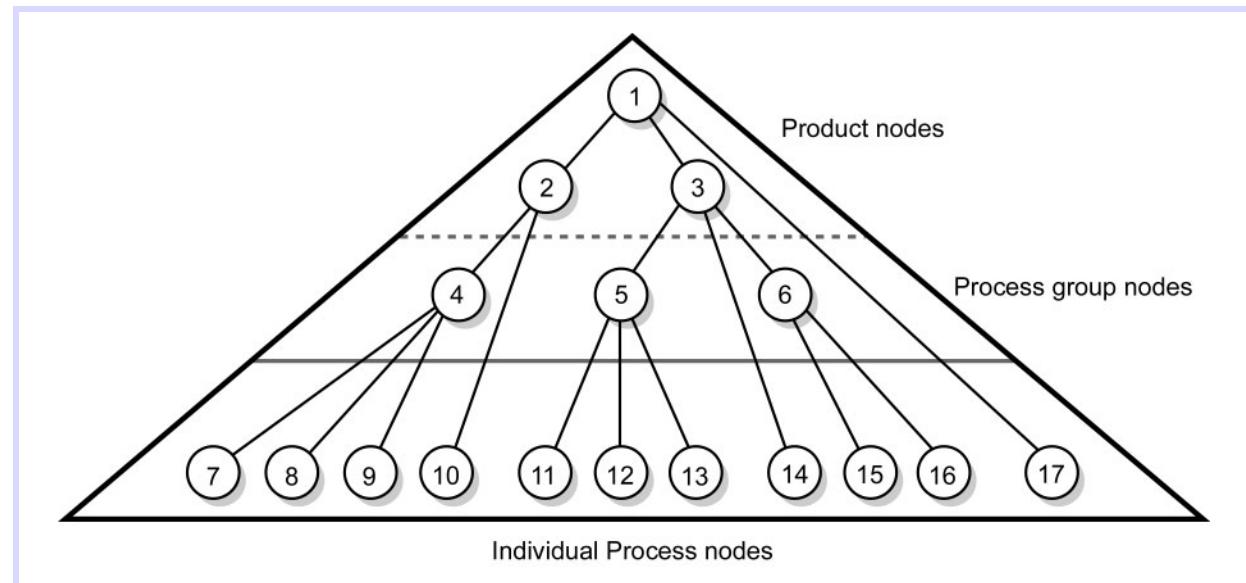
Intent descriptions have been consciously limited to details of the more common products. In order to reduce duplication of resources and keep intent definitions simple, some features that are typically required to describe products that are used in business to business workflows such as packaging have not been included in Intent descriptions. These specialized products SHOULD be described by adding process resources that describe the desired features.

Controllers such as **MIS** SHOULD evaluate product intent and provide all processing instructions for devices as **ResourceSet** elements. Devices NEED NOT evaluate product intent to infer processing instructions. Product intent is provided to Devices in order to provide operators with an overview of the context of the process step within one or more customer **Jobs**.

## 2.2.2 Job Structure

**XJDF** is an interface format that specifies the exchange of information amongst Controllers and Devices in a workflow.

**JDF Jobs** consist of a set of Nodes that specify the production steps needed to create the desired end product. The Nodes, in addition to being connected through inputs and outputs, are arranged in a hierarchical tree structure. Figure 2-3, below, shows a simple example of a tree of Nodes.

**Figure 2-3: JDF tree structure**

The following table provides a hypothetical breakdown of the Nodes in the tree structure shown above.

**Table 2-1: Information contained in JDF Nodes, arranged numerically**

<b>Node #</b>	<b>Meaning</b>
1	Entire book
2	Cover
3	Contents
4	Production of cover
5	Production of all color pages
6	Production of all black-and-white pages
7	Cover production Process 1
8	Cover production Process 2
9	Cover production Process 3
10	Cover Finishing Process
11	RIPing for color pages
12	Plate making for color pages
13	Printing for color pages
14	Color page finishing Process
15	RIPing for black-and-white pages
16	Printing for black-and-white pages on a digital press
17	Binding Process for entire book

The uppermost Nodes (1, 2, & 3) represent the Product Intent in general terms. These Nodes describe the desired end product and the components of that product, which, in this case, are the cover and the content pages. As the tree branches, the information contained within the Nodes gets more specific. Each Subnode defines a component of the product that has a unique set of characteristics, such as different media, different physical size or different color requirements. The Nodes that occur in the middle of the tree (4, 5, & 6) represent the groups of Processes needed to

produce each component of the product. The Nodes that occur closest to the bottom of the tree (7–17) each represent individual Processes.

In this example, there are two subcomponents of the **Job**, the cover and the contents, each with distinct requirements. Therefore, two Nodes—Nodes 2 and 3—are needed to describe the elements of the **Job** in broad terms. Within the content pages there are some black-and-white pages and some color pages. Since fabricating each requires a different set of Processes, further branching is necessary. The following table arranges the Nodes in groups according to the Processes they will be executing.

**Table 2-2: Information contained in JDF Nodes, arranged by group**

Process Group	Node #	Meaning
Entire book	1	Entire book
	17	Assemble book
Cover	2	Cover
	4	Cover assembly Processes
	7	Cover production Process 1
	8	Cover production Process 2
	9	Cover production Process 3
	10	Finishing Process for cover
Contents	3	Contents
Color Pages	5	Production of all color pages
	11	RIPing for color pages
	12	Plate making for color pages
	13	Printing for color pages
	14	Color page finishing
Black-and-white pages	6	Production of all black-and-white pages
	15	RIPing for black-and-white pages
	16	Printing for black-and-white pages on a digital press

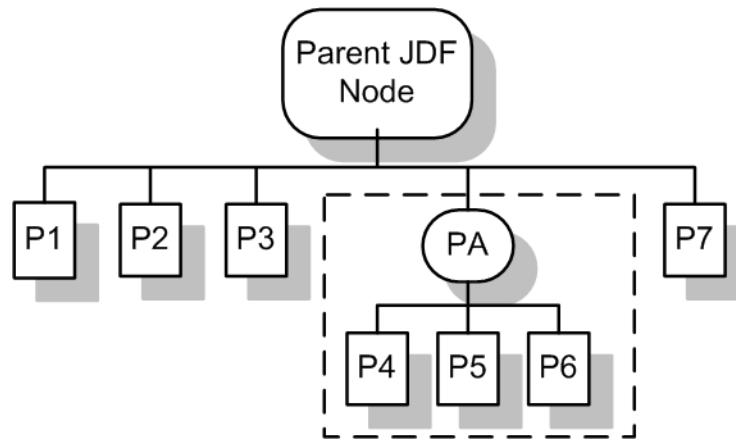
This hierarchical structure is discussed in more detail in the following section.

## 2.3 Hierarchical Tree Structure and Networks in JDF

Output Resources of JDF Nodes are often the Input Resources for other JDF Nodes. Nodes SHALL NOT begin executing until all of their Input Resources are complete and available. This means that the Nodes execute in a well defined sequence. One Process follows the next. For example, a Process for making plates will produce, as Output Resources, press plates that are needed by a **ConventionalPrinting** Process.

In the hierarchical organization of a JDF **Job**, Nodes that occur higher in the tree represent high level, more abstract operations, while lower Nodes represent more detailed Process operations. More specifically, Nodes near the top of the tree can represent only intent regarding the components or assemblies that make up the product, while the leaf Nodes provide explicit instructions to a Device to perform some operation. Figure 2-4 shows an example of a hierarchical structure.

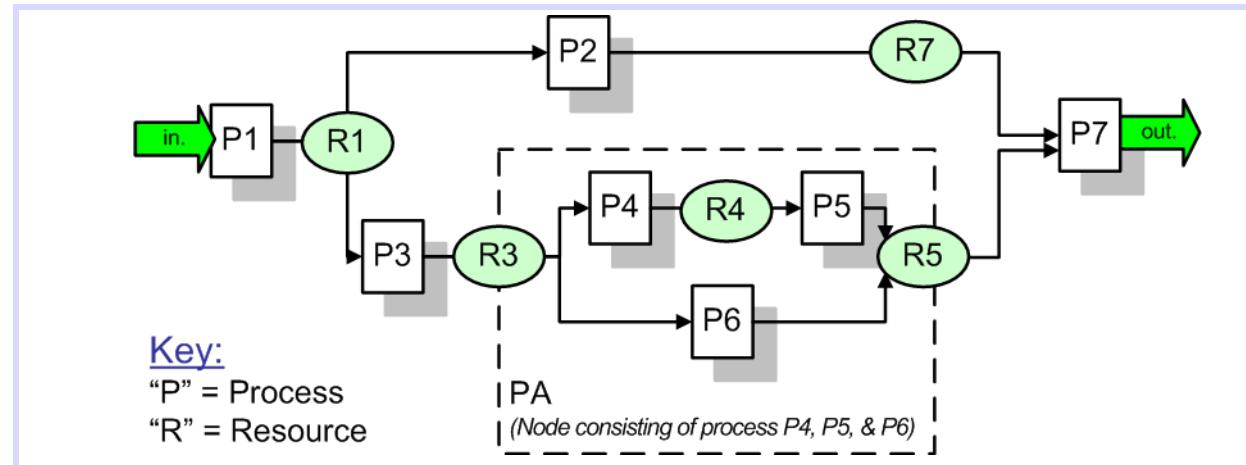
**Figure 2-4: Example of a hierarchical tree structure of JDF Nodes**



In addition to the hierarchical structure of the Node tree, sibling Nodes are linked in a Process chain by their respective Resources. In other words, an Output Resource of one Node ends up representing the Input Resource of the following Node (as represented in Figure 2-5). This interrelationship is known as Resource linking.

With Resource linking, complex networks of Processes can be formed. The Figure 2-5 displays an alternate representation of the Process described in Figure 2-4. Whereas Figure 2-4 represents a hierarchical structure, Figure 2-5 shows an example of the linking mechanism of the same Job. Note that there are many possible Process networks that map to the same Node hierarchy.

**Figure 2-5: Example of a Process chain linked by Input Resources and Output Resources**



In the JDF specification, the linking of Processes is not explicitly specified. In other words, Nodes are not arranged in an abstract chronology, dictating, for example, that the trapping Node is to come before the RIPing Node. Rather, the links are implicitly defined in the exchange of input and Output Resources. Resource dependencies form a network of Processes, and the sequence of Process execution—that is, the routing of Processes—can be derived from these dependencies. One Resource dependency might have the possibility of multiple Process routing scenarios. It is up to MIS to define the proper solution to meet local constraints. Note that the type of exchange Resource effectively limits the Processes that can be linked.

The Agent or set of Agents employed by MIS to write the JDF **Job** SHALL be familiar with these local constraints. They SHALL take into account factors such as the control abilities of the applications that complete the pre-press Processes, the transport distance between the prepress facility and the press itself, the load capabilities of the press, and the time requirements for the **Job**. All of the factors taken together build a Process network representing

the workflow of production. To aid Agents in defining the workflow, JDF provides the following four different and fundamental types of Process mechanisms, which can be combined in any way.

- 1 **Serial processing** that is subsequent production and consumption of Resources as a whole, represented by a simple Process chain
- 2 **Overlapping processing** that is simultaneous production and consumption of Resources by pipes
- 3 **Parallel processing** that involves the splitting and sharing of Resources
- 4 **Iterative processing** that is a circular or back and forward processing for developing Resources by repeated activity

These mechanisms are discussed in greater detail in Section 4.3, “Execution Model”.

## 2.4 Role of Messaging in JDF XJDF

Whereas **XJDF** will typically be submitted to a Device and only be returned after the process has been executed, **XJMF** provides methods to dynamically synchronize and manipulate Controllers and Devices. For more details on **XJMF**, see Chapter 5, “JMF XJMF Messaging with the Job Messaging Format” and Chapter 11, “Building a System Around JDFXJDF”.

Whereas **JDF** provides a container to define a **Job**, the Job Messaging Format — **JMF**, defined in Chapter 5, JMF XJMF Messaging with the Job Messaging Format — provides a method to generate snapshots of **Job** status and to interactively manipulate elements of a workflow system.

**JMF** is specifically designed for communication between the production system Controller and the work centers or Devices with which it interacts. It provides a series of queries and commands to check the status of Processes and, in some cases, to dictate the next course of action. For example, the **KnownDevices** Query Message allows the Controller to determine what Processes can be executed by a particular Device or Work Center. These Processes are likely to be determined at system initialization time. The **SubmitQueueEntry** Message provides a means for the Controller to submit a **Job** ticket to individual work centers or Devices. And the **Status and Resource Messages** allow the Device or Work Center to communicate quasi real-time<sup>1</sup> processing status to a Controller. Depending on the system configuration, the Message handler can choose to record status changes in the history logs. The **status Message** allows the Controller to request status updates from the Controller.

**JDF** also provides mechanisms to define recipients for individual Messages on a Node-by-Node basis. This enables Controllers to define the aspects and the parts of **Jobs** that they want to track. For more information about messaging, see Chapter 5, “JMF XJMF Messaging with the Job Messaging Format”.

## 2.5 Coordinate Systems in JDF XJDF

This chapter explains how coordinate systems are defined and used in **JDF XJDF**. It also shows how the matrices are used to specify a certain transformation and how these matrices can be used to transform coordinates from one coordinate system to another coordinate system. In addition, it clarifies the meaning of terms like “*Top*” or “*Left*”.

### 2.5.1 Introduction

During the production of a printed product it often happens that one object is placed onto another object. During imposition, for example, single pages and marks (like cut, fold or register marks) are placed on a Sheet surface. Later, at image setting, a bitmap containing one separation of a Sheet surface is imposed on a piece of film. In a following step, the film is copied to a printing plate which then is mounted on a press. In postpress, the printed Sheets are gathered on a pile. The objects involved in all these operations have a certain orientation and size when they are put together. In addition, one has to know *where* to place one object on the other.

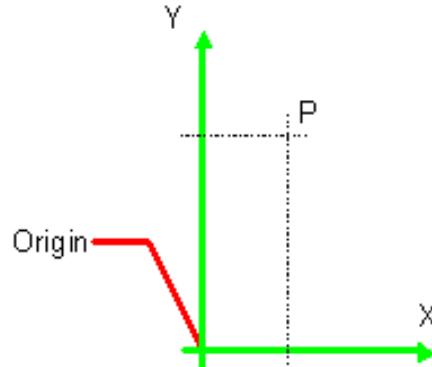
The position of an object (e.g., a cut mark) on a plane can be specified by a two-dimensional coordinate. Every digital or **PhysicalResource** **physical Resource** has its own coordinate system. The origin of each coordinate sys-

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1. Quasi real-time is the time-scale typically associated with production control systems. **JMF XJMF** is not intended for true real-time, lower level Machine control.

tem is located in the lower left corner (i.e., the X coordinate increases from left to the right, and the Y coordinate increases from bottom to top).

**Figure 2-6: Standard coordinate system**

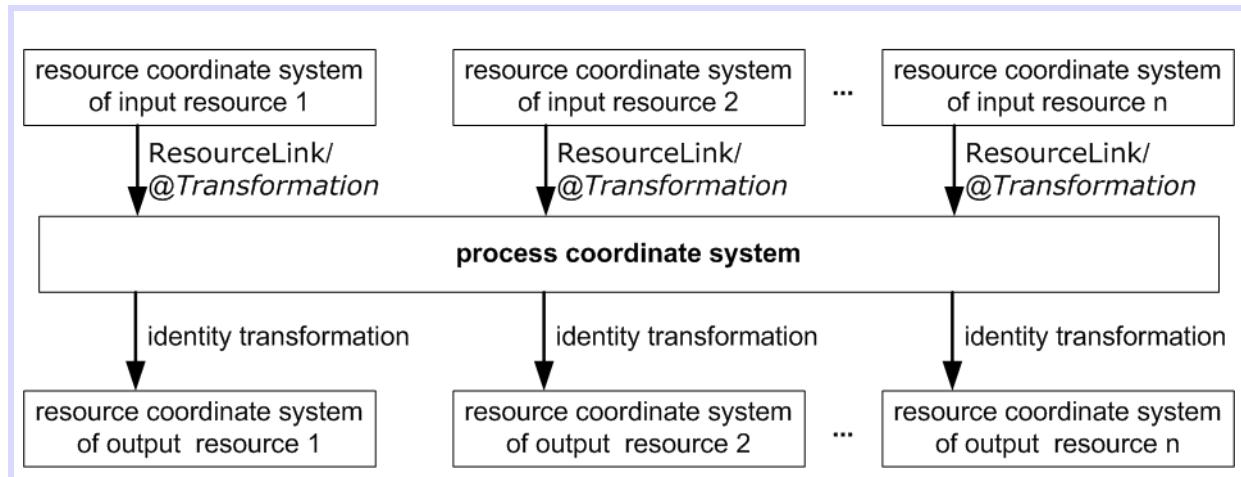


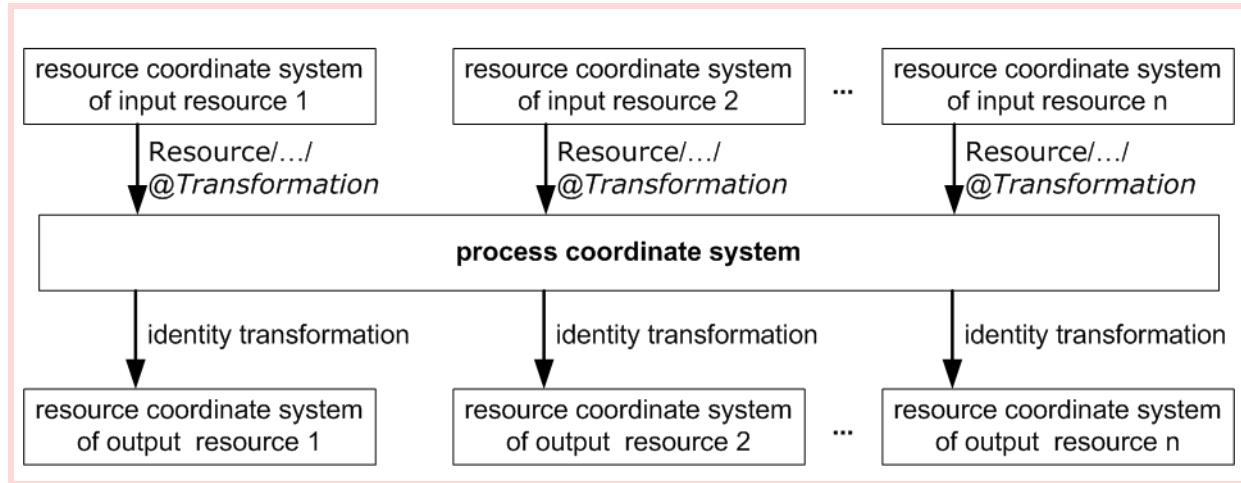
Each page contained in a PDL file has its own coordinate system. In the same way a piece of film or a Sheet of paper has a coordinate system. Within **JDF XJDF** each of these coordinate systems is called *Resource coordinate system*.

If a Process has more than one Input Resource with a coordinate system, it is necessary to define the relationship between these input coordinate systems. Therefore, a *process coordinate system* is defined for each Process. **JDF XJDF** tickets are written assuming an idealized Device that is defined in the process coordinate system for each Process that the Device implements. A real Device SHALL map the idealized process coordinate system to its own device coordinate system.

The coordinate systems of the Input Resources are mapped to the process coordinate system. Each of those mappings is defined by a transformation matrix, which specifies how a coordinate (or position) of the input coordinate system is transformed into a coordinate of the target coordinate system. (See Section 2.5.6, “Homogeneous Coordinates” for mathematical background information.) In the same way, the mapping from the process coordinate system to the coordinate systems of the Output Resources is defined. The process coordinate system is also used to define the meaning of terms like “*Top*” or “*Left*”, which are used as values for parameters in some Processes.

**Figure 2-7: Relation between Resource and process coordinate systems**



**Figure 2-8: Relation between Resource and process coordinate systems**

It is important that no implicit transformations (such as rotations) are assumed if the dimensions of the Input Resources of a Process do not match each other. Instead every transformation (e.g., a rotation) SHALL be specified explicitly by using the `@Orientation` or `@Transformation` attribute of the corresponding **ResourceLink****Resource**/**AmountPool**/**PartAmount**. The same applies also to other areas in **JDF XJDF** (e.g., the *Interpreting* Process). A **FitPolicy** Element MAY define a policy for implied transformations.

### 2.5.1.1 Source Coordinate Systems

The source coordinate system of a referenced object is defined by the lower left of the object. X values are increasing to the right, Y values are increasing towards the top. In case of PDF the lower left of the MediaBox defines the lower left of the source coordinate system.

Note: some object coordinate systems have optional tags to indicate internal transformations. These internal transformations SHALL be applied prior to defining the source coordinate system; for instance:

- PDF: the rotation defined by the Rotate key SHALL be applied. The lower left of the MediaBox of the rotated PDF defines the lower left of the PDF source coordinate system.
- TIFF: the orientation defined by the Orientation tag SHALL be applied. The lower left of the rotated TIFF defines the lower left of the TIFF source coordinate system.

### 2.5.2 Coordinates and Transformations

**Table 2-3: Data types for specifying coordinates and transformation**

Data Type	Example
XYPair	"612 792"
double	"20.7"
rectangle	"0 0 595 843" (Order of elements is "lower-left x, lower-left y, upper-right x, upper-right y" or "left, bottom, right, top".)
Matrix	"1 0 0 1 30.0 235.3" The ordering of elements is defined in Section 2.5.6, "Homogeneous Coordinates".
Orientation	"Rotate180" or "Flip90"

Coordinates and transformations are used throughout **JDF XJDF**, to include:

Intent Resources, such as:

- **LayoutIntent**: specifies size of finished product
- **MediaIntent**: specifies size of media
- **InsertingIntent**: specifies rotation and offset of inserts

Process Resources, such as:

- **Component**: specifies coordinate system
- **CutBlock**: specifies cut block coordinate system
- **FoldingParams**: specifies folding operations

### 2.5.3 Coordinate Systems of Resources and Processes

Each physical Input Resource (e.g., **Component**) of a Process has, by default, its own coordinate system, which is called the “resource coordinate system.” The coordinate system also implies a specific orientation of that **Resource**. On the other hand there is a coordinate system that is used to define various Process-specific parameters. This coordinate system is called a target or process coordinate system.

It is often necessary to change the orientation of an Input Resource before executing the operation. This can be done by specifying a transformation matrix. It is stored in the *@Orientation* or *@Transformation* attribute of the **ResourceLink**. This provides the ability to specify different matrices for the individual Resources of a Process. For details on **ResourceLink**, **AmountPool** and **PartAmount** Elements, see [Section 3.14, “ResourceLinkPool and ResourceLink” on page 97](#)[Section 8.1, “Resource” on page 503](#).

#### 2.5.3.1 Coordinate Systems of Combined Processes

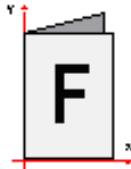
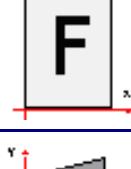
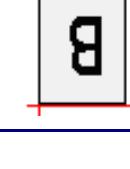
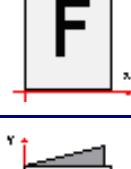
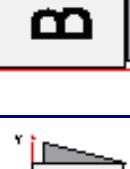
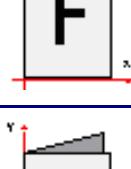
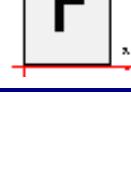
[New in JDF 1.2](#)

Combined Processes (see [Section 3.5.4, “Combined Process Nodes” on page 69](#)) combine **MAY specify** multiple individual Processes’ and thus also the Processes respective coordinate systems. The process coordinate systems are not modified by the fact that the Processes are part of a Combined Process, they are identical to the process coordinate systems of the Processes, were they defined in a linked chain of individual Processes. The coordinate systems of an exchange Resource can be modified by defining it as a pipe by specifying **Resource Dependent**/*@PipeID* and **Resource Dependent**/*@PipeProtocol* = “Internal” (See [Section 4.3.3, “Overlapping Processing Using Pipes” on page 183](#)) and linking it to the Combined Process with both an input and output **ResourceLink**. The Input **ResourceLink** defines the coordinate transformation using the standard *@Transformation* or *@Orientation* attributes. **Resource**/*@Status* of the exchange Resource **SHALL be “Complete”**.

#### 2.5.3.2 Coordinate System Transformations

The following table shows some matrices that can be used to change the orientation of a **PhysicalResource**. Most of the transformations require the X- (*w*) and the Y-dimension (*h*) of the **Component** as specified in the *@Dimensions* attribute. If these are unknown, it is still possible to define a general orientation in the *@Orientation* attribute of the **ResourceLink**. The naming of the attribute reflects the state of the Resource and not necessarily the order of applied transformations. Thus “*Rotate90*” and “*Flip90*” specify that the original Y axis as represented by the spine is on top. In the case of *Flip90*, the **Component** is additionally flipped front to back.

**Table 2-4: Matrices and Orientation values for describing the orientation of a Component**

Orientation Value	Source Coordinate System	Transformation Matrix According Action	Target Coordinate System
Rotate0		1 0 0 1 0 0 No Action	
Rotate90		0 1 -1 0 $h$ 0 90° Counterclockwise Rotation	
Rotate180		-1 0 0 -1 $w$ $h$ 180° Rotation	
Rotate270		0 -1 1 0 0 $w$ 270° Counterclockwise Rotation	
Flip0		1 0 0 -1 0 $h$ Flip around X	
Flip90		0 -1 -1 0 $h$ $w$ 90° Counterclockwise Rotation + Flip around X	
Flip180		-1 0 0 1 $w$ 0 180° Rotation + Flip around X	
Flip270		0 1 1 0 0 0 270° Counterclockwise Rotation + Flip around X	

### 2.5.4 Product Example: Simple Brochure

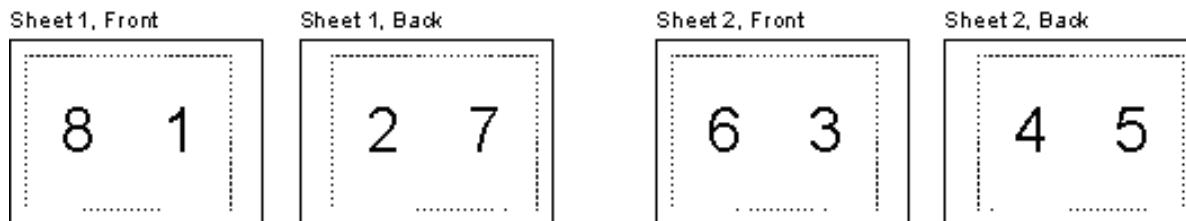
To illustrate the use of coordinate systems in **JDF XJDF**, a simple saddle stitched brochure with eight pages is used as an example in Table 2-5. The brochure is printed on two Sheets with front and back. The two Sheets are then folded, collected on a saddle, and saddle stitched. Finally the brochure is cut with a three-side trimmer.

**Table 2-5: JDF XJDF Processes used for the production of the simple brochure**

Input Resources	Process	Output Resources
<b>Layout</b> <b>RunList (Document)</b> <b>RunList (Marks)</b>	<b>Imposition</b>	<b>RunList</b>
<b>RunList</b>	<b>Interpreting</b>	<b>RunList</b> (of interpreted PDL data)
<b>RunList</b> (of interpreted PDL data) <b>Media</b> <b>RenderingParams</b>	<b>Rendering</b>	<b>RunList</b> (of rasterized byte maps)
<b>RunList</b> (of rasterized byte maps)	<b>Screening</b>	<b>RunList</b> (of bit maps)
<b>ImageSetterParams</b> <b>Media</b> (of film) <b>RunList</b> (of bit maps)	<b>ImageSetting</b> (to film)	<b>ExposedMedia</b> (of film)
<b>ExposedMedia</b> (of film)	<b>ContactCopying</b>	<b>ExposedMedia</b> (of plate)
<b>ExposedMedia</b> (of plate) <b>ConventionalPrintingParams</b>	<b>ConventionalPrinting</b>	<b>Component</b>
<b>FoldingParams</b> <b>Component</b>	<b>Folding</b>	<b>Component</b>
<b>CollectingParams</b> <b>Component</b>	<b>Collecting</b>	<b>Component</b>
<b>StitchingParams</b> <b>Component</b>	<b>Stitching</b>	<b>Component</b>
<b>TrimmingParams</b> <b>Component</b>	<b>Trimming</b>	<b>Component</b>

At imposition, the layout describes a Signature with two Sheets, each having a front and a back surface. On each surface, two content objects (i.e., pages, are placed).

**Figure 2-9: Layout of simple saddle stitched brochure (product example)**

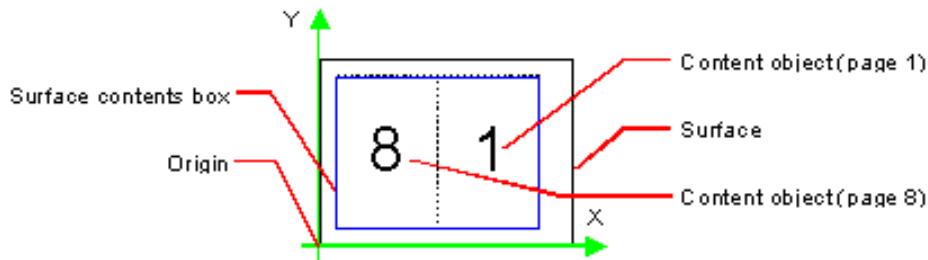


Each surface has its own coordinate system, in which a surface contents box is defined. This coordinate system is also referred to as the **Layout** coordinate system because the Signature, Sheet and surface elements are defined within the hierarchy of the **Layout** Resource by means of Partitioning. The content objects are placed by specifying the CTM attribute relative to the surface contents box. If the position of an object within a page is given in the page coordinate system, this coordinate can be transformed into a position within the surface coordinate system:

**Figure 2-10: Equation for Surface Coordinate System Transformations**

$$P_{\text{Surface}} = P_{\text{Page}} \times \text{CTM}_{\text{Page}} + [\text{SurfaceContentsBox}_{\text{xlowerleft}} \text{ SurfaceContentsBox}_{\text{ylowerleft}} \ 0]$$

Please note, that the width and height of the surface NEED NOT be known at this point.

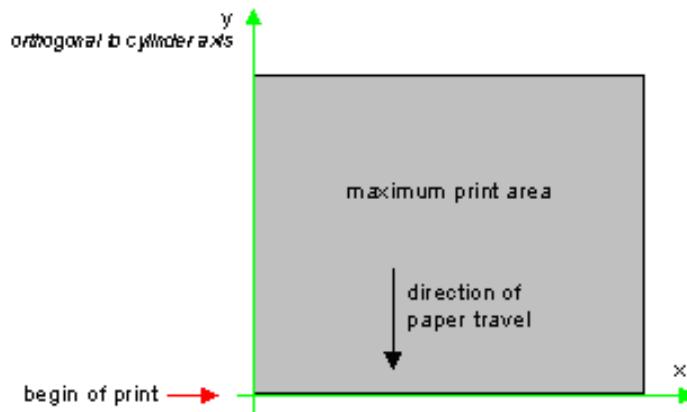
**Figure 2-11: Surface coordinate system**

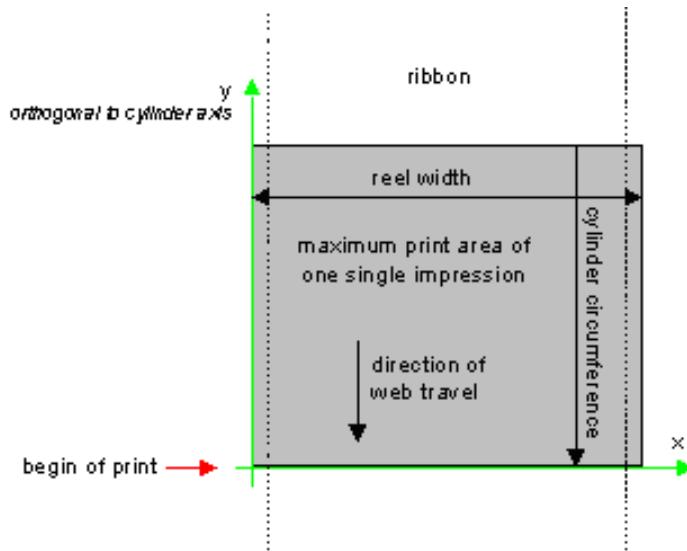
The Sheet coordinate system is identical with the coordinate system of the front surface. This means that no transformation is needed to convert a coordinate from one system to the other. Instead, the coordinates are valid (and equal) in both coordinate systems. The relation between the coordinate system of the front and the back surfaces depends on the value of the **Layout/@LockOrigins** attribute. The Sheet coordinate system is also identical with the Signature coordinate system, which in turn is identical with the coordinate system of the **Imposition** Process.

The Output Resource of the **Imposition** Process is a run list. Each Element of the run list has its own coordinate system, which is identical with the corresponding Signature coordinate system. The interpretation, rendering and screening Processes do not affect the coordinate systems. This means that the coordinate systems of all these Processes are identical.

At the **ImageSetting** process, the digital data is set onto film. The process coordinate system is defined by the **Media** input resource. The width and height of the media are defined in the **Media/@Dimension** attribute. The position of the Signatures (as defined by the **RunList** input resource) on the film is defined by the **ImageSetterParams/@CenterAcross** attribute.

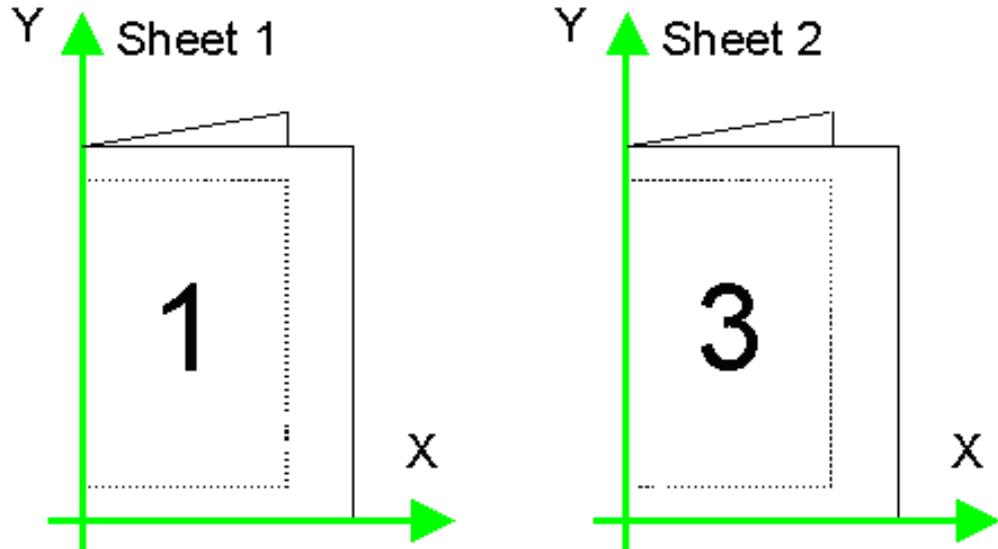
The coordinate system of the conventional and digital printing processes is called *press coordinate system*. It is defined by the press: the X-axis is parallel to the press cylinder, and the Y-axis is going along the paper travel. Y = 0 is at begin of print, X = 0 is at the left edge of the maximum print area. The front side of the press sheet faces up towards the positive Z-axis. The relationship between the layout coordinate system and the press coordinate system is defined by the **@CTM** attributes of the corresponding **TransferCurveSet TransferCurve** elements located in the **TransferCurvePool**.

**Figure 2-12: Press coordinate system used for Sheet-Fed Printing**

**Figure 2-13: Press coordinate system used for Web Printing**

The output of the printing process (e.g., a pile of printed sheets) is described as a **Component** resource in **JDF XJDF**. The coordinate system of the printed sheets is defined by the transformation given in the **TransferCurveSet****TransferCurve**/@CTM attribute (where **@NamePart/@TransferCurveName** = "Paper").

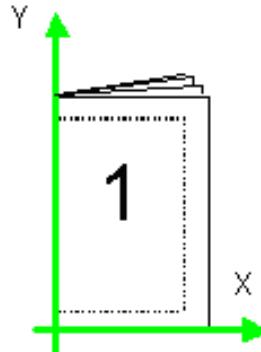
Each of the two sheets is folded in a separate **Folding** process. In this example, the orientation of the sheets is not changed before folding. This can be specified by setting the **@Orientation** attribute of the **Component** input resource to "*Rotate0*" or by setting the **@Transformation** attribute to "*1 0 0 1 0 0*". The **Folding** process changes the coordinate system. In this example the origin of the coordinate system is moved from the lower left corner of the flat sheet (input) to the lower left corner of the folded sheet (output) (i.e., it is moved to the right by half of the sheet width).

**Figure 2-14: Coordinate systems after Folding (product example)**

The two folded sheets are now collected. In this example, the orientation of the folded sheets is not changed before collecting. This can be specified by setting the **@Orientation** attribute of the **Component** input resource to

"*Rotate0*" or by setting the *@Transformation* attribute to " $1 \ 0 \ 0 \ 1 \ 0 \ 0$ ". The **Collecting** process does not change the coordinate system.

**Figure 2-15: Coordinate systems after Collecting (product example)**



The two collected and folded sheets are now trimmed to the final size of the simple brochure. In this example, the orientation of the collected and folded sheets is not changed before trimming. This can be specified by setting the *@Orientation* attribute of the **Component** input resource to "*Rotate0*" or by setting the *@Transformation* attribute to " $1 \ 0 \ 0 \ 1 \ 0 \ 0$ ". The **Trimming** process changes the coordinate system: the origin is moved to the lower left corner of the trimmed product.

In looking at the whole production process, a series of coordinate systems is being involved. The relationship between the separate coordinate systems is specified by transformation matrices. This allows transformation of a coordinate from one coordinate system to another coordinate system. As an example, note the position of the title on page 1 of the product example in Figure 2-15. By applying the first transformation, this position can be converted into a position of the surface (or layout) coordinate system. This position can then be converted into the paper coordinate system by applying (in this order) the *"Film"*, *"Plate"*, *"Press"* and *"Paper"* transformations stored in the **TransferCurvePoolTransferCurve** Elements.

From now on in the workflow, every process is using one or more **Component** resources as input and output resources. The **ResourceLink Resource** of each input and output **Component** contains a *@Transformation* attribute or an *@Orientation* attribute. The *@Transformation* attribute SHALL be used if the width and the height of the **Component** are known or a non-orthogonal rotation is needed. Otherwise the *@Orientation* attribute SHOULD be used to specify a change of the orientation (e.g., an orthogonal rotation).

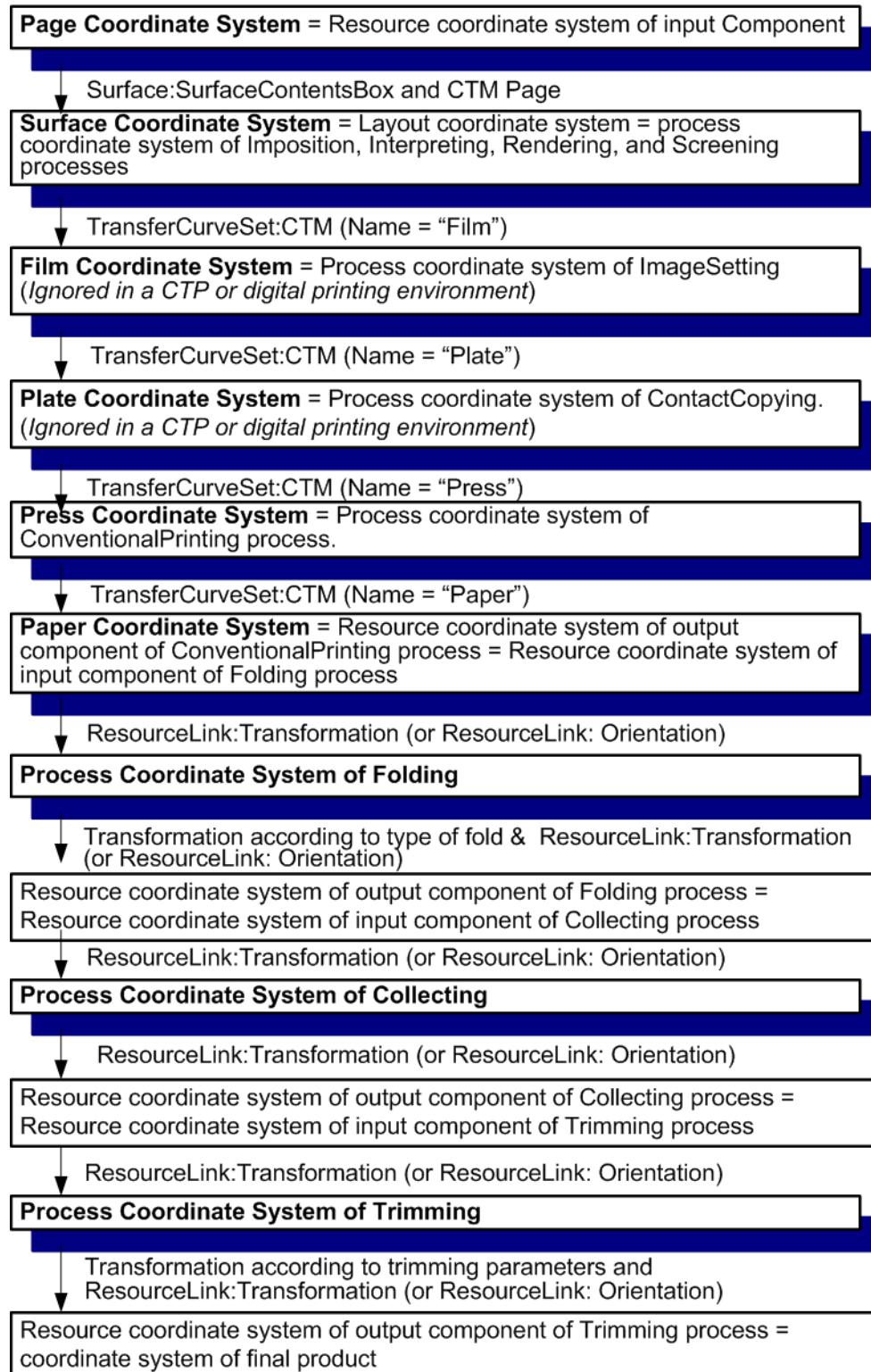
Since the **Folding** process changes the coordinate system depending on the fold type, the transformations specified in the **ResourceLink Resource** elements are not sufficient to transform a position given in the paper coordinate system to a position in the coordinate system of the folded sheets (i.e., the resource coordinate system of the output component of the **Folding** process). An additional transformation depending on the fold type and details of the individual folds has to be applied. The corresponding transformation matrix is not explicitly specified in the **JDF XJDF** file.

The **Collecting** process does not change the coordinate system. Therefore, only the transformations specified in the **ResourceLink Resource** elements of the **Component** input and output resources (i.e., components have to be applied).

The **Trimming** process again changes the coordinate system depending on the trimming parameters. Therefore, a transformation depending on the trimming parameters has to be applied in addition to the transformations specified in the **ResourceLink Resource** elements. The matrix for the additional transformation (depending on the trimming parameters) is not explicitly specified in the **JDF XJDF** file.

After having applied all transformations mentioned above, the resulting coordinate specifies the position of the title in the coordinate system of the final product.

Figure 2-16: Examples of Transformations and Coordinate Systems in **JDF XJDF**.



## 2.5.5 General Rules

The following rules summarize the use of coordinate systems in **JDF XJDF**.

- Every individual piece of material (film, plate, paper) has a *resource coordinate system*.
- Every process has a *process coordinate system*.
- Terms like *top*, *left*, etc., are used with respect to the *process coordinate system* in which they are used and are independent of orientation (i.e., *landscape* or *portrait*), and the human reading direction.
- The coordinate system of each input component is mapped to the process coordinate system.
- The coordinate system might change during processing (e.g., in **Folding**).
- The description of a product in **JDF XJDF** is independent of the particular **Machine** used to produce this product. When creating setup information for an individual **Machine**, it might be necessary to compensate for certain **Machine** characteristics. At printing, for example, it might be necessary to rotate a landscape **Job** because the printing width of the press is not large enough to run the **Job** without rotation.

## 2.5.6 Homogeneous Coordinates

A convenient way to calculate coordinate transformations in a two-dimensional space is by using so-called homogeneous coordinates. With this concept, a two-dimensional coordinate  $P=(x,y)$  is expressed in vector form as  $[x \ y \ 1]$ . The third element "1" is added to allow the vector being multiplied with a transformation matrix describing scaling, rotation, and translation in one shot. Although this only requires a  $2 \times 3$  matrix (e.g., as it is used in PostScript) in practice  $3 \times 3$  matrices are much more common, because they can be concatenated very easily. Thus, the third column is set to " $0 \ 0 \ 1$ ".

$$\text{Trf} = \begin{bmatrix} a & b & 0 \\ c & d & 0 \\ e & f & 1 \end{bmatrix} \quad \text{would in JDF XJDF be written as } \begin{matrix} a & b & c \\ d & e & f \end{matrix}$$

Some often used transformation matrices are

$$\text{Trf} = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \quad \text{identity transformation}$$

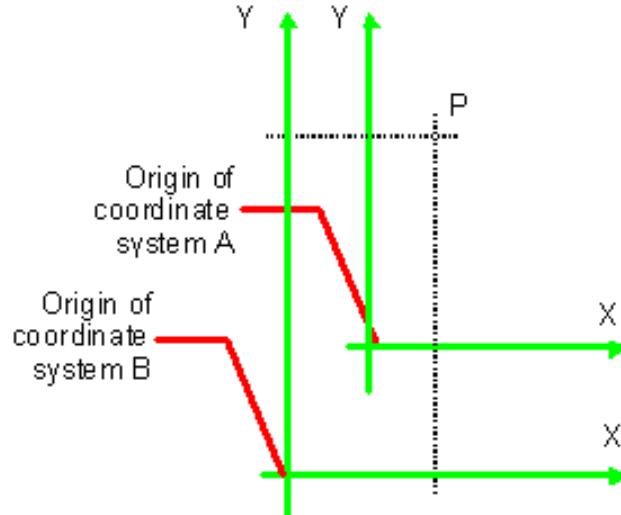
$$\text{Trf} = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ dx & dy & 1 \end{bmatrix} \quad \text{translation by } dx, dy$$

$$\text{Trf} = \begin{bmatrix} \cos \varphi & \sin \varphi & 0 \\ -\sin \varphi & \cos \varphi & 0 \\ 0 & 0 & 1 \end{bmatrix} \quad \text{rotation by } \varphi \text{ degrees counter-clockwise}$$

### Transforming a point

In this example, the position  $P$  given in the coordinate system A is transformed to a position of coordinate system B. The relationship between the two coordinate systems is given by the transformation matrix  $\text{Trf}$

Figure 2-17: Transforming a point (example)



$$P_A = (30, 100)$$

$$P_A = [30 \ 100 \ 1]$$

$$P_B = P_A \times Trf$$

in **JDF XJDF**,  $Trf$  is written as "1 0 0 1 40  
60"

$$P_B = [30 \ 100 \ 1] \times \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 40 & 60 & 1 \end{bmatrix}$$

$$P_B = (70, 160)$$

$$P_B = [70 \ 160 \ 1]$$

# Chapter 3 Structure of XJDF JDF Nodes and Jobs

## Introduction

This chapter describes the structure of JDF Nodes and how they interrelate to form a Job. As described in Section 2.1.1, “Job Components”, a Node is a construct, encoded as an XML element, that describes a particular part of a JDF Job. Each Node represents an aspect of the Job in terms of:

- 1 A Process necessary to produce the end result, such as imposing, printing or binding;
- 2 A product that contributes to the end result, such as a brochure; or
- 3 Some combination of the previous two.

In short, a Node describes a Product Intent or a Process step.

In addition to describing the structure of an individual JDF Node, this chapter examines in what way those Nodes interact to form a coherent Job structure. The visual correlative of this structure resembles a family tree with a single Node describing the entire Job at the top, and a number of Nodes at the bottom that each describes only one specific Process. JDF-supported, leaf-level Processes are described in Chapter 6, “Processes” on page 345.

Resource linking specifies the transformation of Input Resources into Output Resources, which in turn might become inputs of other Nodes. It also allows Nodes to share the same Resource. The combination of hierarchical nesting of Nodes and Resource linking allows complex Process networks to be constructed. In a simple case, however, a JDF instance MAY contain only one Node. The only way that a JDF Node can identify its input and Output Resources is by using ResourceLink Elements.

The hierarchical structure of a JDF Job achieves a functional grouping of Processes. For example, a Job might be split into a prepress Node, a press Node and a finishing Node that contain the respective Process Nodes. Each and every Node in turn contains Attributes that represent various characteristics of that Node. Nodes also contain Subelements of certain types, such as Resources, Process information, customer information, audits, logging information and other JDF Nodes. Some Elements, such as those that deal with customer information, typically occur in the root structure, while other Elements, such as Resources, MAY occur anywhere in the tree. Where the Elements can reside depends on their type and their usage scope.

A single XJDF Node describes the information about a Job or process step that is transferred from a Controller to a Device. The scope of the exchanged information varies depending on the nature of the recipient Device. An XJDF Node that is targeted at an individual Device will typically contain only the details that are required by that Device, along with some optional information about the final product. Multiple work steps belonging to one job that need to be submitted from a Controller to a workflow system that controls multiple Devices SHALL be submitted as multiple XJDF nodes, which MAY be submitted as one or more transactions. See chapter #ref building a system for details of packaging and referencing of the individual nodes.

This chapter describes the Elements, Subelements and Attributes commonly found in JDF Nodes, and provides the characteristics necessary to understand where each belongs and how it is used. Many of these characteristics are presented in tables, and each of these tables includes the following three columns.

- **Name** — Identifies the Element being discussed.
- **Data Type** — Refers to the data type, all of which are described in Section 1.7, “Data Structures”. Only the data types element and text element are applied to Elements. All other types are Attributes.
- **Description** — Provides detail about the Element or Attribute being discussed.

The JDF workflow model is based on a resource/consumer model. JDF Nodes are the consumers that are linked by Input Resources and Output Resources. The ordering of siblings within a Node, however, has no effect on the execution of a Node. All chronological and logical dependencies are specified using ResourceLink Resource Elements, which are defined in Section 3.14, “ResourceLinkPool and ResourceLink” Section 3.10.2, “Resource”.

This section provides details of the XJDF element and its direct child elements.

### 3.1 Modification Notes

This chapter has the most significant modification compared to JDF 1.x. The syntax of Resource partitioning has been completely revised, and the concept of abstract Element types has been replaced by explicit Element definitions. Details are provided in the relevant subsections.

### 3.2 Generic Contents of All Elements

JDF contains a set of generic structures that MAY occur in any Element of a JDF or JMF document. Some of these are provided as containers for human-readable comments and descriptions and are described below. Others define the usage policy for Attributes and Subelements.

**Table 3-1: Any Element (generic content) (Sheet 1 of 2)**

Name	Data Type	Description
<i>BestEffortExceptions</i> ? <a href="#">New in JDF 1.1</a>	NMTOKENS	The names of the Attributes in this Element that are to have the best effort policy applied when <i>@SettingsPolicy</i> is not "BestEffort".
<i>CommentURL</i> ?	URL	URL to an external, human-readable description of the Element. Note that <i>@CommentURL</i> MAY be specified within a <i>Comment</i> .
<i>DescriptiveName</i> ?	string	Human-readable descriptive name of the JDF Element (e.g., a descriptive name of a Resource, Process or Product Intent). It is strongly RECOMMENDED to supply <i>@DescriptiveName</i> in all JDF Nodes, <a href="#">Quantity Resources</a> (for example: <a href="#">Component Resources</a> ) and <a href="#">Handling Resources</a> (for example, <a href="#">ExposedMedia</a> ) for communication from applications to humans in order to reference the Process or Resource.
<i>MustHonorExceptions</i> ? <a href="#">New in JDF 1.1</a>	NMTOKENS	The names of the Attributes in this Element that are to have the "MustHonor" policy applied when <i>@SettingsPolicy</i> is not "MustHonor".
<i>OperatorInterventionExceptions</i> ? <a href="#">New in JDF 1.1</a>	NMTOKENS	The names of the Attributes in this Element that are to have the operator intervention policy applied when <i>@SettingsPolicy</i> is not "OperatorIntervention". If a Device has no operator intervention capabilities, <i>@OperatorIntervention</i> is treated as "MustHonor".

**Table 3-1: Any Element (generic content) (Sheet 2 of 2)**

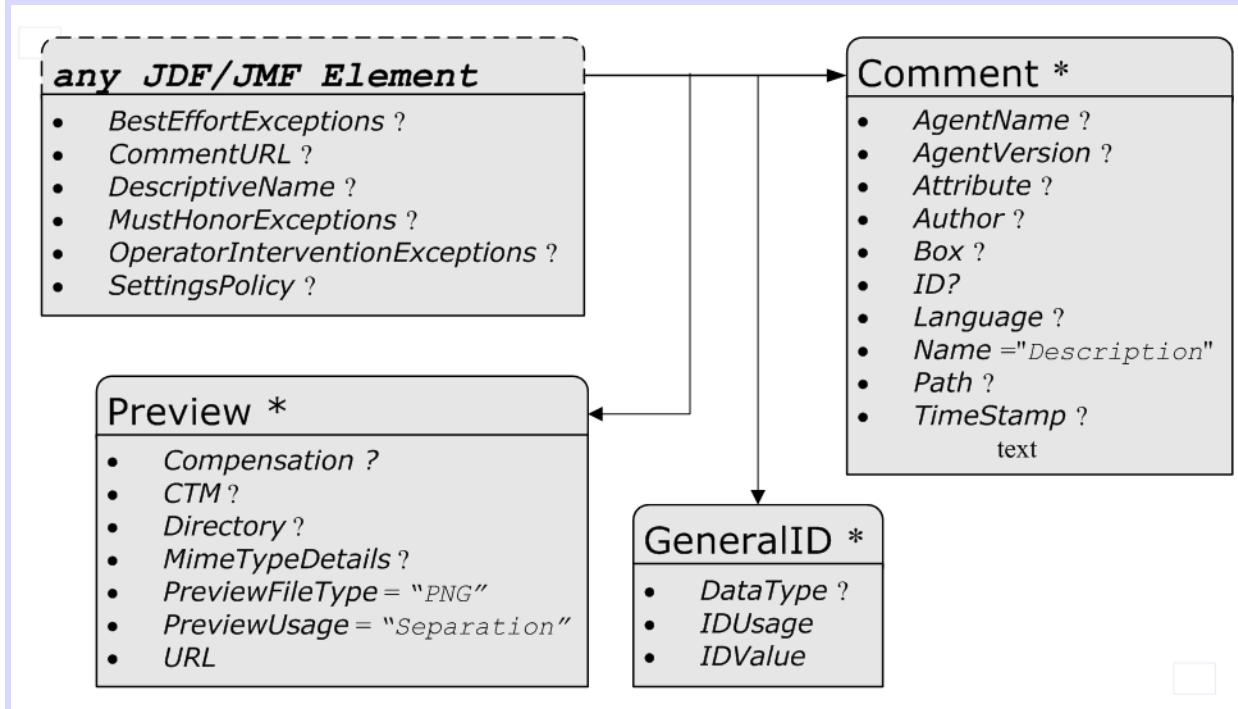
Name	Data Type	Description
<i>SettingsPolicy</i> ? <a href="#">New in JDF 1.2</a>	enumeration	<p>The policy for this Element indicates what happens when unsupported settings (i.e., Subelements, Attributes or Attribute Values) are present in the Element.</p> <p><b>Default value is from:</b> parent's <i>@SettingsPolicy</i>. If not specified in the parent Element or further superior Elements, the default value is "<i>BestEffort</i>".</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>BestEffort</i> – Substitute or ignore unsupported Attributes, Attribute Values, default Attribute Values or Elements, and continue processing the Job.</li> <li><i>MustHonor</i> – Reject the Job when any unsupported Attributes, Attribute Values or Elements are present.</li> <li><i>OperatorIntervention</i> – Pause Job and query the operator when any unsupported Attributes, Attribute Values or Elements are present. If a Device has no operator intervention capabilities, "<i>OperatorIntervention</i>" is treated as "<i>MustHonor</i>".</li> </ul> <p><b>Note:</b> for additional details on <i>@SettingsPolicy</i>, see Section 1.6.3, "Conformance to Settings Policy" on page 19.</p>
Comment *	element	<p>Any human-readable text. The <b>Comment</b> Element is different from an XML comment <code>&lt;!-- XML Comment --&gt;</code>. The <b>XJDF JDF</b> comment is meant for display in a user interface whereas the XML comment is used to add developers comments to the underlying XML.</p> <p>Comments SHALL NOT be nested within <b>Comment</b> Elements.</p>
GeneralID * <a href="#">New in JDF 1.4</a>	element	<p>Additional identifiers related to the Element.</p> <p><b>Creation note:</b> starting with JDF 1.4, <b>GeneralID</b> has been promoted from being only in a Resource to being in any JDF Element,</p>
<b>Preview</b> * <a href="#">New in JDF 1.4</a>	refelementI-DREFS	<p>Provides a <b>Preview</b> Resource for thumbnails or other images. SHALL not provide multiple <b>Preview</b> Resources with the same <b>Preview/@PreviewUsage</b> values</p> <p><b>Creation note:</b> starting with JDF 1.4, <b>Preview</b> has been moved from Table 6-1, "Template for Input Resources".</p>

### 3.2.1 Structure Diagram

Figure 3-1 below shows the structure of the generic content defined above. Figure 3-1 and other similar diagrams describe JDF structure using the following notation.

- Each box represents an Element, with the Element's name in the rounded box at the top and its Attributes if any, listed below. A rounded box with a dashed line represents an Abstract Element
- A solid line connects an Element to its Subelement, where the Subelement is at the arrowhead. The cardinality of the Subelement is specified after its name. Cardinality in the line overrides that in the box.
- A dashed line connects an Element to its Abstract Element, where the superclass Element is at the arrowhead.

Figure 3-1: Any-Element (generic content) – a diagram of its structure



### 3.3 JDF XJDF Node

#### 3.3.1 Modification Notes

Syntax and process model for XJDF have been revised. The concept of test running has been removed. Section 5.8.3, “KnownDevices”) SHOULD be used to query the abilities of a Device.

XJDF Nodes are no longer nested. There is exactly one XJDF Node per XJDF ticket. Multiple XJDF Nodes with different @JobPartId MAY be sent to a controller to specify multiple individual tasks.

Product descriptions are now specified as a ProductList Subelement in the XJDF Node. This allows informative specification of one or more products for any process node without requiring the process to be a descendent of the respective product.

All XJDF Nodes are essentially Gray Boxes that can be processed by a Device. There are no Gray Box expansion requirements in case a Gray Box is processed by lower level Devices.

Resources have been split into two classes. Product Intent Elements are specified within their respective Product elements. All other Resource classes from JDF 1.x have been combined into the ResourceSet/Resource group. All generic Attributes and Elements SHALL be specified in the Product Intent or Resource element, whereas specific Attributes and Elements SHALL be specified in a corresponding Product Intent or Specific Resourcer as specified in Chapter 7, “Product Intents” or Chapter 8, “Resources”, respectively. Partitioning has

been limited syntactically to exactly one level. Zero or more Part Elements specify the part usage, and each Part Element MAY still contain multiple partition attributes. Multiple Part Elements replace the Identical Element.

### 3.3.2 XJDF Node

The top-level Element of a JDF XJDF instance is SHALL be a JDF an XJDF Element. JDF Elements MAY also be nested within other JDF Elements. The individual JDF Elements are referred to as “Nodes” and Nodes, in turn, contain various Attributes and further Subelements, including nested JDF Nodes. See Table 3-4 below for details. XJDF elements MAY be embedded within other XML documents.

XJDF/@Types defines whether an XJDF specifies an end product or a list of processes that SHALL be executed. XJDF Nodes that are created by print buyers typically describe only the desired Product rather than manufacturing process details. XJDF that describe finished products SHALL have a value of XJDF/@Types that contains "Product". If additional process information that is not defined in the ProductList is required, this information SHOULD be provided in ResourceSet Elements.

ProductList MAY be provided in a process XJDF for informational purposes. If the ResourceSet elements contain all required processing instructions then the value of XJDF/@Types SHALL NOT contain "Product".

The following table presents the Attributes and Elements likely to be found in any given JDF Node. Three of the Attributes in Table 3-4, below, SHALL appear in every JDF Node. Although the rest are designated as OPTIONAL, some OPTIONAL Attributes become REQUIRED under circumstances described in the Description column.

The most important of the Attributes is the @Type Attribute, which defines the Node type. The value of the @Type Attribute defines the Product Intent or Process the JDF Node represents. As is detailed in Section 3.5, “Common Node Types”, all Nodes fall into one of the following four general categories: Process, Process Group, Combined Processes and Product Intent. Each Node is identified as belonging to one of these categories by the value of its @Type Attribute, as described in the table below. For example, if @Type = "Product", the Node is a Product Intent Node. Each of these categories is described in greater detail in the sections that follow.

Each Attribute/ Element in Table 3-4 on page 52 has a Scope. The Scope provides further details about the valid range of the Attribute/Element content, how the content is inherited by descendants (children, grandchildren, etc.), and where the Attribute/Element can reside in the JDF tree.

The Scope is specified by the first line of each Description cell in Table 3-4. The first line is always: “Scope and Position is XXX” where the meaning of XXX is defined in Table 3-2.

**Table 3-2: Definition of “XXX”**

XXX	Description
Descendent	The content is valid locally within its Node and in all descendent Nodes, unless a descendent contains an identical Attribute that overrides the content.
Local	The content is only valid locally, within the Node where the content is defined.
Root	The Attribute SHALL be specified only in the Root Node. An exception from the localization only in the Root Node occurs if the spawning and merging mechanism for independent Job tickets is applied as described in Section 4.4, “Spawning and Merging”. All Attributes and Elements listed in subsequent chapters SHOULD be considered local unless otherwise noted.

**Table 3-3: Behavior for Activation Values in Table 3-4 (Sheet 1 of 2)**

Activation	Test Node	Execute Node
Inactive	false	false
Informative	false	false
Held	false	false
Active	false	true

**Table 3-3: Behavior for Activation Values inTable 3-4 (Sheet 2 of 2)**

Activation	Test Node	Execute Node
TestRun	true	false
TestRunAndGo	true	true

**Table 3-4: JDF XJDF Node (Sheet 1 of 7)**

Name	Data Type	Description
<i>Activation</i> ? <small>Modified in JDF 1.1</small>	enumeration	<p><b>Scope and Position is Descendent.</b></p> <p>Describes the activation status of the JDF XJDF Node. Allows for a range of activity, including deactivation and test running.</p> <p>A child Node inherits the value of the <i>@Activation</i> Attribute from its parent. The value of <i>@Activation</i> corresponds to the least active value of <i>@Activation</i> of any ancestor, including itself. Therefore, if any ancestor has an <i>@Activation</i> of "Inactive", the Node itself is "Inactive".</p> <p>If no ancestor is "Inactive" but any ancestor is "Informative", the Node is "Informative" unless the Node itself is "Inactive". If no ancestor is "Informative" but any ancestor is "TestRun", the Node is "TestRun" unless the Node itself is "Informative". If no ancestor has a value of "Inactive" or "TestRun" and any ancestor has a value of "TestRunAndGo", the Node has a value of "TestRunAndGo" unless that Node is "Inactive" or "TestRun" and so on. Table 3-3 on page 51 illustrates the actions to be applied to a Node depending on the value of <i>@Activation</i>.</p> <p>The values are ordered from least to most active</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Inactive</i> – The Node and all its descendants SHALL NOT be executed or tested. This value is set if certain parts of a JDF Job SHALL NOT be executed or tested.</li> <li><i>Informative</i> – The XJDF JDF ticket is for information only. If a Job is "Informative", it SHALL NOT be processed. Jobs with <i>@Activation</i> = "Informative" will generally be sent to an operator console for preview but are still completely under the control of an external Controller. When a JDF an XJDF ticket is supplied to a customer as proof of execution, its <i>@Activation</i> SHOULD also be "Informative". When a new Job ticket with an identical <i>@ID</i> Attribute and a higher <i>@Activation</i> is submitted to a Device, that XJDF JDF Job ticket SHALL replace the XJDF JDF Job ticket that was submitted to the Device with an <i>@Activation</i> of "Informative".</li> <li><i>Held</i> – Execution has been held. If a Job is "Held", it SHALL NOT be processed until its <i>@Activation</i> is changed to "Active".</li> <li><i>TestRun</i> – The Node requests a test run check by a Controller or a Device. This does not imply that the Node is to be automatically executed when the check is completed. Descendents of a Node that is being test run are not to be considered "Active".</li> <li><i>TestRunAndGo</i> – Similar to "TestRun", but requests a subsequent automatic start if the test run has been completed successfully.</li> <li><i>Active</i> – The default value if not specified in a parent Node – The Node SHALL be executed according to the steps specified in Section 4.2.1, "Determining Executable Nodes" on page 178.</li> </ul>

**Table 3-4: JDF XJDF Node (Sheet 2 of 7)**

Name	Data Type	Description
<i>Category</i> ?	NMTOKEN  <a href="#">New in JDF 1.2</a> <a href="#">Modified in JDF 1.4</a>	<p>Scope and Position is Local.</p> <p><i>@Category</i> specifies the named Named category of this XJDF Node. Controllers SHOULD specify <i>@Category</i> for processes that have many optional values in <i>@Types</i>. Used when <i>@Type</i> = "Combined" or <i>@Type</i> = "ProcessGroup" to identify the general Node category. This allows Processors to identify the general purpose of a Node without parsing the <i>@Types</i> field. For instance, a RIP for final output and RIP for proof Process have identical <i>@Types</i> Attribute Values, but have <i>@Category</i> = "ProofRIPing" or <i>@Category</i> = "RIPing", respectively.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Binding</i> – Binding of a bound product.</li> <li><i>Cutting</i> – Specifies cutting of a Component. <a href="#">New in JDF 1.3</a></li> <li><i>DigitalPrinting</i> – A RIP and print run on a digital printer that produces final output.</li> <li><i>FinalImaging</i> – A RIP and image that produces final output that is ready for further processing (e.g., film or plates).</li> <li><i>FinalRIPing</i> – RIP Process for generating final output.</li> <li><i>Folding</i> – Folding of a product.</li> <li><i>Newsprinting</i> – A press run on a newsprinting Web Press. <a href="#">New in JDF 1.4</a></li> <li><i>PostPress</i> – General postpress. Includes "Folding" and "Binding".</li> <li><i>PrePress</i> – General prepress.</li> <li><i>Printing</i> – A press run that produces final output.</li> <li><i>ProofImaging</i> – A RIP that produces proof output.</li> <li><i>ProofRIPing</i> – RIP Process for generating a proof. The Processes are identical to those in specified for "FinalRIPing".</li> <li><i>PublishingPreparation</i> – Preparing an issue of a newspaper or magazine to be published. <a href="#">New in JDF 1.3</a></li> <li><i>RIPing</i> – General RIP Gray Box. For details, see <a href="#">Section 6.4.33, "RIPing"</a> <a href="#">Section 6.4.20.1, "RIPing"</a>. <a href="#">New in JDF 1.3</a></li> <li><i>WebPrinting</i> – A press run on a Web Press can produce one or more components as output at the same time. A Web Printing press might be equipped with Prepress and Postpress equipment.</li> <li><i>WebToPrint</i> – A Product description that describes a product order in a web shop.</li> </ul> <p><b>Note:</b> the value MAY also be the name of a Gray Box defined by an ICS document or JDF XJDF spec. See the ICS documents for the exact names.</p>
<i>CommentURL</i> ?	URL	URL SHALL refer to an external, human-readable description of this XJDF.
<i>DescriptiveName</i> ?	string	Human-readable descriptive name of this XJDF. <i>@DescriptiveName</i> SHOULD be provided for communication from applications to humans in order to reference the XJDF.

**Table 3-4: JDF XJDF Node (Sheet 3 of 7)**

Name	Data Type	Description
<i>ICSVersions</i> ? <a href="#">New in JDF 1.2</a>	NMTOKENS	<p>Scope and Position is Descendent.</p> <p>@<i>ICSVersions</i> SHALL list all CIP4 Interoperability Conformance Specification (ICS) Versions that this <b>XJDF JDF Node</b> complies with.</p> <p><b>Value format is:</b> &lt;ICSName&gt;_L&lt;ICSLevel&gt;-&lt;ICSVersion&gt;.</p> <p><b>Example:</b> MISPRE_L1-1.3-2.0 for the MIS to Prepress ICS. If there is a revision to that ICS: "MISPRE_L1-1.3.1". See Section 11.9, "Interoperability Conformance Specifications" on page 1108 for more information on ICS documents.</p>
<i>ID</i> ?	ID	<p>Scope and Position is Local.</p> <p>Unique identifier of a JDF Node. This ID is used to refer to the <b>JDF Node</b>.</p> <p>Note: @ID is optional because no IDREFS ever refer to XJDF. Instead, it is referenced from outside by @JobID and @JobPartID.</p>
<i>JobID</i> ?	stringNMTO-KEN	<p>Scope and Position is Descendent.</p> <p>Job identification used by the application that created the <b>JDF XJDF Job</b>. Typically, a Job is identified by the internal order number of the MIS system that created the Job.</p>
<i>JobPartID</i> ?	stringNMTO-KEN	<p>Scope and Position is Descendent.</p> <p>@<i>JobPartID</i> SHALL identify one or more worksteps of the same type that can be described as one <b>XJDF</b>. @<i>JobPartID</i> is internal to the MIS system that created the <b>XJDF</b>. Identification of a JDF Node within a Job, used by the application that created the Job. Typically, @<i>JobPartID</i> is internal to the MIS system that created the Job and specifies a Process or set of Processes. Note that a product that is produced by a Process or set of Processes is identified by Resource/@<i>ProductID</i> and not by @<i>JobPartID</i>.</p>
<i>MaxVersion</i> ? <a href="#">New in JDF 1.2</a>	JDFJMFVersion	<p>Scope and Position is Descendent.</p> <p>Maximum JDF version to be written by an Agent that modifies this Node. If not specified, an Agent that processes the Node MAY write any version it is capable of writing. See Section 3.19, "JDF Versioning" for a discussion of versioning in JDF.</p>
<i>NamedFeatures</i> ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	NMTOKENS	<p>Scope and Position is Local.</p> <p>@<i>NamedFeatures</i> represents an implementation dependent set of parameters for setting up a Device that a Device SHALL apply to the <b>XJDF JDF ticket</b>. It is formatted as an ordered list of name value pairs with an even number of entries. The @<i>NamedFeatures</i> names supported by the Device MAY be specified in <b>DeviceCap</b> Elements. See Section 9.1.1, "DeviceCap" on page 949. @<i>NamedFeatures</i> SHALL be placed only in Combined Nodes, Process Group Nodes or Product Intent Nodes . For Process Group Nodes, the @<i>Types</i> Attribute is typically supplied. See Section 3.5.3.1, "Use of NamedFeature in Product and Process Group Nodes" on page 67 for details.</p> <p><b>Deprecation note:</b> starting with JDF 1.5, use <b>JDF/GeneralID[@DateType = "NamedFeature"]</b>.</p>

**Table 3-4: JDF XJDF Node (Sheet 4 of 7)**

Name	Data Type	Description
<i>ProjectID</i> ? <a href="#">New in JDF 1.1</a>	stringNMTO-KEN	<b>Scope and Position is Descendent.</b> Identification of the project context that this XJDF JDF belongs to. Used by the MIS to group a set of JDF XJDF Jobs.
<i>RelatedJobID</i> ? <a href="#">New in JDF 1.2</a>	stringNMTO-KEN	<b>Scope and Position is Descendent.</b> Job identification of a related Job. Used to identify the <i>@JobID</i> of a previous run of this Job or Job with very similar settings. It MAY be used to retrieve additional Job and Device specific settings from a data store.
<i>RelatedJobPartID</i> ? <a href="#">New in JDF 1.2</a>	stringNMTO-KEN	<b>Scope and Position is Descendent.</b> Job identification of a related Job Part. Used to identify the <i>@JobPartID</i> of a previous run of this Job or Job with very similar settings. It MAY be used to retrieve additional Job and Device specific settings from a data store.
<i>SpawnID</i> ? <a href="#">New in JDF 1.1</a>	NMTOKEN	<b>Scope and Position is Descendent.</b> Identification of a spawned part of a Job. Typically this is used to map Audit Elements and JMF Messages to a spawned processing step in the workflow. For details on Job spawning, see Section 4.4, “Spawning and Merging” on page 189.
<i>Status</i> <a href="#">Modified in JDF 1.3</a>	enumeration	<b>Scope and Position is Local.</b> Identifies the status of the Node. Derivation of the <i>@Status</i> of a parent Node from the <i>@Status</i> of child Nodes is non-trivial and implementation-dependent. <b>Allowed values are from:</b> Table 8-203, “NodeStatus Attribute Values” on page 808.
<i>StatusDetails</i> ? <a href="#">New in JDF 1.2</a>	string	<b>Scope and Position is Local.</b> Description of the status phase that provides details beyond the enumerative values given by the <i>@Status</i> Attribute. <b>Values include those from:</b> Section C.1, “StatusDetails Supported Strings” on page 1133.
<i>Template</i> ?= "false" <a href="#">New in JDF 1.1</a>	boolean	<b>Scope and Position is Root.</b> Indicates that this JDF Node (or instance) is a template that is used to generate XJDF JDF Elements but SHALL NOT be exchanged as a Job definition. A Device SHALL reject a Job ticket that contains <i>@Template</i> = "true".
<i>TemplateID</i> ? <a href="#">New in JDF 1.2</a>	string	<b>Scope and Position is Descendent.</b> Name or ID that identifies a XJDF JDF template. Can be used to differentiate between various templates. If <i>@Template</i> = "false", <i>@TemplateID</i> identifies the template that was used to generate this XJDF JDF.
<i>TemplateVersion</i> ? <a href="#">New in JDF 1.2</a>	string	<b>Scope and Position is Descendent.</b> Provides the version of the XJDF JDF template. Can be used to differentiate between various template versions. If <i>@Template</i> = "false", <i>@TemplateVersion</i> identifies the version of the template that was used to generate this XJDF JDF.

**Table 3-4: JDF XJDF Node (Sheet 5 of 7)**

Name	Data Type	Description
Type	NMTOKEN	<p><b>Scope and Position is Local.</b></p> <p>Identifies the type of the Node. Any <b>JDF XJDF</b> Process name is a valid type. The Processes that have been predefined are listed in Chapter 6, “Processes” on page 345, although the flexibility of <b>JDF XJDF</b> allows anyone to create Processes.</p> <p>In addition to these, there are three values which are described in greater detail in the sections that follow.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Combined</i></li> <li><i>ProcessGroup</i></li> <li><i>Product</i> – Identifies a Product Intent Node.</li> </ul> <p><b>Values include those from:</b> Chapter 6, “Processes” on page 345.</p>
Types ? <a href="#">Modified in JDF 1.2</a>	NMTOKENS	<p><b>Scope and Position is Local.</b></p> <p>List of the <i>@Type</i> Attributes of the Nodes that are combined to create this Node. This Attribute is REQUIRED if <i>@Type</i> = "Combined", OPTIONAL when <i>@Type</i> = "ProcessGroup", and is ignored if <i>@Type</i> equals any other value. For details on using Combined Process Nodes, see Section 3.5.4, “Combined Process Nodes”. A list of one or more process names that are specified within this XJDF Document. For details on using Process Nodes, see Section 3.5.3, “Process Nodes”. A value of <i>@Types</i> that contains "Product" specifies that the products that are described shall be produced without complete knowledge of the production workflow. Additional process specifics MAY be supplied in a ticket that contains "Product". If the <i>@Types</i> Attribute is specified, that JDF Node SHALL NOT contain child JDF Nodes. For details on using Process Group Nodes, see Section 3.5.2, “Process Group Nodes”.</p> <p>If <i>@Type</i> = "ProcessGroup", the tokens MAY also be the name of a Gray Box that needs expansion. See <i>@Category</i> for more details.</p> <p><b>Values include those from:</b> Chapter 6, “Processes” on page 345.</p>
Version ? <a href="#">Modified in JDF 1.2</a>	JDFJMFileVersion	<p><b>Scope and Position is Root and Descendent.</b></p> <p>Text that identifies the version of the JDF Node. The <i>@Version</i> Attribute is REQUIRED in the JDF Root Node but OPTIONAL in child Nodes. The version of a JDF Node is defined by the highest version of the JDF Node itself or any child JDF Node or Element or any directly or indirectly linked Resources. For details on JDF versioning see Section 3.19, “JDF Versioning” on page 171.</p>
xmlns ? <a href="#">New in JDF 1.1</a>	URI	<p><b>Scope and Position is Root and Descendent.</b></p> <p><b>JDF XJDF</b> supports use of XML namespaces. The namespace SHALL be declared in the root JDF Element. For details on using namespaces in XML, see [XMLNS]. For versions 1.1 through 1.5 2.0 of <b>JDF XJDF</b>, <i>@xmlns</i> = "http://www.CIP4.org/JDFSchema_1_1_2_0".</p>

**Table 3-4: JDF XJDF Node (Sheet 6 of 7)**

Name	Data Type	Description
<a href="#"><i>xsi:type ?</i></a> <a href="#">New in JDF 1.2</a>	NMTOKEN	<b>Scope and Position is Local.</b> Informs schema aware validators of the JDF Node type definition that the containing Node is to be validated against. The schema for this version includes definitions for all the JDF Nodes defined in Section 6. If omitted, then a general definition for JDF Nodes will be used. See Section 3.3, “JDF XJDF Node” on page 50.
AncestorPool ?	element	<b>Scope and Position is Root.</b> If this Element is present, the current JDF Node has been spawned, and this Element contains a list of all Ancestor Elements prior to spawning. See Section 3.6, “AncestorPool”.
AuditPool ?	element	<b>Scope and Position is Local.</b> List of Elements that contains all relevant audit information. Audit Elements are intended to serve the requirements of MIS for evaluation and post calculation. See Section 3.16, “AuditPool and Audit”.
Comment *	element	Any human-readable text. The Comment Element is different from an XML comment <code>&lt;!-- XML Comment --&gt;</code> . The XJDF JDF comment is meant for display in a user interface whereas the XML comment is used to add developers comments to the underlying XML.
<b>CustomerInfo ?</b> <a href="#">Deprecated in JDF 1.3</a>	element	<b>Scope and Position is Descendent.</b> Container Element for customer-specific information. See Section 3.7, “CustomerInfo”. In JDF 1.3 and beyond, CustomerInfo is a Resource that is referenced through a CustomerInfoLink in the ResourceLinkPool.
GeneralID *	element	Additional identifiers related to the XJDF JDF.
JDF *	element	<b>Scope and Position is Local.</b> Child JDF Nodes. The nesting of JDF Nodes defines the XJDF JDF tree.
<b>NodeInfo ?</b> <a href="#">Deprecated in JDF 1.3</a>	element	<b>Scope and Position is Local.</b> Container Element for Process-specific information such as scheduling and messaging setup. Scheduling affects the planned times when a Node is to be executed. Actual times are saved in the AuditPool. See Section 3.16, “AuditPool and Audit”. In JDF 1.3 and beyond, NodeInfo is a Resource that is referenced through a NodeInfoLink in the ResourceLinkPool.
ResourceLinkPool ?	element	<b>Scope and Position is Local.</b> Container Element for ResourceLink Elements, which describe the input and Output Resources of the Node. See Section 3.14, “ResourceLinkPool and ResourceLink”.
ResourcePool ?	element	<b>Scope and Position is Local.</b> Container Element for Resources. See Section 3.10, “ResourcePool and its Resource Children”. <b>Note:</b> Resources are local in a ResourcePool but MAY be referenced from ResourceLink Elements in descendent Nodes. For details see Section 3.14, “ResourceLinkPool and ResourceLink” on page 97.

**Table 3-4: JDF XJDF Node (Sheet 7 of 7)**

Name	Data Type	Description
StatusPool ? <a href="#">Deprecated in JDF 1.3</a>	element	Scope and Position is Local. Container for PartStatus Elements that specify the details of a Node's Partition dependent @Status related Attributes if the @Status of the Node is "Pool". <b>Deprecation note:</b> starting with JDF 1.3, StatusPool/PartStatus/ @Status is replaced by NodeInfo/@NodeStatus in the respective Partition of NodeInfo.
ProductList ?	element	Bill of materials - description of the product, or products that this XJDF produces.
ResourceSet *	element	Container Elements for Resource Elements.

### 3.3.3 Structure Diagram of XJDF JDF Node

Figure 3-2 Figure 3-3 shows the structure of the XJDF JDF Node. Arrows point to child elements.

Figure 3-2: JDF Node – a Diagram of its Structure

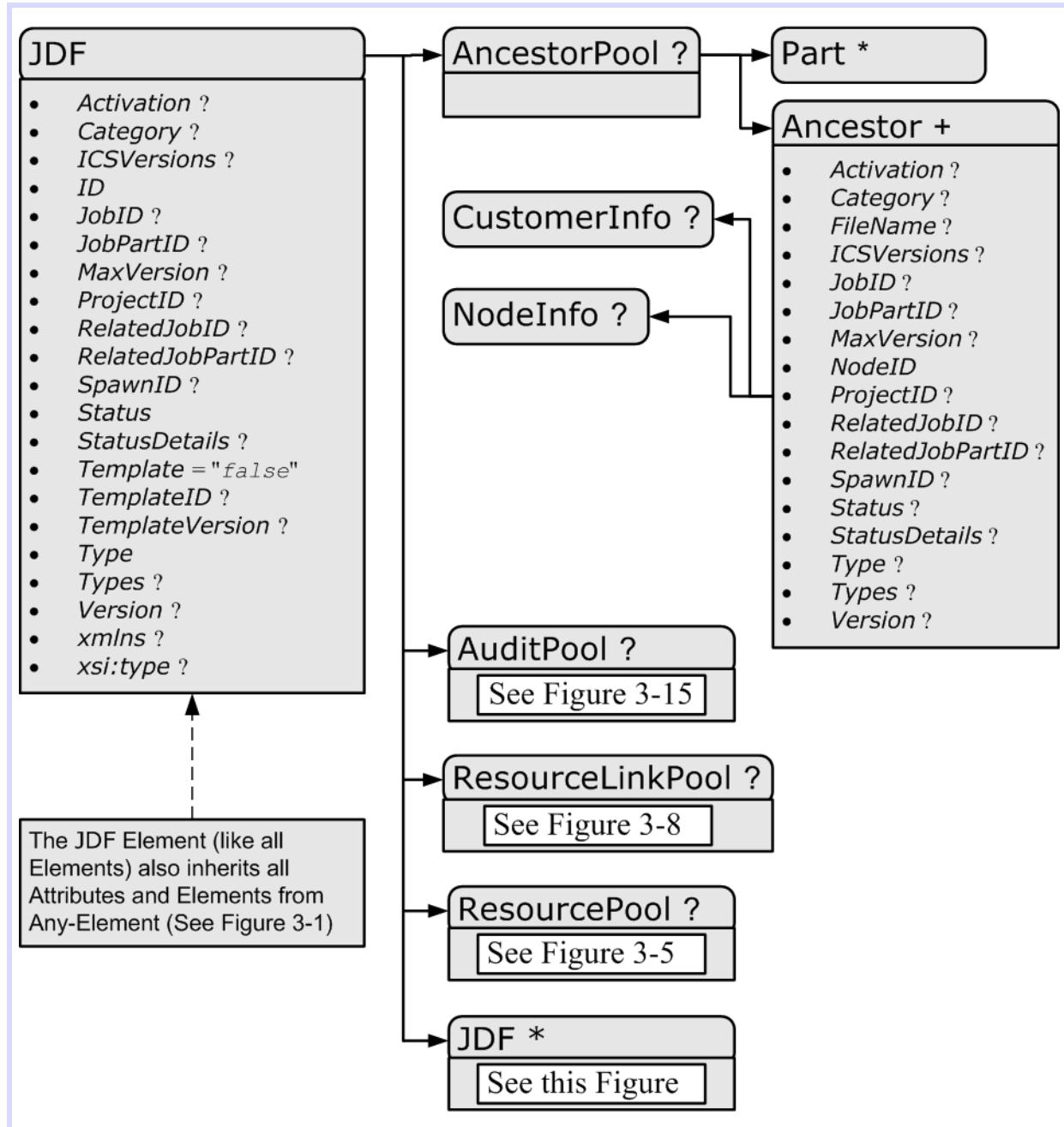
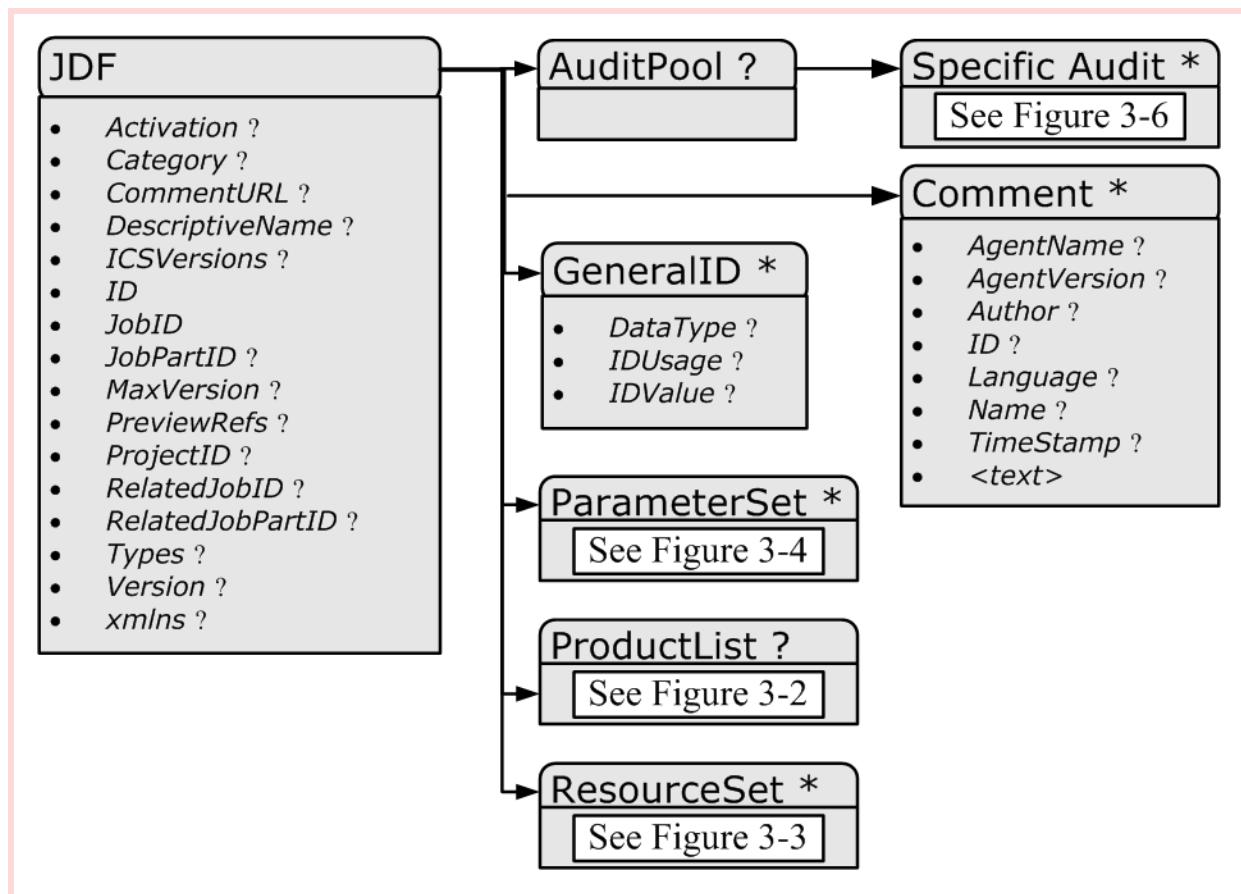


Figure 3-3: XJDF Node – a Diagram of its Structure



## 3.4 Common Elements

### 3.4.1 Element: Comment

Table 3-5: Comment Element (Sheet 1 of 4)

Name	Data Type	Description
AgentName ? <small>New in JDF 1.3</small>	string	The name of the <a href="#">Agent</a> application that created the <a href="#">Comment</a> . Both the company name and the product name MAY appear, and SHOULD be consistent between versions of the application.
AgentVersion ? <small>New in JDF 1.3</small>	string	The version of the <a href="#">Agent</a> application that created the <a href="#">Comment</a> . The format of the version string MAY vary from one application to another, but SHOULD be consistent for an individual application.

**Table 3-5: Comment Element (Sheet 2 of 4)**

Name	Data Type	Description
<i>Attribute ?</i> <a href="#">New in JDF 1.1</a>	NMTOKEN	<p>Name of the Attribute in the parent Element of the <b>Comment</b> Element that this <b>Comment</b> refers to. <i>@Attribute</i> SHOULD include the namespace prefix if the Attribute is in a non-JDF namespace. If omitted, the <b>Comment</b> refers to the entire parent Element. <i>@Attribute</i> MAY be used to provide instructions for setting an Attribute or to provide additional human readable information. For instance the name for <b>Media/@Dimensions</b> or the name <b>Media/@Weight</b> MAY be localized.</p> <p><b>Note:</b> <i>@Attribute</i> MAY be specified for Attributes of the parent that are not explicitly set in that Element. This allows human readable descriptions of Attribute settings during the setup of a Job.</p>
<i>Author ?</i> <a href="#">New in JDF 1.3</a>	string	<p>Text that identifies the person who created the <b>Comment</b>. When the <b>Comment</b> is created by a person with a known <b>Employee / @PersonalID</b><b>Contact / @UserID</b>, this <i>@Author</i> SHOULD contain the value of <b>Employee /@PersonalID</b><b>Contact /@UserID</b>.</p>
<i>Box ?</i>	rectangle	The rectangle that is associated with the comment. The coordinate system of the rectangle is the same as the coordinate system defined in the <i>@Path</i> Attribute.
<i>ID ?</i> <i>ExternalID ?</i> <a href="#">New in JDF 1.3</a>	IDNMTOKEN	Identification that is used to reference the <b>Comment</b> .
<i>Language ?</i>	language	Human readable language of the <b>Comment</b> .

Table 3-5: Comment Element (Sheet 3 of 4)

Name	Data Type	Description
<a href="#"><u>Type ?Name = "Description"</u></a> <a href="#"><u>Modified in JDF 1.4</u></a>	NMTOKEN	<p><b>@Type</b> specifies the usage of a comment.</p> <p>A name that defines the usage of a comment. For example, it could determine whether two comments are intended to fill two distinct fields of a user interface.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Description</i> – Human readable description, which is REQUIRED if the Comment Element is REQUIRED in a given context, as is the case in the Notification Element (see Table 3-44, “Notification Audit Element” on page 154).</li> <li><i>DeviceText</i> – Human readable description created by the Device that provides details beyond the value of <b>@StatusDetails</b>. The <b>"DeviceText"</b> value SHOULD only be specified in <b>Notification/Comment/@Name</b>. <a href="#"><u>New in JDF 1.4</u></a></li> <li><i>Instruction</i> – Message to the operator that contains information regarding the processing of the Job. The <b>"Instruction"</b> value SHOULD only be specified in <b>XJDF/Comment/@Name</b>. <a href="#"><u>New in JDF 1.2</u></a></li> <li><i>JobDescription</i> – Description of the Job. The <b>"JobDescription"</b> value SHOULD only be specified in <b>XJDF/Comment/@Name</b>. A Comment Element that contains <b>@Name = "JobDescription"</b> SHALL be specified only in a JDF Node or <b>CustomerInfo</b> Resource. See also <b>CustomerInfo/@CustomerJobName</b> in Section 8.35, “CustomerInfo”. <a href="#"><u>New in JDF 1.2</u></a></li> <li><i>OperatorText</i> – Message from the operator that contains information regarding the processing of the Job. The <b>"OperatorText"</b> value SHOULD only be specified in <b>Notification/Comment/@Name</b>. <a href="#"><u>New in JDF 1.2</u></a></li> <li><i>Orientation</i> – Description of the orientation of a <b>PhysicalResource</b> <b>Resource</b>. The <b>"Orientation"</b> value SHOULD only be specified in <b>Resource/Comment/@Name</b> or <b>ResourceSet/Comment/@Name</b>.</li> <li><i>TemplateDescription</i> – Description of the Job ticket template. A Comment Element that contains <b>@Name = "TemplateDescription"</b> SHALL be specified only in the root JDF Node. <a href="#"><u>New in JDF 1.2</u></a></li> <li><i>UserText</i> – Message to a user that contains information regarding the processing of the Job <a href="#"><u>New in JDF 1.2</u></a></li> </ul>
<b>Path ?</b>	PDFPath	<p>Description of the area that the comment is associated with in the coordinate system of the Element where the path resides. In the case of <b>PhysicalResources</b>, <b>Layout</b> Resources and Resources that are related to <b>Layout</b>, <b>@Path</b> is defined within the coordinate system of the Resource in which it resides. For example, if the comment is inserted in an <b>ExposedMedia</b> Resource that describes a plate, the path refers to the plate coordinate system. In all other cases, it is defined in the process coordinate system of the JDF Node that contains the Element that the Comment Element containing <b>@Path</b> is defined in.</p> <p>Note that there are cases where a coordinate system is not available and therefore defining <b>@Path</b> is NOT RECOMMENDED (e.g., <b>CustomerInfo</b>).</p>
<b>PersonalID ?</b>	NMTOKEN	Identifier of the employee that entered the comment.

**Table 3-5: Comment Element (Sheet 4 of 4)**

Name	Data Type	Description
<a href="#">TimeStamp ?</a> <a href="#">New in JDF 1.3</a>	dateTime	Describes the date and time when the Comment was created.
	text	Body of the comment. Note that whitespace is preserved only as generic whitespace in XML. Applications that display comments to the user SHOULD maintain whitespace. Thus carriage returns, line feeds or indentation MAY be lost.

**3.4.2 Element: GeneralID**[New in JDF 1.3](#)[Modified in JDF 1.4](#)

**Modification note:** starting with JDF 1.4, GeneralID becomes an Element, and is no longer a Resource. GeneralID becomes a child of any Element. See Table 3-1, “Any Element (generic content)” on page 48.

GeneralID describes a generic **variable identifier**. The name or usage of the **variable identifier** is specified in GeneralID/@**IDUsage** and the specific value of the variable is specified in GeneralID/@**IDValue**. The data type is specified in GeneralID/@**DataType**.

Although GeneralID could technically be used to describe arbitrary proprietary data, this is strongly discouraged as it is non interoperable. Proprietary extensions SHOULD be avoided if possible, or if absolutely required, they MAY be implemented in proprietary namespaces.

**Table 3-6: GeneralID Element**

Name	Data Type	Description
<a href="#">DataType ?</a> <a href="#">New in JDF 1.4</a> <a href="#">Modified in JDF 1.5</a>	enumeration	<p>Data type of the variable.  <b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>string</i></li> <li><i>integer</i></li> <li><i>double</i></li> <li><i>NMOKEN</i></li> <li><i>boolean</i></li> <li><i>dateTime</i></li> <li><i>duration</i></li> </ul> <p><i>NamedFeature</i> – This GeneralID represents a NamedFeature as defined in Table 1-5, “Glossary” on page 9 Section 3.5.3.2, Specifying NamedFeatures with GeneralID. <a href="#">New in JDF 1.5</a></p>

**Table 3-6: GeneralID Element**

Name	Data Type	Description
<i>IDUsage</i> <a href="#">Modified in JDF 1.4</a>	NMTOKEN	<p>Usage of the GeneralID. There are no predefined values in <b>JDF XJDF</b>. Values below with "AdsML" prefix are defined in [AdsML].</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>DeviceProductIDDeviceExternalID</i> – An ID of the resource as defined in the Device namespace. For instance Media catalogs of a press may provide Media identifiers that are different from those defined by the MIS (which are identified with <b>@ProductID @ExternalID</b> values). <a href="#">New in JDF 1.4</a></li> <li><i>AdsML:AdBuyer_BookingTransactionID</i> – an ID for the booking transaction that was assigned by a party acting on behalf of the advertiser</li> <li><i>AdsML:AdSeller_BookingTransactionID</i> – an ID for the booking transaction that was assigned by the publisher or a party acting on its behalf</li> <li><i>AdsML:AdBuyer_AdMaterialID</i> – an ID for the artwork that was assigned by a party acting on behalf of the advertiser</li> <li><i>AdsML:AdSeller_AdMaterialID</i> – an ID for the artwork that was assigned by the publisher or a party acting on its behalf.</li> <li><i>LineID</i> – an ID for PrintTalk which associates a PrintTalk//Pricing/Price[@LineID = "someValue"] Element with a JDF Element embedded in PrintTalk, such as PrintTalk//jdf:<b>DeliveryParams/Drop</b>/DropItem[GeneralID/@IDUsage = "LineID" and GeneralID/@IDValue = "someValue"].</li> <li><i>ShopID</i> - Identifier of a web shop if the job has been submitted in a web to print environment. If the JDF was submitted via PrintTalk, <b>@IDValue</b> SHOULD be a copy of PrintTalk/Header/From/Credential[@domain="jdf:ShopID"]/Identity.</li> <li><i>L</i> – named variable that defines length within a ShapeTemplate. (See Table 8-287 on page 893.)</li> <li><i>W</i> – named variable that defines width within a ShapeTemplate. (See Table 8-287 on page 893.)</li> <li><i>D</i> – named variable that defines depth within a ShapeTemplate. (See Table 8-287 on page 893.)</li> </ul>
<i>IDValue</i>	string	Value of the GeneralID. The data type of the value SHALL correspond to GeneralID/@DataType.

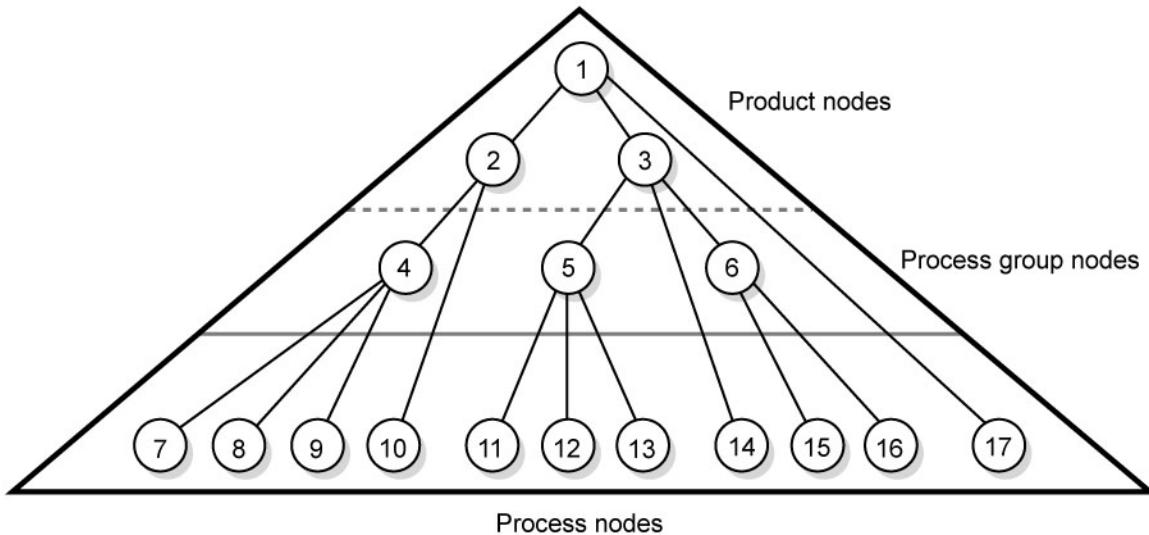
## 3.5 Common Node Types

As was noted in the preceding section, the **@Type** of a Node can fall into four categories. The first is comprised of the specific Processes of the kind delineated in Chapter 6, “Processes” on page 345, known simply as Process Nodes. The other categories are made up of three enumerative values of the **@Type** Attribute: “*ProcessGroup*”, “*Combined*” and “*Product*”, which is also known as Product Intent. These three Node types are described in this section.

The figure below, which was also presented as an illustration in Chapter 2, represents a theoretical Job hierarchy comprised of Product Intent Nodes, Process Group Nodes and Nodes that represent individual or Combined Processes. The diagram is divided into three levels to help illustrate the difference between the three kinds of Nodes, but these levels do not dictate the hierarchical nesting mechanism of a Job. Note, however, that an individual Process

Node MAY be the child of a Product Intent Node without first being the child of a Process Group Node. Likewise, a Process Group Node MAY have child Nodes that are also Process Groups.

**Figure 3-4: Job hierarchy with Process, Process Group and Product Intent Nodes**



### 3.5.1 Product Intent Nodes

Except in certain specific circumstances, the Agent assigned to begin writing a JDF Job will very likely not know every Process detail needed to produce the desired results. For example, an Agent that is a Job-estimating or Job-submission tool might not know what Devices can execute various steps or even which steps will be needed.

If this is the case, the initiating Agent creates a set of top-level Nodes to specify the Product Intent without providing any of the processing details. Subsequent Agents then add Nodes below these top-level Nodes to provide the processing details needed to fulfill the intent specified.

XJDF Nodes that are created by end customers typically describe only the desired Product rather than manufacturing process details.



#### Product Intent

"Product Intent" is another way of saying "Job Specifications". Rather than describing how a Job will be made, Product Intent describes what a finished product (or some aspect of a product) will look like when it is completed. Product Intents can initiate with the customer and in rather vague terms, and they might be later fleshed out or completed by a printer's customer service representative, estimating department or production planners.

These top-level Nodes SHALL have a **@Type** **@Types** Attribute Value of "*Product*" to indicate that they do not specify any processing, (and are referred to as "Product Intent Nodes"). All processing needed to produce the products described in these Nodes SHALL be specified in Process Nodes, which exist lower in the Job hierarchy..

Product Intent Nodes Product elements SHOULD include Intent Resources Product Intent Elements that describe the end results the customer is requesting. The Intent Resources that have already been defined for JDF are easily recognizable, as they contain the word "intent" in their titles. Examples include **ColorIntent** and **FoldingIntent**. All Intent Resources share a set of common Subelements, which are described in Section , "Span Subelements of an Intent Resource". If additional process information that is not defined in Product Intent

Elements is required, this information SHOULD be provided in **Resource** Elements. The value of **@Types** SHALL remain "*Product*".

Each Product Intent Node SHOULD contain at most one **ResourceLink** for one type of Intent Resource. If multiple product parts with different intents are needed, each part has its own Product Intent Node. **DeliveryIntent** Resources are a notable exception. Specifying multiple **DeliveryIntent** Resources effectively requests multiple options of a quote. A Product Intent Node produces one or more **Component** Resources as Output Resources. For more information about Product Intent, see Section 4.1.1, "Product Intent Constructs".

## 3.5.2 Process Group Nodes

Intermediate Nodes in the JDF Job hierarchy (i.e., Nodes 4, 5 and 6 in Figure 3-4) describe groups of Processes. The **@Type** Attribute Value of these kinds of Nodes is "*ProcessGroup*", (and they are referred to as "Process Group Nodes"). These Nodes are used to describe multiple steps in a Process chain that have common Resources or scheduling data.

Since the Agent writing the Job has the option of grouping Processes in any way that seems logical, custom workflows MAY be modeled flexibly. Process Group Nodes MAY contain further Process Group Nodes, individual Process Nodes or a mixture of both Node types. Sequencing of Process Group Nodes SHOULD be defined by linking Resources of the appropriate child JDF Nodes.

The higher the level of the Process Group Nodes within the hierarchy, the larger the number of Processes the group contains. A high level Process Group Node (e.g., prepress, finishing or printing Processes) might include lower level Process Group Nodes that define a set of individual steps which are executed as a group of steps in the individual workflow hierarchy. For example, all steps performed by one designated individual MAY be grouped in a lower level Process Group Node.

### 3.5.2.1 Use of the Types Attribute in Process Group Nodes – Gray Boxes

New in JDF 1.2

Process Group Nodes MAY contain an OPTIONAL **@Types** Attribute that allows a Controller (e.g., an MIS system) to specify a minimum set of Processes to be executed without specifying the complete list of Processes or the exact structure or grouping of these Processes into individual JDF Nodes. Process Group Nodes that contain a **@Types** Attribute are commonly referred to as Gray Boxes. Additional Processes that are not included in **@Types** MAY be added during expansion of a Gray Box. A **ResourceLink/@CombinedProcessIndex** is used to map **ResourceLink** Elements to **JDF/@Types** in the **ProcessGroup**. Process Group Nodes with a non-empty **@Types** Attribute SHALL NOT be executed. A Device that receives the Process Group Node SHALL define the exact structure of the Process Group Node by executing the following steps until the **@Types** list referenced by the Process Group Node is empty:

**Step 1** — Select at least one of the Process types defined in **@Types** and remove these values from the **@Types** list of values referenced by the Process Group Node.

**Step 2** — Create one new JDF child Node within the **ProcessGroup** that either:

- Has a **@Type** Attribute matching the removed **@Types** entry value, or
- Is a JDF Node with a **@Type** Attribute Value of "*Combined*" or "*ProcessGroup*" that contains the removed **@Types** value or values.

**Step 3** — Link the appropriate Resources that were predefined in the original Process Group Node to the newly created subordinate JDF Node(s). The **ResourceLink** SHALL either be retained or deleted from the Process Group Node. If it is retained, the Process Group Node SHALL NOT be executed before the Resource that is linked by that **ResourceLink** is available. Otherwise, the Process Group Node MAY be executed, even if the Resource is not available.

**Step 4** — Add missing **@Types** to the subordinate JDF Node where appropriate. For instance, the original **@Types** Attribute list referenced by Process Group Node might have specified "*Interpreting Rendering*" or simply "*RIPing*", but the newly created RIP Node would specify "*Interpreting Rendering Trapping Screening*".

**Step 5** — Finalize the newly created subordinate JDF Node by adding any missing Resources and Resource parameters. Note that newly created Resources SHALL NOT be linked to the Process Group Node but only to the subordinate JDF Node created in this Process.

An Agent SHALL instantiate all of the Processes in the **@Types** Attribute of the Gray Box before releasing the created JDF Nodes for processing and production. The ordering of the Processes in the **@Types** Attribute SHALL be maintained when instantiating the child Nodes. JDF Process Group Nodes that contain both a non-empty **@Types** Attribute and child JDF Nodes are **not** supported, although a Process Group Node MAY contain child Process Group Nodes that have non-empty **@Types** Attribute.

### 3.5.3 Process Nodes

Process nodes contain processing instructions in ResourceSet Elements that are targeted to a specific Device in addition to an optional Product definition in a ProductList and referenced Product Intent elements. The **@Types** Attribute of Process Nodes SHALL NOT contain the token "*Product*" if any additional process type tokens are present.

#### 3.5.3.1 Use of NamedFeature in Product and Process Group Nodes

New in JDF 1.2

Modified in JDF 1.5

#### 3.5.3.2 Specifying NamedFeatures with GeneralID

Combined, ProcessGroup and Product Intent XJDF Nodes MAY contain zero or more GeneralID[@Datatype="NamedFeature"] elements to specify global setup definitions. These GeneralID elements that are referred to as "NamedFeatures" in this paragraph allow a Controller (e.g., an MIS system) to define a named set of parameters for Processes that SHALL be executed without defining the details or even the Resources for the individual JDF Nodes. The Agent (e.g., a Prepress Control System) populates the JDF Node with the values implied by NamedFeatures in an implementation-defined manner. This procedure MAY include the addition of additional JDF Subnodes. The precedence of parameters (Attributes or Elements) is as follows in order of decreasing precedence:

- Explicitly supplied parameters
- Parameters supplied by the Device Agent that are associated with the supplied NamedFeatures closest to the Process.
- Parameters supplied by the Device Agent that are associated with the supplied NamedFeatures supplied by the Device Agent at Node levels closer to the root.

Explicitly specified traits SHALL override any implied traits defined by GeneralID[@Datatype="NamedFeature"].

An individual NamedFeature is selected by the GeneralID/@IDUsage and GeneralID/@IDValue that matches entries from DeviceCap/FeaturePool/EnumerationState/@Name and DeviceCap/FeaturePool/EnumerationState/@AllowedValueList (see Section 9.1.1, "DeviceCap" on page 949), where GeneralID/@IDUsage defines the name of the parameter set name (e.g., "Screening"), and GeneralID/@IDValue defines the selected parameter set value (e.g., "AM\_HighRes"). Multiple NamedFeatures MAY be selected. Names and values are implementation dependent. Each GeneralID/@IDUsage SHALL occur only once in the NamedFeatures list.

Use of NamedFeatures is commonly combined with the use of **@Types** in Process Group Nodes as described in Section 3.5.2.1, "Use of the Types Attribute in Process Group Nodes – Gray Boxes" on page 66. JDF XJDF/**@Types** abstractly specifies the set of Processes to execute, whereas NamedFeatures abstractly specifies the set of Resources for the Processes specified in **@Types**.

#### 3.5.3.3 ResourceLink Structure in Process Group Nodes

New in JDF 1.2

The contents of the ResourceLinkPool of a Process Group Node define the Resources that SHALL be available for the Process Group Node itself to be executed.

#### Example 3-1: ResourceLink Structure for a ProcessGroup

The following example shows the ResourceLink structure for a "ProcessGroup" digital printing with near-line finishing Node. The input **Media** is Available and the Output **Component** is of interest to the submitting Control-

ler. The Parameter Resources are assumed to be supplied by the sub-Controller that executes the Process Group Node. Note the presence of intermediate component links that link the individual Processes. The corresponding ResourcePool Elements and Resource Elements have been omitted for brevity.

```

<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="J1" Status="Waiting"
      Type="ProcessGroup" JobPartID="ID300" Version="1.4">
  <!--the ResourceLink Elements in the ProcessGroup define the Input
      Resources that are to be available for the ProcessGroup to be
      submitted and the Output Resources that are produced by the ProcessGroup
  -->
  <ResourcePool>
    <DigitalPrintingParams ID="L1" Class="Parameter" Status="Available"/>
    <Media ID="L2" Class="Consumable" Status="Available"/>
    <RunList ID="L8" Class="Parameter" Status="Available"/>
    <Component ID="L3" Class="Quantity" Status="Unavailable"
      ComponentType="Sheet"/>
    <GatheringParams ID="L4" Class="Parameter" Status="Available"/>
    <Component ID="L5" Class="Quantity" Status="Unavailable"
      ComponentType="Sheet"/>
    <StitchingParams ID="L6" Class="Parameter" Status="Available"/>
    <Component ID="L7" Class="Quantity" Status="Unavailable"
      ComponentType="Sheet"/>
  </ResourcePool>
  <ResourceLinkPool>
    <!-- print input media -->
    <MediaLink Usage="Input" rRef="L2"/>
    <!-- gathered output components -->
    <ComponentLink Usage="Output" rRef="L7"/>
  </ResourceLinkPool>
  <JDF ID="J2" Status="Waiting" JobPartID="ID301" Type="DigitalPrinting">
    <ResourceLinkPool>
      <!-- digital printing parameters -->
      <DigitalPrintingParamsLink Usage="Input" rRef="L1"/>
      <!-- input sheets -->
      <MediaLink Usage="Input" rRef="L2"/>
      <RunListLink Usage="Input" rRef="L8"/>
      <!-- printed output components -->
      <ComponentLink Usage="Output" rRef="L3"/>
    </ResourceLinkPool>
  </JDF>
  <JDF ID="J3" Status="Waiting" JobPartID="ID302" Type="Gathering">
    <ResourceLinkPool>
      <!-- gathering parameters -->
      <GatheringParamsLink Usage="Input" rRef="L4"/>
      <!-- printed output components -->
      <ComponentLink Usage="Input" rRef="L3"/>
      <!-- gathered output components -->
      <ComponentLink Usage="Output" rRef="L5"/>
    </ResourceLinkPool>
  </JDF>
  <JDF ID="J4" Status="Waiting" JobPartID="ID303" Type="Stitching">
    <ResourceLinkPool>
      <!-- Stitching parameters -->
      <StitchingParamsLink Usage="Input" rRef="L6"/>
      <!-- gathered output components -->
      <ComponentLink Usage="Input" rRef="L5"/>
      <!-- stitched output components -->
      <ComponentLink Usage="Output" rRef="L7"/>
    </ResourceLinkPool>
  </JDF>

```

```

</ResourceLinkPool>
</JDF>
</JDF>
```

### 3.5.4 Combined Process Nodes

The Processes described in Chapter 6, “Processes” on page 345 define individual workflow steps that are assumed to be executed by a single-purpose Device. Many Devices, however, are able to combine the functionality of multiple single-purpose Devices and execute more than one Process. For example, a digital printer might be able to execute the **Interpreting**, **Rendering** and **DigitalPrinting** Processes. To accommodate such Devices, JDF allows Processes to be grouped within a Node whose `@Type = "Combined"`, (referred to as “Combined Process Nodes”). Such a Node SHALL also contain a `@Types` Attribute, which in turn contains an ordered list of the `@Type` values of each of Processes that the Node specifies. The ordering of the Process names in the `@Types` Attribute specifies the ordering in which the Processes SHOULD be executed. If the final product result would be indistinguishable, the Device MAY change the execution order of the Processes from that given in the `@Types` Attribute.

Furthermore, ResourceLink Elements in Combined Process Nodes should specify a `@CombinedProcessIndex` Attribute in order to define the subprocess to which the Resource belongs. Combined Process Nodes are leaf Nodes and SHALL NOT contain further nested JDF Nodes.

A Device with multiple processing capabilities is able to recognize the Combined Process Node as a single unit of work that it can execute. All input and Output Resources that are consumed and produced externally by the Process SHALL be specified in the ResourceLinkPool Element of the Node. This includes all REQUIRED Parameter Resources as well as the initial Input Resources and final Output Resources. Intermediate Resources that are internally produced and consumed NEED NOT be specified.

In a Combined Process Node, the information defined by the various Resources linked as input to the various subProcesses are logically available to all Processes of the Combined Process Node. In situations where the Parameter Resource of more than one subprocess specifies the mapping of Sheet surface content to media, the subprocess that specifies such a mapping that is defined earliest in the `Types` Attribute list SHALL be used, and any other mappings specified by any down-stream subprocess Resource SHALL be ignored.

#### 3.5.4.1 Combined Process Nodes with Multiple Processes of the Same Type

A Combined Process Node MAY contain multiple instances of the same Process type (e.g., `@Types = "Cutting Folding Cutting"`). In this case, the ordering and mapping of links Processes is significant — the parameters of the first **Cutting** Process are most likely to be different from those of the second **Cutting** Process. Mapping is accomplished using the `@CombinedProcessIndex` Attribute in the respective ResourceLink.

#### Example 3-2: Combined Process Node

```

<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="J1" Status="Waiting"
      Type="Combined" Types="Cutting Folding Cutting" JobPartID="ID345"
      Version="1.4">
    <!--Resources (incomplete...) -->
    <ResourcePool>
      <!-- parameters of the first Cutting Process-->
      <CuttingParams Class="Parameter" ID="L1" Status="Available"/>
      <!-- Folding parameters -->
      <FoldingParams Class="Parameter" ID="L2" Status="Available"/>
      <!-- parameters of the second Cutting Process-->
      <CuttingParams Class="Parameter" ID="L3" Status="Available"/>
      <!-- raw input components -->
      <Component Class="Quantity" ID="L4" Status="Available" ComponentType="Sheet"/>
      <!-- completed output components -->
      <Component Class="Quantity" ID="L5" Status="Unavailable"
                  ComponentType="Sheet"/>
    </ResourcePool>
    <!-- Links -->
    <ResourceLinkPool>
```

```

<!-- parameters of the first Cutting Process-->
<CuttingParamsLink CombinedProcessIndex="0" Usage="Input" rRef="L1"/>
<!-- Folding parameters -->
<FoldingParamsLink CombinedProcessIndex="1" Usage="Input" rRef="L2"/>
<!-- parameters of the second Cutting Process-->
<CuttingParamsLink CombinedProcessIndex="2" Usage="Input" rRef="L3"/>
<!-- raw input components -->
<ComponentLink Usage="Input" rRef="L4"/>
<!-- completed output components -->
<ComponentLink Usage="Output" rRef="L5"/>
</ResourceLinkPool>
</JDF>

```

### Example 3-3: ResourceLinkPool for Combined Process Node

The following example of the ResourceLinkPool of a JDF Node describes digital printing with in-line finishing and includes the same Processes as the previous ProcessGroup example. The Node requires the Parameter Resources and Consumable Resources of all three Processes as inputs, and produces a completed booklet as output. The intermediate printed Sheets and gathered piles are not declared, since they exist only internally within the Device and cannot be accessed or manipulated by an external Controller.

```

<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="J1" Status="Waiting"
      Type="Combined" Types="DigitalPrinting Gathering Stitching" JobPartID="ID200"
      Version="1.4">
  <ResourceLinkPool>
    <!-- digital printing input RunList -->
    <RunListLink CombinedProcessIndex="0" Usage="Input" rRef="L1"/>
    <!-- digital printing parameters -->
    <DigitalPrintingParamsLink CombinedProcessIndex="0" Usage="Input" rRef="L2"/>
    <!-- gathering parameters -->
    <GatheringParamsLink CombinedProcessIndex="1" Usage="Input" rRef="L3"/>
    <!-- Stitching parameters -->
    <StitchingParamsLink CombinedProcessIndex="2" Usage="Input" rRef="L4"/>
    <!-- input sheets -->
    <MediaLink CombinedProcessIndex="0" Usage="Input" rRef="L5"/>
    <!-- stitched output components -->
    <ComponentLink CombinedProcessIndex="2" Usage="Output" rRef="L6"/>
  </ResourceLinkPool>
  <ResourcePool>
    <RunList ID="L1" Class="Parameter" Status="Available"/>
    <DigitalPrintingParams ID="L2" Class="Parameter" Status="Available"/>
    <GatheringParams ID="L3" Class="Parameter" Status="Available"/>
    <StitchingParams ID="L4" Class="Parameter" Status="Available"/>
    <Media ID="L5" Class="Consumable" Status="Available"/>
    <Component ID="L6" Class="Quantity" Status="Unavailable"
               ComponentType="Sheet"/>
  </ResourcePool>
</JDF>

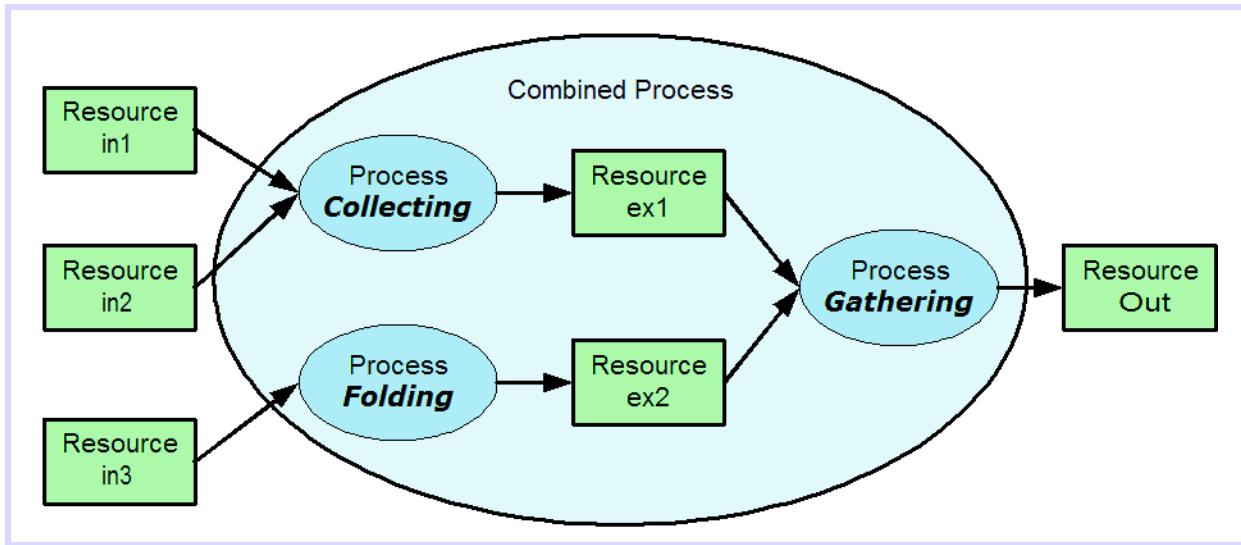
```

#### 3.5.4.2 Specifying non-linear dependencies in a Combined Process Node

A Combined Process Node typically specified a linear execution chain of the individual Process steps defined in JDF/**@Types**. A Device that executes a Combined Process Node MAY execute a more complex network of individual work steps. For instance, a Cover might be printed from one tray, the insert from another tray and both be bound to produce a bound component. This behavior is modeled by explicitly declaring the exchange Resource and by defining it as a pipe by specifying **Resource/@PipeID** and **Resource/@PipeProtocol = "Internal"**. The exchange Resource linking it to the Combined Process with both an input and output ResourceLink Elements. Mul-

multiple input ResourceLink Elements and/or multiple output ResourceLink Elements MAY be declared. Resource/@Status of the exchange Resource SHALL allow execution of the Node.

**Figure 3-5: Combined Process Node dependencies**



#### Example 3-4: Complex Combined Process Node

The following example specifies an inline combined folder and collector and gatherer.

```

<JDF ID="ID" xmlns="http://www.CIP4.org/JDFSchema_1_1" Status="Waiting"
      Type="Combined" Types="Collecting Gathering Folding" JobPartID="ID345"
      Version="1.4">
    <ResourcePool>
        <GatheringParams ID="gp1" Class="Parameter" Status="Available"/>
        <FoldingParams ID="fp1" Class="Parameter" Status="Available"/>
        <Component ID="in1" Class="Quantity" Status="Available" ComponentType="Sheet"/>
        <Component ID="in2" Class="Quantity" Status="Available" ComponentType="Sheet"/>
        <Component ID="in3" Class="Quantity" Status="Available" ComponentType="Sheet"/>
        <Component ID="ex1" Class="Quantity" Status="Unavailable" ComponentType="Sheet"
                  PipeProtocol="Internal" PipeID="ex1"/>
        <Component ID="ex2" Class="Quantity" Status="Unavailable" ComponentType="Sheet"
                  PipeProtocol="Internal" PipeID="ex2"/>
        <Component ID="Out" Class="Quantity" Status="Unavailable"
                  ComponentType="Sheet"/>
    </ResourcePool>
    <ResourceLinkPool>
        <GatheringParamsLink Usage="Input" rRef="gp1"/>
        <FoldingParamsLink Usage="Input" rRef="fp1"/>
        <ComponentLink CombinedProcessIndex="0" Usage="Input" rRef="in1"/>
        <ComponentLink CombinedProcessIndex="0" Usage="Input" rRef="in2"/>
        <ComponentLink CombinedProcessIndex="2" Usage="Input" rRef="in3"/>
        <ComponentLink CombinedProcessIndex="0" Usage="Output" rRef="ex1"/>
        <ComponentLink CombinedProcessIndex="2" Usage="Output" rRef="ex2"/>
        <ComponentLink CombinedProcessIndex="1" Usage="Input" rRef="ex1"/>
        <ComponentLink CombinedProcessIndex="1" Usage="Input" rRef="ex2"/>
        <ComponentLink CombinedProcessIndex="1" Usage="Output" rRef="Out"/>
    </ResourceLinkPool>
</JDF>

```

### 3.5.5 Process Nodes

Process Nodes represent the very lowest level in a Job hierarchy. They SHALL NOT contain further nested JDF Nodes, as every Process Node is a leaf Node. These Nodes define the smallest work unit that can be scheduled and executed individually within the JDF workflow model. In Figure 3-9 below, Nodes 7-17 represent Process Nodes. The various individual Process Node types are specified in Section 6, “Processes”.

## 3.6 AncestorPool

When a Job is spawned, an **AncestorPool** is created in the spawned JDF to identify its parents and grandparents. This allows storing of information about Job context in a spawned Node as well as allowing the Job to be correctly merged with its parent after it is completed. The **AncestorPool** Element is only REQUIRED in the root of a spawned JDF. Spawning and merging are described in Section 4.4, “Spawning and Merging”. The **AncestorPool** Element contains an ordered list of one or more **Ancestor** Elements, which reflect the family tree of a spawned JDF. Each **Ancestor** Element identifies exactly one ancestor Node. The ancestor Nodes reside in the original Job where the Job with the **AncestorPool** has been spawned off. The position of the **Ancestor** Element in the ordered list defines the position in the family tree. The first Element in the list is the original root Element, the last Element in the list is the parent, the last but one, the grandparent and so on. The following table lists the contents of an **AncestorPool** Element.



**Table 3-7: AncestorPool Element**

Name	Data Type	Description
Ancestor +	element	Ordered list of one or more <b>Ancestor</b> Elements, which reflect the family tree of a spawned JDF.
<b>Part *</b> <i>New in JDF 1.1</i>	element	List of parts that this Node was spawned with. Used in case of parallel spawning of a Node. This defines the aggregated <b>Part(s)</b> in the case of nested spawns (i.e., a logical AND of all spawned <b>Part(s)</b> ). For instance, the JDF that was spawned with a <b>@SheetName</b> Partition and subsequently spawned with a <b>@Separation</b> would contain both <b>@SheetName</b> and <b>@Separation</b> within <b>Part</b> .

### 3.6.1 Element: **Ancestor**

An **Ancestor** Element SHALL contain read-only copies of all the Attributes of the Node that it represents with the exception of the **@ID** Attribute, which SHALL be copied to the **@NodeID** Attribute of that **Ancestor** Element. **Ancestor** Elements MAY contain further read-only references to **CustomerInfo** and **NodeInfo**. The Attributes and Elements of **Ancestor** Elements are described below.

**Table 3-8: Ancestor Element (Sheet 1 of 3)**

Name	Data Type	Description
<b>Activation ?</b>	enumeration	Copy of the <b>@Activation</b> Attribute from the ancestor Node. For details, see Table 3-4, “JDF XJDF Node” on page 52. <b>Allowed values are from:</b> JDF/ <b>@Activation</b> .
<b>Category ?</b> <i>New in JDF 1.2</i>	NMTOKENS	Copy of the <b>@Category</b> Attribute from the original ancestor Node. For details, see Table 3-4, “JDF XJDF Node” on page 52. <b>Allowed values are from:</b> JDF/ <b>@Category</b> .
<b>FileName ?</b>	URL	The URL of the JDF file where the ancestor Node resided prior to spawning. Note that despite of Attribute name, <b>@URL</b> NEED NOT refer to a file. <b>@URL</b> MAY refer to any url scheme.

**Table 3-8: Ancestor Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>ICSVersions</i> ? <a href="#">New in JDF 1.2</a>	NMTOKENS	Copy of the <i>@ICSVersions</i> Attribute from the original ancestor Node. For details, see Table 3-4, “JDF XJDF Node” on page 52. <b>Allowed values are from:</b> JDF/ <i>@ICSVersions</i> .
<i>JobID</i> ?	string	Copy of the <i>@JobID</i> Attribute from the original ancestor Node. For details, see Table 3-4, “JDF XJDF Node” on page 52.
<i>JobPartID</i> ?	string	Copy of the <i>@JobPartID</i> Attribute from the original ancestor Node. For details, see Table 3-4, “JDF XJDF Node” on page 52.
<i>MaxVersion</i> ? <a href="#">New in JDF 1.2</a>	JDFJMVersion	Copy of the <i>@MaxVersion</i> Attribute from the original ancestor Node. For details, see Table 3-4, “JDF XJDF Node” on page 52.
<i>NamedFeatures</i> ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	NMTOKENS	Copy of the <i>@NamedFeatures</i> Attribute from the original ancestor Node. For details, see Table 3-4, “JDF XJDF Node” on page 52.
<i>NodeID</i>	NMTOKEN	Copy of the <i>@ID</i> Attribute of the ancestor Node. <b>Note:</b> the data type is NMTOKEN and not ID because the ID does not reside in the spawned JDF. The corresponding <i>@ID</i> Attribute resides in the original JDF.
<i>ProjectID</i> ?	string	Identification of the project context that this JDF belongs to. Used by the application that created the JDF Job.
<i>RelatedJobID</i> ? <a href="#">New in JDF 1.2</a>	string	Copy of the <i>@RelatedJobID</i> Attribute from the original ancestor Node. For details, see Table 3-4, “JDF XJDF Node” on page 52.
<i>RelatedJobPartID</i> ? <a href="#">New in JDF 1.2</a>	string	Copy of the <i>@RelatedJobPartID</i> Attribute from the original ancestor Node. For details, see Table 3-4, “JDF XJDF Node” on page 52.
<i>SpawnID</i> ? <a href="#">New in JDF 1.1</a>	NMTOKEN	Copy of the <i>@SpawnID</i> Attribute of the ancestor Node.
<i>Status</i> ?	enumeration	Copy of the <i>@Status</i> Attribute from the original ancestor Node. For details, see Table 3-4, “JDF XJDF Node” on page 52. <b>Allowed values are from:</b> JDF/ <i>@Status</i> .
<i>StatusDetails</i> ? <a href="#">New in JDF 1.2</a>	string	Copy of the <i>@StatusDetails</i> Attribute from the original ancestor Node. For values and details, see Table 3-4, “JDF XJDF Node” on page 52. <b>Values include those from:</b> JDF/ <i>@StatusDetails</i>
<i>Template</i> = “false” <a href="#">New in JDF 1.1</a>	boolean	Copy of the <i>@Template</i> Attribute from the original ancestor Node. For details, see Table 3-4, “JDF XJDF Node” on page 52.
<i>TemplateID</i> ? <a href="#">New in JDF 1.2</a>	string	Copy of the <i>@TemplateID</i> Attribute from the original ancestor Node. For details, see Table 3-4, “JDF XJDF Node” on page 52.
<i>TemplateVersion</i> ? <a href="#">New in JDF 1.2</a>	boolean	Copy of the <i>@TemplateVersion</i> Attribute from the original ancestor Node. For details, see Table 3-4, “JDF XJDF Node” on page 52.
<i>Type</i> ?	NMTOKEN	Copy of the <i>@Type</i> Attribute from the original ancestor Node. For details, see Table 3-4, “JDF XJDF Node” on page 52. <b>Allowed values are from:</b> JDF/ <i>@Type</i> .
<i>Types</i> ?	NMTOKENS	Copy of the <i>@Types</i> Attribute from the original ancestor Node. For details, see Table 3-4, “JDF XJDF Node” on page 52. <b>Allowed values are from:</b> JDF/ <i>@Types</i> .

**Table 3-8: Ancestor Element (Sheet 3 of 3)**

Name	Data Type	Description
<a href="#">Version ?</a> <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.3</a>	JDFJMFileVersion	Copy of the <i>@Version</i> Attribute from the original ancestor Node. For details, see Table 3-4, “JDF XJDF Node” on page 52.
<a href="#">CustomerInfo ?</a> <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.3</a>	refelement	Reference to or copy of the <b>CustomerInfo</b> Element or Resource from the original Node. In JDF 1.3 and beyond, <b>CustomerInfo</b> SHOULD be a Resource reference. For details, see Table 3-4, “JDF XJDF Node” on page 52.
<a href="#">NodeInfo ?</a> <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.3</a>	refelement	Reference to or copy of the <b>NodeInfo</b> Element or Resource from the original Node. In JDF 1.3 and beyond, <b>NodeInfo</b> SHOULD be a Resource reference. For details, see Table 3-4, “JDF XJDF Node” on page 52.

## 3.7 CustomerInfo

Deprecated in JDF 1.3

Starting with JDF 1.3, **CustomerInfo** is deprecated in its use as a direct child of a JDF Node, and becomes a Resource (which is a child of some **ResourcePool**; see Section 3.10, “ResourcePool and its Resource Children”).

## 3.8 NodeInfo

Deprecated in JDF 1.3

Starting with JDF 1.3, **NodeInfo** is deprecated in its use as a direct child of a JDF Node, and becomes a Resource (which is a child of some **ResourcePool**; see Section 3.10, “ResourcePool and its Resource Children”).

## 3.9 StatusPool

Deprecated in JDF 1.3.

Starting with JDF 1.3, **StatusPool** is deprecated and replaced by a Partitioned **NodeInfo** Resource. For details, see Section P.1.3, “StatusPool” on page 1308.

## 3.10 ResourcePool and its Resource Children

### 3.10.1 ResourcePool

All Resources are contained in the **ResourcePool** Element of some Node. The **ResourcePool** Element is described in the following table.

**Table 3-9: ResourcePool Element**

Name	Data Type	Description
Resource *	element	List of Resource Elements. The Resource Elements are abstract and serve as place-holders for any Resource type.

### 3.10.2 Resource

Resources represent the “things” that are produced or consumed by Processes. They might be physical items such as inks, plates or glue; electronic items such as files or images; or conceptual items such as parameters and Device settings. Processes describe what Resources they input or output through **ResourceLink** Elements, discussed in Section 3.14, “ResourceLinkPool and ResourceLink”. By examining the input and outputs of a set of Processes, it is possible to determine Process dependencies, and therefore Job routing.

### 3.10.3 Abstract Resource

Like the `@Type` Attribute in abstract JDF Nodes, the `@Class` Attribute in Resource Elements helps to identify how particular Resources are to be used. These values are listed in Table 3-10, “Abstract Resource Element” on page 75, below, and are described in greater detail in the sections that follow.

**Modification note:** GeneralID has moved to Table 3-1, “Any Element (generic content)” on page 48.

Table 3-10: Abstract Resource Element (Sheet 1 of 4)

Name	Data Type	Description
<code>AgentName ?</code> <a href="#">New in JDF 1.2</a>	string	The name of the Agent application that created the Resource. Both the company name and the product name MAY appear, and SHOULD be consistent between versions of the application.
<code>AgentVersion ?</code> <a href="#">New in JDF 1.2</a>	string	The version of the Agent application that created the Resource. The format of the version string MAY vary from one application to another, but SHOULD be consistent for an individual application.
<code>Author ?</code> <a href="#">New in JDF 1.2</a>	string	Text that identifies the person who generated the Resource.
<code>CatalogID ?</code> <a href="#">Deprecated in JDF 1.4</a>	string	Identification of the Resource (e.g., in a catalog environment). Defaults to the value of <code>@ProductID</code> . <b>Deprecation note:</b> starting with JDF 1.4, use GeneralID.
<code>CatalogDetails ?</code> <a href="#">Deprecated in JDF 1.4</a>	string	Additional details of a Resource in a catalog environment. <b>Deprecation note:</b> starting with JDF 1.4, use GeneralID.
<code>Class</code> <a href="#">Modified in JDF 1.5</a>	enumeration	Defines the Abstract Resource type. For details, see the sections that follow.  <code>@Class</code> SHALL be specified in the Resource root, SHALL NOT be specified in a Resource leaf and SHOULD NOT be specified in an inline Resource Subelement.  <b>Allowed values are:</b> <i>Consumable</i> <i>Handling</i> <i>Implementation</i> <i>Intent</i> <i>Parameter</i> <i>PlaceHolder</i> <a href="#">Deprecated in JDF 1.5</a> <i>Quantity</i>
<code>ID</code>	ID	Unique identifier of a Resource. <code>@ID</code> SHALL be specified in the Resource root, SHALL NOT be overwritten in a Resource leaf and SHOULD NOT be specified in an inline Resource Subelement.
<code>Locked="false"</code>	boolean	If “ <code>true</code> ”, the Resource SHALL NOT be modified (e.g., because it resides in a spawned ticket that is spawned in read-only mode or referenced by an <code>Audit</code> and SHALL NOT be modified without invalidating the <code>Audit</code> ).

**Table 3-10: Abstract Resource Element (Sheet 2 of 4)**

Name	Data Type	Description
<i>PartUsage = "Explicit"</i> <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.3</a>	enumeration	<p>Description of the interpretation of Partitions.  <code>@PartUsage</code> SHALL NOT be specified outside of the root of a Resource. For details on <code>@PartUsage</code> and Partitioning, see Section 3.15.7.4, “Implicit, Sparse and Explicit PartUsage in Partitioned Resources”.</p> <p><b>Allowed values are:</b></p> <p><i>Explicit</i> – Require explicit Partition matches. All referenced Partitions referenced in Part SHALL exist, otherwise it is an error.</p> <p><i>Implicit</i> – The closest matching Partition with no non-matching Partition Keys is returned. If keys with non-matching values exist, the first Partition Element that is closer to the root than the referenced Partition and has no non-matching keys is returned.</p> <p><i>Sparse</i> – The closest matching Partition with no non-matching Partition Keys is returned. If keys with non-matching values exist the link is in error. <code>@PartUsage = "Sparse"</code> is typically used to describe versioned Resources, where not all Nodes are fully Partitioned (e.g., only the Black Separations of a 4 color Resource are versioned). <a href="#">New in JDF 1.3</a></p> <p><b>Modification note:</b> <code>@PartUsage</code> was moved to this table from Table 3-32, “Partitionable Resource Element” on page 128 in JDF 1.2.</p>
<i>PipeID ?</i> <a href="#">New in JDF 1.2</a> <a href="#">Modified in JDF 1.5</a>	string	If this Attribute exists, the Resource is a pipe. <code>@PipeID</code> is used by JMF pipe-control Messages to identify the pipe. For more information, see Section 4.3.3, “Overlapping Processing Using Pipes” on page 183.
<i>PipeProtocol ?</i> <a href="#">New in JDF 1.2</a> <a href="#">Modified in JDF 1.5</a>	NMTOKEN	<p>Defines the protocol use for pipe handling. <i>"JMF"</i> and <i>"Internal"</i> are the only non-proprietary piping protocols that are supported. Proprietary pipe protocols MAY be specified in addition to those defined below but will not necessarily be interoperable.</p> <p><b>Values include:</b></p> <p><i>IdentificationField</i> – The pipe data is provided by barcodes that are defined in <b>IdentificationField</b> elements.</p> <p><i>Internal</i> – Internal or virtual pipe used within a Combined Process.</p> <p><i>JMF</i> – JMF-based PipePush/PipePull Messages. The sequence of pipe initialization is undefined. See next two values: <i>"JMFPush"</i> and <i>"JMFPull"</i>.</p> <p><i>JMFPush</i> – JMF based PipePush/PipePull protocol. The producing Device initiates the protocol. <a href="#">New in JDF 1.5</a></p> <p><i>JMFPull</i> – JMF based PipePush/PipePull protocol. The consuming Device initiates the protocol. <a href="#">New in JDF 1.5</a></p> <p><i>None</i> – No pipe support.</p>

**Table 3-10: Abstract Resource Element (Sheet 3 of 4)**

Name	Data Type	Description
<i>PipeURL</i> ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	URL	<p>Pipe request URL. Dynamic pipe requests to this Resource SHOULD be made to this URL. Note that this URL is only used for initiating pipe requests. Responses to a pipe request are issued to the URL that is defined in the PipePush or PipePull Message. For details on using @PipeURL, see Section 4.3.3, “Overlapping Processing Using Pipes”.</p> <p><b>Note:</b> in most cases this is the URL of the Controller of the <i>other end</i> of the pipe. This might seem counterintuitive, but it allows parallel spawning and merging of Processes that represent a dynamic pipe without having to include the Node that describes the other end in the spawned file.</p> <p><b>Deprecation note:</b> starting with JDF 1.5, use ResourceLink/@PipeURL.</p>
<i>ProductID</i> ?	string	An ID of the Resource as defined in the MIS system. For instance item codes or article numbers or identifiers on semi-finished products or Handling Resources.
<i>rRefs</i> ? <a href="#">Deprecated in JDF 1.2</a>	IDREFS	Array of IDs of internally referenced Resources. In JDF 1.2 and beyond, it is up to the implementation to maintain references.
<i>SkipIndex</i> ? <a href="#">New in JDF 1.5</a>	integer	Number of indexed Partition leaves to omit when evaluating the respective XXXIndex partitions. Valid only on Partition leaves or branches where the Partition Key is one of the XXXIndex keys (e.g., @SetIndex). Used when an index range comprises every Nth index. For example, a range of @SheetIndex = "1000 ~ 2000" with @SkipIndex = "1" would comprise a list starting at @SheetIndex = "1000" including every other index (1000, 1002, 1004, etc.) with a maximum value of @SheetIndex = "2000".
<i>SpawnIDs</i> ? <a href="#">New in JDF 1.1</a>	NMTOKENS	List of @SpawnID values. This is used as a reference count for how often the Resource has been spawned.
<i>SpawnStatus</i> = "NotSpawned"	enumeration	<p>The spawn status of a Resource indicates whether or not a Resource has been spawned, and under what circumstances. The @SpawnStatus of a Resource that has ResourceRef Elements is defined as the maximum @SpawnStatus (whose values are ordered) of all recursively linked Resources.</p> <p>Value are ordered from lowest to highest</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>NotSpawned</i> — Indicates that the Resource has not been copied to another Process.</li> <li><i>SpawnedRO</i> — Indicates that the Resource has been copied to another Process where it cannot be modified. The “RO” stands for read-only.</li> <li><i>SpawnedRW</i> — Indicates that the Resource has been copied to another Process where it can be modified. The “RW” stands for read/write.</li> </ul>

**Table 3-10: Abstract Resource Element (Sheet 4 of 4)**

Name	Data Type	Description
<i>Status</i> <a href="#">Modified in JDF 1.2</a>	enumeration	<p>The status of a Resource indicates under what circumstances it can be processed or modified. <i>@Status</i> SHALL be specified in the Resource root, SHALL NOT be specified in an inline Resource Subelement and MAY be overwritten in a Resource leaf.</p> <p>The values listed below are assumed to be ordered so that the <i>@Status</i> of a Resource that references further Resources can be defined as the minimum <i>@Status</i> of all recursively linked Resources.</p> <p>The values are ordered from lowest to highest</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Incomplete</i> – Indicates that the Resource does not exist, and the metadata is not yet valid. Incomplete Resources NEED NOT specify all Attributes or Elements defined in Chapter 8, “Resources”. The structural Attributes <i>@Class</i> and <i>@ID</i> SHALL be specified.</li> <li><i>Rejected</i> – Indicates that the Resource has been rejected by an <i>Approval</i> Process. The metadata is valid. <a href="#">New in JDF 1.2</a></li> <li><i>Unavailable</i> – Indicates that the Resource is not ready to be used or that the Resource in the real world represented by the <i>PhysicalResource</i> in JDF is not available for processing. The metadata is valid.</li> <li><i>InUse</i> – Indicates that the Resource exists, but is in use by another Process. Also used for active pipes (see Section 3.13.6, “Pipe Resources” and Section 4.3.3, “Overlapping Processing Using Pipes”).</li> <li><i>Draft</i> – Indicates that the Resource exists in a state that is sufficient for setting up the next Process but not for production.</li> <li><i>Complete</i> – Indicates that the Resource is completely specified and the parameters are valid for usage. A <i>PhysicalResource</i> with <i>@Status = "Complete"</i> is not yet available for production, although it is sufficiently specified for a Process that references it through a <i>ResourceRef</i> from a Parameter Resource to commence execution.</li> <li><i>Available</i> – Indicates that the whole Resource is available for usage.</li> </ul>
<i>UpdateID</i> ? <a href="#">New in JDF 1.1</a> <a href="#">Deprecated in JDF 1.3</a>	NMTOKEN	Unique ID that identifies the Resource or Resource Partition. Note that only one <i>Resource</i> , <i>Resource Partition</i> or <i>ResourceUpdate</i> with a given value of <i>@UpdateID</i> MAY occur per JDF document, even though the scope of the <i>ResourceUpdate</i> is local to the Resource that it is defined in.
<b>QualityControlResult</b> * <a href="#">New in JDF 1.2</a>	refelement	Results of quality measurements which were performed during or after the production of this Resource.
<b>SourceResource</b> * <a href="#">New in JDF 1.3</a>	element	List of Resources that were or SHOULD be taken into account to populate this Resource.

### 3.10.3.1 Element: **SourceResource**

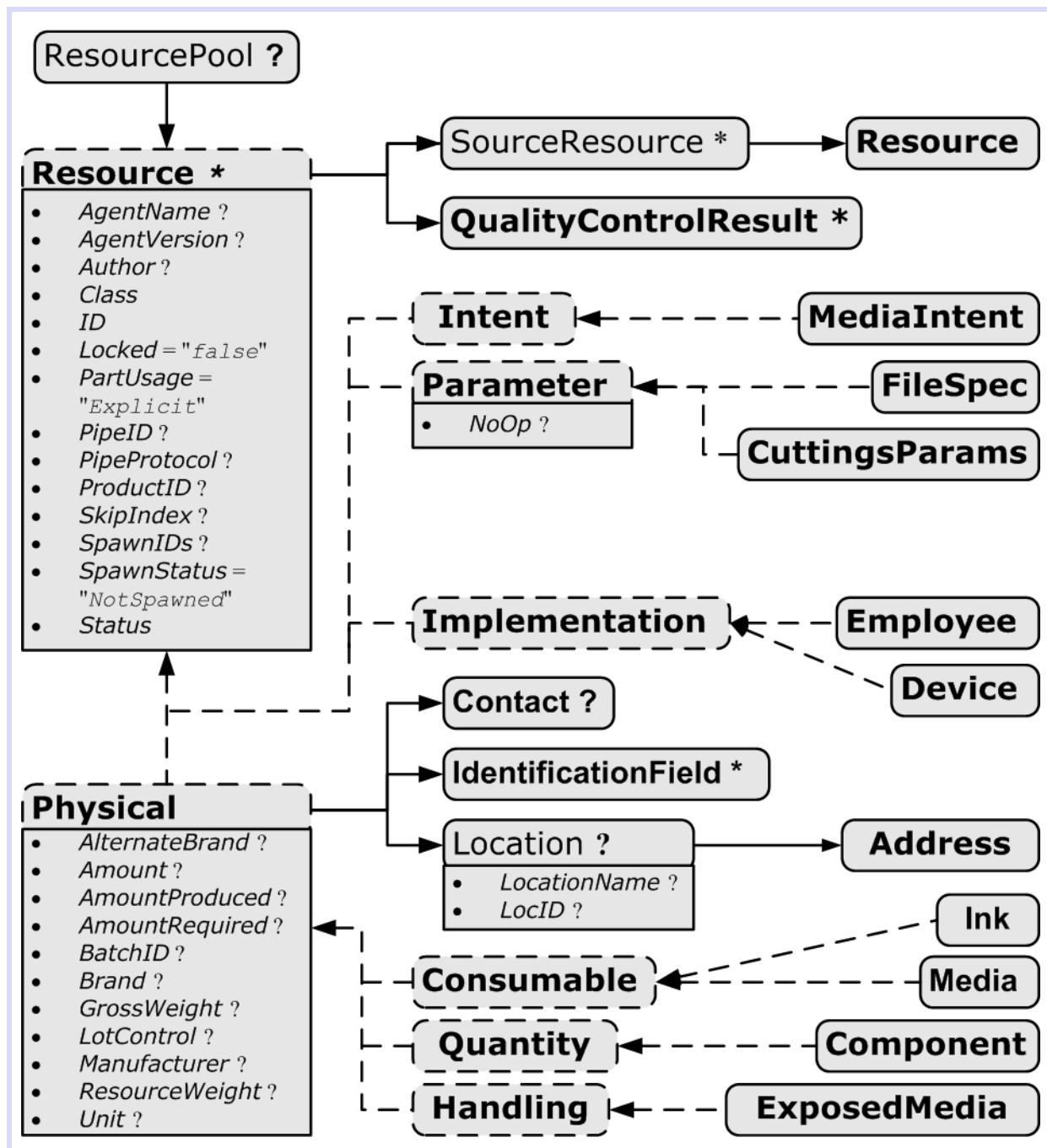
**Table 3-11: SourceResource Element**

Name	Data Type	Description
Resource	refelement	<p>Reference to Resources that were or SHOULD be taken into account to populate this Resource. Resource is an Abstract Element that MAY reference either Process Resources or Intent Resources that contain information that is used to populate this Resource. Note that Resource is an abstract type and designates any valid JDF Resource (e.g., <b>StrippingParams</b> or <b>ColorIntent</b>).</p> <p>This Element SHALL NOT be an inline Resource.</p>

### 3.10.4 Structure Diagram

Figure 3-6 shows the structure of the Abstract Resource Classes defined above. Arrows define inheritance relations and the thin orthogonal lines describe containing relations.

Figure 3-6: ResourcePool and Abstract Resource Element – a diagram of the structure



### 3.11 ProductList

The **ProductList** specifies a list of products and sub products from the print buyers point of view. For more details on product intent, see Chapter 7, “Product Intents”.

**Table 3-12: ProductList Element**

Name	Data Type	Description
Product +	element	Each Product element in this list represents a Product or part of a product with unique properties such as substrate, colors or size.

## 3.12 ResourceSet

One ResourceSet describes a set of one or more **Resource** elements that are logically grouped together. Thus two ResourceSet elements with the same **@Name** and **@Usage** MAY coexist in an XJDF if they define logically separated entities. In this case **ResourceSet/@ProcessUsage** SHALL be specified and different. For Instance **NodeInfo** MAY be defined based on End Customer scheduling requirements and partitioned by **@ProductPart** and the production scheduling SHOULD be defined in a separate ResourceSet.

The Resource Element is described in the Section 8.1, “Resource”.

**Table 3-13: ResourceSet Element (Sheet 1 of 2)**

Name	Data Type	Description
CommentURL ?	URL	URL to an external, human-readable description of the ResourceSet.
DescriptiveName ?	string	Human-readable descriptive name of the ResourceSet.
ID ?	ID	Identifier of the ResourceSet.
Name	string	Type of the ResourceSet. A list of valid types is specified in Chapter 8, “Resources”
ProcessUsage ?	string NMTOKEN	<p><b>ProcessUsage</b> identifies a Process’s usage the context of a <b>Resource</b> if multiple <b>Resource</b> elements of the same type MAY be supplied. For example, <b>@ProcessUsage</b> SHALL be provided this Attribute appears when two <b>RunList</b> Resources – Marks and Document—one Cover and one BookBlock— are used in Impositioning <b>CoverApplication</b>. <b>@ProcessUsage</b> MAY also be used to define the Individual Process Step from XJDF/@Types that a given ResourceSet applies to.</p> <p><b>Values include those from:</b> Table 3-24, “ProcessUsage Attribute Values” on page 105</p> <p><b>Values include those from:</b> ICS documents New in JDF 1.4</p> <p><b>Note:</b> the values of <b>@ProcessUsage</b> can be derived from specified in the appropriate Process descriptions in Chapter 6, “Processes”. Section 6.2, Process Template defines the parenthesized notation for denoting the value of <b>@ProcessUsage</b> (e.g., <b>RunList</b> (Marks)).</p> <p>Note: ICS documents MAY define additional values for <b>@ProcessUsage</b>.</p>
Unit ?	NMTOKEN	<p>Unit of measurement for the values of <b>@Amount</b>, <b>@AmountProduced</b> and <b>@AmountRequired</b>.</p> <p><b>Values include those from:</b> Table 1-8, “Units Used in JDF XJDF”.</p> <p><b>Note:</b> that it is strongly discouraged to specify units other than those that are defined in Table 1-8, “Units Used in JDF XJDF”.</p>

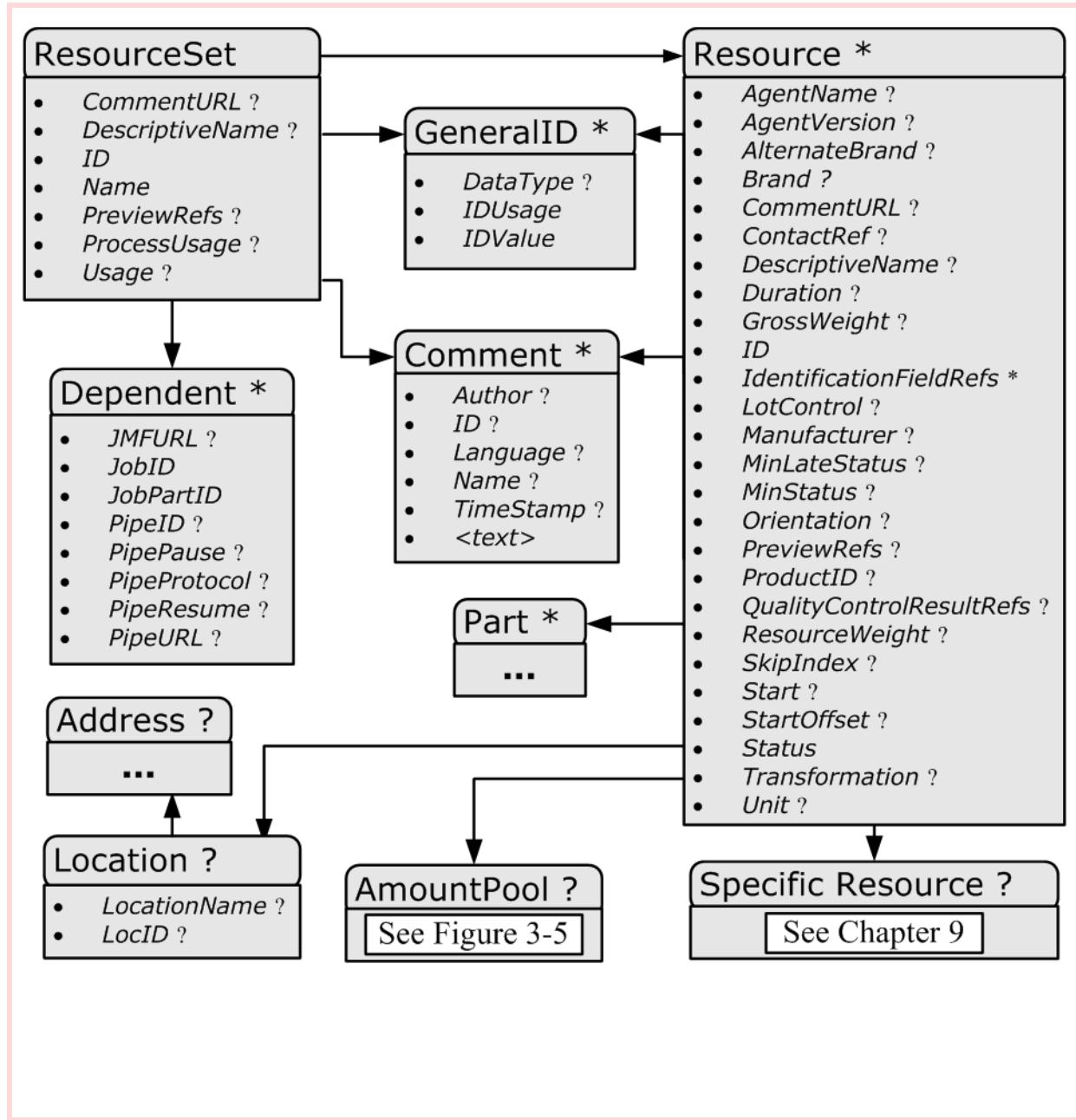
**Table 3-13: ResourceSet Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Usage</i> ?	enumeration	Resource usage within this XJDF Document. If no <i>@Usage</i> is specified, the ResourceSet or its child <b>Resource</b> elements SHALL be referenced from another <b>Resource</b> or sub-element thereof. <b>Allowed values are:</b> <i>Input</i> – The ResourceSet is an input that is consumed by the XJDF. <i>Output</i> – The ResourceSet is an output that is produced by the XJDF.
Comment *	element	Any human-readable text that relates to the ResourceSet.
Dependent *	element	Reference to an XJDF that produces this input ResourceSet or consumes this output ResourceSet.
GeneralID *	element	Additional identifiers related to the ResourceSet.
<b>Resource</b> *	element	List of <b>Resource</b> Elements.

### 3.12.1 Structure Diagram of ResourceSet

Figure 3-7 shows the structure of the ResourceSet. Arrows point to child elements.

Figure 3-7: ResourceSet – a Diagram of its Structure



### 3.12.2 Element: **Dependent**

A **Dependent** Element SHALL reference an XJDF that produces an input **ResourceSet** or consumes an output **ResourceSet** of the **Dependent** element's parent **ResourceSet**. **Dependent** elements also provide all pipe control information. See Section 4.3.3, “Overlapping Processing Using Pipes” on page 183 and Section 5.10.1, **PipeControl**.

**Table 3-14: Dependent Element**

Name	Data Type	Description
JMFURL ?	URL	URL of a processor that has knowledge of the referenced process. This MAY be either a Device, Controller or MIS. The URL may provide additional information through XJMF.
JobID	NMTOKEN	@JobID of the referenced process.
JobPartID	NMTOKEN	@JobPartID of the referenced process.
PipeID ?	NMTOKEN	If this Attribute exists, the Resource is a pipe. @PipeID is used by XJMF pipe-control Messages to identify the pipe. For more information, see Section 4.3.3, “Overlapping Processing Using Pipes”.
PipePartIDKeys ?	enumerations	Defines the <a href="#">list of valid partition keys</a> of a dynamic pipe for a resource such as RunList with @Automation = "Dynamic". Resource/Part of any PipeControl message SHALL NOT contain partition keys other than those specified in either @PipePartIDKeys or the respective ..../Resource/Part. The contents of @PipePartIDKeys SHALL NOT contain any enumeration values that are specified in any ..../Resource/Part
PipePause ?	double	Attribute for controlling the pausing of a Process if the Resource amount in the pipe buffer passes the specified value. For details on using @PipePause, see Section 4.3.3, “Overlapping Processing Using Pipes”.
PipeProtocol ?	NMTOKEN	Defines the protocol use for pipe handling. "JMF" and "Internal" are the only non-proprietary piping protocols that are supported. Proprietary pipe protocols MAY be specified in addition to those defined below but will not necessarily be interoperable. <b>Values include:</b> <i>IdentificationField</i> – The pipe data is provided by barcodes that are defined in <b>IdentificationField</b> elements. <i>JMF</i> – XJMF-based <b>PipeControl</b> Messages. The sequence of pipe initialization is undefined. See next two values: " <i>JMFPush</i> " and " <i>JMFPull</i> ". <i>JMFPush</i> – XJMF based <b>PipeControl</b> protocol. The producing Device initiates the protocol. <i>JMFPull</i> – XJMF based <b>PipeControl</b> protocol. The consuming Device initiates the protocol. <i>None</i> – No pipe support.
PipeResume ?	double	Attribute for controlling the resumption of a Process if the Resource amount in the pipe buffer passes the specified value. For details on using @PipeResume, see Section 4.3.3, “Overlapping Processing Using Pipes”.

### 3.13 Subelements of Resource

This section defines an Element for each type of **Resource**.

#### 3.13.1 Location

**Resource** elements can be stored at multiple, distributed locations. This is specified by including a **Location** Element in the **Resource** Element. See Section 8.1.1, “Location”. A @Location Partition Key is provided to define multiple locations of one **Resource**. The Partition Key carries no semantic meaning and does not by itself define the name of a location.

### Example 3-5: ExposedMedia with Location Elements

The following example describes a set of plates that are distributed over two locations. (Note: See Section C.5, “Input Tray and Output Bin Names” on page 1147 for additional detail on locating **Resource**.

TBD 2.x Example.

### Example 3-6: Media with Location Elements

The following example describes two different Media in the top and bottom tray of an **Interpreting** Process. The Media is selected for the cover and inside pages respectively.

TBD 2.x Example.

### 3.13.2 Part

The optional **Part** elements define the context in which the individual **Resource** is used. In our printing plate example, this would typically include the *@SheetName*, *@Side* and *@Separation* that the printing plate is for.

**Resource** partitions are uniquely identified by the **Resource**/Part elements. If multiple **Part** Elements are specified within one **Resource**, the **Resource** specifies one entity that applies to both parts.

The following table lists the content of a **Part** Element, which contains a set of Attributes that have a well described meaning.

Table 3-15: Part Element (Sheet 1 of 5)

Name	Data Type	Description
<i>BinderySignatureID</i> ?	NMTOKEN	Master Identifier of a BinderySignature.
<i>BlockName</i> ?	NMTOKEN	Identifies a <b>CutBlock</b> from a <b>Cutting</b> Process. The value of this Attribute SHALL match the value of the <i>@BlockName</i> Attribute of a <b>CutBlock</b> .
<i>BundleItemIndex</i> ?	IntegerRange	The <i>@BundleItemIndex</i> Attribute selects a set of BundleItem Elements from a <b>Component</b> Resource.
<i>DeliveryUnit0</i> ?	NMTOKEN	Specifies a hierarchical manifest of delivery packages where <i>@DeliveryUnit0</i> specifies the most granular bundle. <i>@DeliveryUnit&lt;N+1&gt;</i> specifies the next most granular bundle in packing after <i>@DeliveryUnit&lt;N&gt;</i> . Bundles can be packaged with varying numbers of products. <i>@DeliveryUnit&lt;N+1&gt;</i> SHALL occur before <i>@DeliveryUnit&lt;N&gt;</i> in <i>@PartIDKeys</i> . Note that N is a placeholder for the values 0 through 9.
<i>DeliveryUnit1</i> ?	NMTOKEN	See <i>@DeliveryUnit0</i> .
<i>DeliveryUnit2</i> ?	NMTOKEN	See <i>@DeliveryUnit0</i> .
<i>DeliveryUnit3</i> ?	NMTOKEN	See <i>@DeliveryUnit0</i> .
<i>DeliveryUnit4</i> ?	NMTOKEN	See <i>@DeliveryUnit0</i> .
<i>DeliveryUnit5</i> ?	NMTOKEN	See <i>@DeliveryUnit0</i> .
<i>DeliveryUnit6</i> ?	NMTOKEN	See <i>@DeliveryUnit0</i> .
<i>DeliveryUnit7</i> ?	NMTOKEN	See <i>@DeliveryUnit0</i> .
<i>DeliveryUnit8</i> ?	NMTOKEN	See <i>@DeliveryUnit0</i> .
<i>DeliveryUnit9</i> ?	NMTOKEN	See <i>@DeliveryUnit0</i> .

**Table 3-15: Part Element (Sheet 2 of 5)**

Name	Data Type	Description
<i>DocIndex</i> ?	IntegerRange	<i>@DocIndex</i> SHALL select a set of logical Instance Documents. The index SHALL refer to the list of documents in the context of all document sets selected by <i>@SetIndex</i> . <i>@DocIndex</i> SHALL NOT be specified for a <b>RunList</b> resource unless <i>RunList/@Automated</i> = "true".
<i>DropID</i> ?	NMTOKEN	Identifier of an individual drop within a <b>Delivery</b> . A drop represents multiple items being delivered to one address at one point in time.
<i>Location</i> ?	NMTOKEN	Name of the location (e.g., in MIS). This part key allows to describe distributed Resources. Note that this name does not define the location by itself. See Section 3.13.1, "Location" for details on specifying locations. <b>Values include those from:</b> Table C-21, "Input Tray and Output Bin Names" on page 1147. <b>Note:</b> the specified values are for printer locations.
<i>LotID</i> ?	NMTOKEN	Identifier of the Lot of a resource in a lot controlled environment.
<i>Metadata0</i> ?	RegExp	Metadata extracted from a PDL using <b>RunList/MetadataMap</b> Elements. See Section 10.30, "MetadataMap" on page 1074.
<i>Metadata1</i> ?	RegExp	See <i>@Metadata0</i> .
<i>Metadata2</i> ?	RegExp	See <i>@Metadata0</i> .
<i>Metadata3</i> ?	RegExp	See <i>@Metadata0</i> .
<i>Metadata4</i> ?	RegExp	See <i>@Metadata0</i> .
<i>Metadata5</i> ?	RegExp	See <i>@Metadata0</i> .
<i>Metadata6</i> ?	RegExp	See <i>@Metadata0</i> .
<i>Metadata7</i> ?	RegExp	See <i>@Metadata0</i> .
<i>Metadata8</i> ?	RegExp	See <i>@Metadata0</i> .
<i>Metadata9</i> ?	RegExp	See <i>@Metadata0</i> .
<i>Option</i> ?	NMTOKEN	Generic option that MAY be semantic free.
<i>PageNumber</i> ?	IntegerRange	Page number in a <b>Component</b> or document (e.g., <b>FileSpec</b> that is not described as a <b>RunList</b> ). References an index in a <b>Content</b> where <i>Content/@ContentType</i> = "Page".
<i>PartVersion</i> ?	NMTOKEN	Version identifier (e.g., the language version of a catalog).

**Table 3-15: Part Element (Sheet 3 of 5)**

Name	Data Type	Description
<i>PreviewType</i> ?	enumeration	<p>Preview specifies the type and usage of a <b>Preview</b>.  <code>@PreviewType</code> SHALL NOT be specified for Resources other than <b>Preview</b> or <b>PreviewGenerationParams</b>.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Animation</i> – animated previews for 3D display.</li> <li><i>Identification</i> – <b>Preview</b> is used as a visual help to identify one or more products, e.g. on a gang form</li> <li><i>SeparatedThumbNail</i> – Very low resolution separated preview.</li> <li><i>Separation</i> – Separated preview in medium resolution.</li> <li><i>SeparationRaw</i> – Separated preview in medium resolution with no compensation.</li> <li><i>Static3D</i> – static 3D model.</li> <li><i>ThumbNail</i> – Very low resolution RGB preview.</li> <li><i>Viewable</i> – RGB preview in medium resolution.</li> </ul>
<i>PrintCondition</i> ?	NMTOKEN	<code>@PrintCondition</code> specifies the name of a characterization data set for standard printing processes.
<i>ProductPart</i> ?	NMTOKEN	References the <b>Product</b> / <code>@ID</code> that this <b>Part</b> applies to.
<i>QualityMeasurement</i> ?	NMTOKEN	Identifier of an individual quality measurement in a <b>QualityControl</b> process.
<i>Run</i> ?	NMTOKEN	<code>@Run</code> identifies an individual Partition of a <b>RunList</b> .
<i>RunIndex</i> ?	IntegerRange	<code>@RunIndex</code> SHALL select a set of logical pages from a <b>RunList</b> Resource in a manner that is independent from the internal structure of the <b>RunList</b> . The index SHALL refer to the list of pages in the context of all documents and sets selected by <code>@DocIndex</code> and <code>@SetIndex</code> . <code>@RunIndex</code> SHALL NOT be specified for a <b>RunList</b> resource unless <b>RunList</b> / <code>@Automated = "true"</code>

**Table 3-15: Part Element (Sheet 4 of 5)**

Name	Data Type	Description
<i>Separation</i> ?	NMTOKEN	<p>Identifies the separation name.</p> <p><b>Values include:</b></p> <p><i>Composite</i> – Non-separated Resource.</p> <p><i>Separated</i> – The Resource is separated, but the separation definition is handled internally by the Resource, such as a PDF file that contains <b>SeparationInfo</b> dictionaries.</p> <p><i>Cyan</i> – Process color.</p> <p><i>Magenta</i> – Process color.</p> <p><i>Yellow</i> – Process color.</p> <p><i>Black</i> – Process color.</p> <p><i>Red</i> – Additional process color.</p> <p><i>Green</i> – Additional process color.</p> <p><i>Blue</i> – Additional process color.</p> <p><i>Orange</i> – Additional process color.</p> <p><i>Spot</i> – Generic spot color. Used when the exact nature of the spot color is unknown.</p> <p><i>Varnish</i> – Varnish.</p> <p><i>none</i> – explicit reference to a skipped module (i.e., no separation). Note that "<i>none</i>" is spelled in lower case so that its value is identical to the pre-defined separation "<i>none</i>" in [PDF1.6].</p> <p><b>Note:</b> Other values specify spot colors.</p>
<i>SetIndex</i> ?	IntegerRange	The <b>@SetIndex</b> Attribute SHALL select a set of logical Instance Document Sets. The index always refers to entries of the entire <b>RunList</b> . <b>@SetIndex</b> SHALL not be specified for a <b>RunList</b> resource unless <b>RunList/@Automated = "true"</b>
<i>SetTags</i> ?	RegExp	List of tags of pages in a multi-set <b>RunList</b> . Used to Partition Resources that are linked from Processes that also have a <b>RunList</b> as input. The Partition is selected if the implied value (i.e., from the PDL) of the set in the <b>RunList</b> matches any of the entries in <b>@SetTags</b> .
<i>SheetIndex</i> ?	IntegerRange	<b>@SheetIndex</b> selects a set of logical Sheets from a <b>RunList</b> Resource either implicitly or explicitly Partitioned by <b>@SheetIndex</b> . <b>@SheetIndex</b> is only valid when a <b>RunList</b> is describing sheet/surfaces.
<i>SheetName</i> ?	NMTOKEN	A string that uniquely identifies each Sheet.
<i>Side</i> ?	enumeration	<p>Denotes the side of the Sheet.</p> <p>If <b>@Side</b> is specified, the <b>Part</b> Element refers to one or both surfaces of the Sheet. In case of Web Printing, "<i>Front</i>" is a synonym for the upper side and "<i>Back</i>" for the down side of the Web.</p> <p><b>Allowed values are:</b></p> <p><i>Front</i></p> <p><i>Back</i></p>

**Table 3-15: Part Element (Sheet 5 of 5)**

Name	Data Type	Description
StationName?	NMOKEN	The name of the 1-up design in a <b>DieLayout</b> .
TileID ?	XYPair	XYPair of integer values that identifies the tile. Tiles are identified by their X and Y indexes. Values are zero-based and expressed in the PS coordinate system. So "0 0" is the lower left tile and "1 0" is the tile next to it on the right. <b>Tile</b> Resources are described in detail in the Section 8.160, "Tile".
TransferCurveName ?	NMOKEN	<p>@TransferCurveName SHALL specify the destination system that the <b>TransferCurve</b> SHALL apply to.</p> <p><b>Allowed values are:</b></p> <p><i>Film</i> – The transformation from the <b>Layout</b> system to the "<i>Film</i>".</p> <p><i>Plate</i> – The transformation from the <b>Layout</b> system to the "<i>Plate</i>".</p> <p><i>Press</i> – The transformation from the <b>Layout</b> system to the "<i>Press</i>".</p> <p><i>Paper</i> – The transformation from the <b>Layout</b> system to the "<i>Paper</i>".</p> <p><i>Proof</i> – The transformation from the <b>Layout</b> system to the "<i>Proof</i>".</p>
WebName ?	NMOKEN	A string that uniquely identifies each Web.

### 3.13.2.1 Partitioned Subsets of ResourceSets

In many cases, a set of similar **Resource** elements — such as separation films, plates or **RunList** elements — needs to be specified. When this occurs, it is convenient to define one **Resource** element that describes the complete set and allows individual subsets to be referenced.

In other cases, there can be a need to change some Attribute of a **Resource** for some subset of the processing to be done by a Device. For instance, when printing a document using **DigitalPrinting**, it would be a common application to change the dimensions of the media to be selected based on the actual media box changes in a PDF file.

Printing workflows contain a number of Processes that are repeated over a potentially large number of individual files, Sheets, surfaces or separations. Sets of resources are described by a **ResourceSet** with multiple **Resource** elements. An individual **Resource** SHALL be referenced by referencing **Resource/@ID**. The **ResourceSet** SHALL be referenced by referencing **ResourceSet/@ID**.

In some cases the partitioning structure of partitioned **ResourceSets** is not explicitly required because the **Resource** elements are individually referenced from other elements. In this case the **Part Element** NEED NOT be specified, even if there are multiple **Resource** elements in one **ResourceSet**.

Unless otherwise specified, an **@IDREF** or **@IDREFS** will refer to an individual **Resource** rather than an entire **ResourceSet**.

### 3.13.2.2 Selecting a Partition

A matching partition for a given set of partition keys is selected by iterating the **Resource** elements of the respective **ResourceSet** from top to bottom. If any of the **Resource/Part** elements has no mismatching attributes, that **Resource** is selected and the iteration is completed. Note that there NEED NOT be a match for any given Partition. Note: A **Resource/Part** with no attributes always matches.

### 3.13.2.3 Referencing Multiple Resources of the Same Type

Some Processes (e.g., **Collecting**, **Gathering**) allow multiple Input Resources of the same type. These multiple Input Resources SHALL be represented by multiple individual elements. If ordering is not explicitly defined, e.g. by specification of an Assembly, then the order of the ResourceSet elements in the XJDF Node defines said ordering.

### 3.13.2.4 Multiple Part Elements in One Resource

A ResourceSet MAY contain one or more **Resource** elements which MAY respectively contain 0 or more **Part** elements. Each **Resource** represents one entity, regardless of the number of **Part** elements. If a **Resource** contains more than one **Part** element, this **Resource** is applicable to any of the contained **Part** elements. For instance a set of plates for a versioned CMYK sheet with black change for English and French versions could have 5 plates. The C, M and Y would each contain 2 **Part** elements with both English and French whereas the two individual **Resource** elements for the K Plates would contain the respective *@PartVersions*.

#### Example 3-7: Versioned Set Of Plates with Multiple Part Elements

```
<ResourceSet Name="ExposedMedia">
    <!-- 3 Common Plates for English and French -->
    <Resource>
        <Part Separation="Cyan" PartVersion="English"/>
        <Part Separation="Cyan" PartVersion="French"/>
        <ExposedMedia .../>
    </Resource>
    <Resource>
        <Part Separation="Magenta" PartVersion="English"/>
        <Part Separation="Magenta" PartVersion="French"/>
        <ExposedMedia .../>
    </Resource>
    <Resource>
        <Part Separation="Yellow" PartVersion="English"/>
        <Part Separation="Yellow" PartVersion="French"/>
        <ExposedMedia .../>
    </Resource>
    <!-- Specific Black Plate for English -->
    <Resource>
        <Part Separation="Black" PartVersion="English"/>
        <ExposedMedia .../>
    </Resource>
    <!-- Specific Black Plate for French -->
    <Resource>
        <Part Separation="Black" PartVersion="French"/>
        <ExposedMedia .../>
    </Resource>
</ResourceSet>
```

### 3.13.3 AmountPool

Whereas **Resource/Part** identifies the context of **Resource** that the Process is consuming or producing, **AmountPool** is a container for the amount-related metadata of the **Resource**. **AmountPool/PartAmount/Part** SHALL refer to existing Partitions or non-existing sub-partitions of existing partitions that are implicitly or explicitly referred to by **Resource/Part**. For instance, if a **Resource** refers to a partition with *@SheetName="Sheet1"*, **AmountPool/PartAmount** MAY refer to Sheet1 or any existing or non-existing child of Sheet1, but NOT to Sheet2 or any existing or non-existing child of Sheet2.

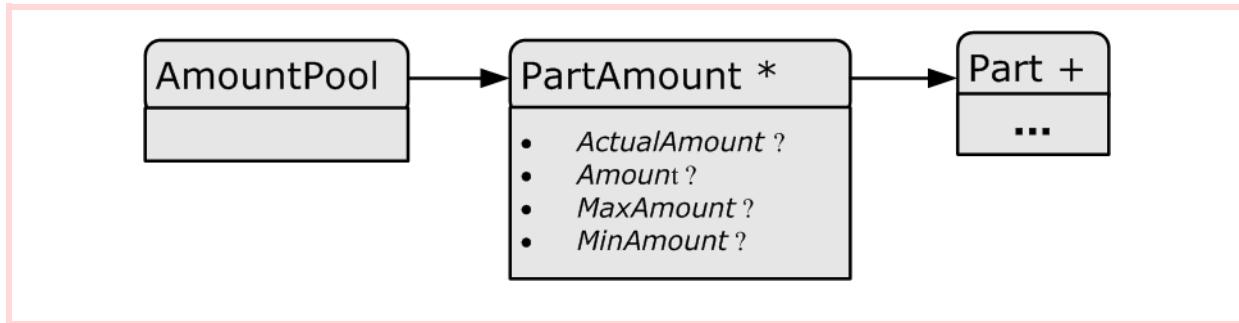
The following table lists the generic contents of an **AmountPool** Element. Further parameters of the **AmountPool** are described in the sections below.

**Table 3-16: AmountPool Element**

Name	Data Type	Description
PartAmount *	element	Element that defines the amounts and pipe parameters for a Partitioned Resource.

### 3.13.3.1 Structure Diagram of AmountPool

Figure 3-8 shows the structure of the AmountPool. Arrows point to child elements.

**Figure 3-8: AmountPool – a Diagram of its Structure**

### 3.13.3.2 Element: PartAmount

The following table lists the contents of a PartAmount Element.

**Table 3-17: PartAmount Element (Sheet 1 of 2)**

Name	Data Type	Description
ActualAmount ?	double	Total amount of the Resource that has been produced (in a <b>Resource</b> with <b>@Usage</b> = "Output") or consumed (in a <b>Resource</b> with <b>@Usage</b> = "Input") by this Node in every execution. For details see Section 3.14.4, "Resource Amount".
Amount ?	double	Good Amount in units defined in <b>ResourceSet/@Unit</b> or implied by Table 1-8, "Units Used in JDF XJDF". For an <b>ResourceSet</b> with a <b>@Usage</b> of "Input", <b>@Amount</b> specifies the amount of the <b>ResourceSet</b> that is needed by the Process. For an <b>ResourceSet</b> with a <b>@Usage</b> of "Output", <b>@Amount</b> specifies the amount of the <b>ResourceSet</b> that SHALL be produced by the Process.
MaxAmount ?	double	Defines the planned <b>@Amount</b> including the maximum overage.
MinAmount ?	double	Defines the planned <b>@Amount</b> including the maximum underage that the Customer is willing to accept.
ModuleIDs ?	NMTOKENS	Specifies the module or modules where the waste was produced.
Waste ?	double	Waste amount in units defined in <b>ResourceSet/@Unit</b> or implied by Table 1-8, "Units Used in JDF XJDF". For a <b>ResourceSet</b> with a <b>@Usage</b> of "Input", <b>@Waste</b> specifies the amount of the <b>ResourceSet</b> that is needed by the Process. For an <b>ResourceSet</b> with a <b>@Usage</b> of "Output", <b>@Waste</b> specifies the amount of the <b>ResourceSet</b> that SHALL be produced by the Process.

**Table 3-17: PartAmount Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>WasteDetails</i> ?	NMTOKEN	Specifies additional details about how the waste was produced. See Table 3-18, “WasteDetails Attribute Values” for suggested values.
Part +	element	Part specifies the selected parts that the PartAmount is valid for. If the parent AmountPool is specified in a Resource element that also contains Part elements, then these PartAmount/Part elements SHALL NOT include any partition keys that are already specified in the parent Resource/Part.

**— Attribute: WasteDetails****Table 3-18: WasteDetails Attribute Values**

Value	Description
<i>Waste</i>	General waste.
<i>Rejected</i>	Rejected in an Approval process
<i>Overrun</i>	Excess Component Resource(s) that were produced by running the Device after the specified amount has been produced.
<i>xxxWaste</i>	Like "Waste" above, but where "xxx" can be the name of any JDF XJDF Process (e.g., "FeedingWaste", "TrimmingWaste", etc.). In the case of a Combined Process or Process Group, the name of the last JDF XJDF Process in the Process chain is used.
<i>AuxiliarySheet</i>	This Partition identifies Media that was consumed as specified by InsertSheet/@SheetType = "AccountingSheet", "ErrorSheet", "JobSheet" or "SeparatorSheet".
<i>BindingQualityTestFailed</i>	Failed binding quality test. The Component Resource(s) with this @WasteDetails belong to the batch of Component Resource(s) that did not pass the test.
<i>BindingQualityTestPassed</i>	Passed binding quality test. The Component Resource(s) with this @WasteDetails belong to the batch of Component Resource(s) that passed the test but were not destroyed in the Process.
<i>BindingQualityTestWaste</i>	Passed binding quality test. The Component Element(s) with this @WasteDetails belong to the batch of Component Element(s) that passed the test but were destroyed in the Process.
<i>CaliperWaste</i>	Waste by caliper on gathering / collecting.
<i>DoubleFeedWaste</i>	Waste by double feeds on feeders.
<i>IncorrectComponentWaste</i>	Waste by the attempted use of an incorrect components (e.g., on a feeder).
<i>BadFeedWaste</i>	Waste caused by a bad feed
<i>ObliqueSheetWaste</i>	Waste by oblique Sheets on gathering / collecting chains.
<i>PaperJamWaste</i>	Waste by paper or other media jam.
<i>Reusable</i>	Waste to be used for setup in the next process.
<i>WhitePaperWaste</i>	White paper waste.

### 3.13.4 Resource Classes

The following sections describe the functions of each of the seven values of the `@Class` Attribute. All Resources fall into one of these Classes. In Chapter 7, “Product Intents” and Chapter 8, “Resources”, the Class of each Resource is indicated in the Resource Properties subheading.

#### 3.13.4.1 Parameter Resource

Parameter Resources define the details of Processes, as well as any non-physical computer data such as files used by a Process. They are usually associated with a specific Process. For example, a REQUIRED Input Resource of the **DigitalPrinting** Process is the **DigitalPrintingParams** Resource. Most predefined Parameter Resources contain the suffix “Params” in their titles. Examples of Parameter Resources include **FoldingParams** and **ConventionalPrintingParams**.

##### 3.13.4.1.1 Abstract Parameter Resource

#### Parameter & Intent Resources



Parameter and Intent Resources are information about the Job. Intent

Resources might originate in the customer’s RFQ and might include information such as trim size, the number of colors and so on. Later on in the process of estimating and scheduling the Job, these intents might be transformed into parameters for production process.

Table 3-19: Abstract Parameter Resource Element

Name	Data Type	Description
<code>NoOp = "false"</code> <u>New in JDF 1.1</u>	boolean	A value of “ <code>true</code> ” indicates that the Process step that is parameterized by this Resource or Resource Partition SHALL NOT be executed. If “ <code>false</code> ” or not specified, the Resource is operational and that the Process step that is parameterized by this Resource or Resource Partition SHALL be executed. The <code>@NoOp</code> Attribute SHALL only be used for Processes that input and output exchange Resources of identical Resource types (e.g., <b>RunList</b> or <b>Component</b> ).

#### 3.13.4.2 Intent Resource

Intent Resources define the details of products to be produced without defining the Process to produce them. In addition, they provide structures to define sets of allowable options and to match these selections with prices. The details of all Product Intents are described in Chapter 7, “Product Intents”. The Abstract Intent Resource Element contains no Attributes or Elements besides those contained in the Abstract Resource Element.

#### 3.13.4.3 ImplementationResource

ImplementationResources define the Devices and operators that execute a given Node. Only two ImplementationResource types are defined: **Employee** (see Section 8.56, “Employee”) and **Device** (see Section 8.47, “Device”)

ImplementationResources can only be used as Input Resources and MAY be linked to any Process. The Abstract ImplementationResource Element contains no Attributes or Elements besides those contained in the Abstract Resource Element. An example demonstrating how to use ImplementationResources is provided in Section 3-8, “EmployeeLink”.

Note that if a Node links to a **Device** Resource in order to specify that the Device is intended to execute the Node, the **Device** Resource SHOULD NOT specify the capabilities of the Device.

#### 3.13.4.4 Consumable Resource

A Consumable Resource is consumed during a Process. Examples include **Ink** and **Media**. Consumable Resources are the unmodified inputs in a Process chain. A Consumable Resource is a PhysicalResource and inherits the contents of the Abstract PhysicalResource Element.

### 3.13.4.5 Quantity Resource

A **Quantity Resource** has been created by a Process from either a **Consumable Resource** or an earlier **Quantity Resource**. For example, printed Sheets are cut and a pile of cut blocks is created. A **Component Resource** is an example of a **Quantity Resource**. A **Quantity Resource** is a **PhysicalResource** and inherits the contents of the **Abstract PhysicalResource Element**.

### 3.13.4.6 Handling Resource

A **Handling Resource** is used during a Process, but is not destroyed by that Process. The **ExposedMedia** and **Tool** Resources are examples of such a Resource, although it does describe various kinds of items such as film and plates. A **Handling Resource** MAY be created from a **Consumable Resource**. A **Handling Resource** is a **PhysicalResource** and inherits the contents of the **Abstract PhysicalResource Element**.

### 3.13.4.7 PhysicalResource

A **PhysicalResource** is a Resource that is a **Consumable Resource**, a **Quantity Resource** or a **Handling Resource** (whose **@Class** is "Consumable", "Quantity" or "Handling", respectively):

#### 3.13.4.7.1 Abstract PhysicalResource

Table 3-20, “Abstract PhysicalResource Element” on page 94, defines the additional Attributes and Elements that can be defined for **PhysicalResources**. The Processes that consume **PhysicalResources**—any kind of **PhysicalResource**—have the option of using these Attributes and Elements to determine in what way the Resources are to be consumed.



#### Automating Inventory Management

JDF's handling of **PhysicalResources** provides a bridge between your JDF enabled systems and inventory management, ordering and replenishing systems. This opens the door to just-in-time inventory management driven by real-time scheduling and consumption data.

**Table 3-20: Abstract PhysicalResource Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>AlternateBrand</i> ?	string	Information, such as the manufacturer or type, about a Resource compatible to that specified by the <b>@Brand</b> Attribute, which is described below.
<i>Amount</i> ?	double	Actual amount of the Resource that is available. Note that the amount of consumption and production of a Node is specified in the corresponding <b>ResourceLink</b> Element. For details on amount handling, see Section 3.15.4, “Resource Amount”. For the unit of measurement, see the <b>@Unit</b> Attribute below.
<i>AmountProduced</i> ?	double	Total amount of the Resource that has been produced by all Nodes that reference this Resource as output. This corresponds to the sum of all <b>@ActualAmount</b> values of output <b>ResourceLink</b> Elements of leaf JDF Nodes with <b>@Status</b> = "Completed" that reference this Resource. For the unit of measurement, see the <b>@Unit</b> Attribute below.
<i>AmountRequired</i> ?	double	Total amount of the Resource that is referenced by all Nodes that will consume this Resource. This corresponds to the sum of all <b>@Amount</b> values of input <b>ResourceLink</b> Elements of all Processes that consume this Resource. In case the Resource is the last Resource in a Process chain, <b>@AmountRequired</b> specifies the sum of all <b>@Amount</b> values of all output <b>ResourceLink</b> Elements that produce this Resource. For the unit of measurement, see the <b>@Unit</b> Attribute below.
<i>BatchID</i> ?	string	ID of a specific batch of the <b>PhysicalResource</b>

**Table 3-20: Abstract PhysicalResource Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Brand</i> ? <a href="#">Modified in JDF 1.3</a>	string	<p>Information, such as the model, part number and/or type, about the Resource being used. Some examples are as follows.</p> <ul style="list-style-type: none"> <li>Premium InkProp Glossy 6x642A</li> <li>Premium Multipurpose 1234, 88 Bright 24 lb. Bond, 8-1/2 x 11, White Copy Paper Reorder 4711</li> </ul> <p>Prior to JDF 1.3, <i>@Brand</i> included details of the <i>@Manufacturer</i>, which SHOULD be specified in <i>@Manufacturer</i>.</p>
<i>GrossWeight</i> ? <a href="#">New in JDF 1.3</a>	double	Gross weight of a single Resource, as counted in <i>@Amount</i> , in grams.
<i>LotControl</i> ? <a href="#">New in JDF 1.3</a>	enumeration	<p>Specifies whether the Resource is lot controlled.</p> <p><b>Allowed values are:</b></p> <p><i>Controlled</i> – Resource is lot controlled, lot usage SHOULD be reported in ResourceAudit Elements.</p> <p><i>NotControlled</i> – Resource is not lot controlled.</p>
<i>Manufacturer</i> ? <a href="#">New in JDF 1.3</a>	string	Specifies the manufacturer of the Resource.
<i>ResourceWeight</i> ? <a href="#">New in JDF 1.1</a>	double	Net weight of a single Resource, as counted in <i>@Amount</i> , in grams.
<i>Unit</i> ?	NMTOKEN	<p>Unit of measurement for the values of <i>@Amount</i>, <i>@AmountProduced</i> and <i>@AmountRequired</i>.</p> <p><b>Values include those from:</b> Table 1-8, “Units Used in JDF XJDF”.</p> <p><b>Note:</b> that it is strongly discouraged to specify units other than those that are defined in Table 1-8, “Units Used in JDF XJDF”.</p>
<i>Contact</i> ?	refelement	If this Element is specified, it describes the owner of the Resource.
<i>IdentificationField</i> * <a href="#">New in JDF 1.1</a>	refelement	If this Element is specified, a bar code or label is associated with this PhysicalResource.
<i>Location</i> ?	element	<p>Description of details of the location of this Resource.</p> <p>Note, in order to describe multiple locations, Resources MAY be Partitioned by the <i>@Location</i> Partition Key as described in Section 3.15.5, “Description of Partitioned Resources”.</p>

### 3.13.4.7.2 Element: [Location](#)

**Table 3-21: Location Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Address</i> ?	element	Address of the storage facility. For more information, see Section 10.1, “Address”.
<i>LocationName</i> ? <a href="#">New in JDF 1.1</a>	string	<p>Name of the location (e.g., in MIS). This allows the user to describe distributed Resources.</p> <p><b>Values include those from:</b> Table C-21, “Input Tray and Output Bin Names” on page 1147.</p> <p><b>Note:</b> the specified values are for printer locations.</p>

**Table 3-21: Location Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>LocID</i> ?	string	Location identifier (e.g., within a warehouse system).
<b>Address</b> <b>sRef</b>	elementI-DREF	Address of the storage facility. For more information, see Section 10.1, “Address”.

### 3.13.4.8 PlaceHolder Resource

Deprecated in JDF 1.5

The PlaceHolder Resource has been deprecated starting with JDF 1.5. For details of the deprecated PlaceHolder Resource, see Section P.1.1, “PlaceHolder Resource” on page 1307.

### 3.13.5 Position of Resources within JDF Nodes

Resources MAY exist in any JDF Node, but JDF Nodes SHALL reference only local or global Resources. In other words, JDF Nodes SHALL reference Resources only in the two kinds of locations: in the Node’s own ResourcePool Element, or in JDF Nodes that are hierarchically closer to the JDF root. An exception to this rule, however, occurs if two independent Jobs are merged for a Process step and are to be separated afterwards, as is the case when two independent Jobs are printed on the same Web Press. For further details on independent Job merging, see Section 4.4.5, “Case 5: Spawning and Merging of Independent Jobs”.

It is good practice to put Resources into the closest Node that references the Resource. For example, the **RenderingParams** Resource SHOULD be located in the **Rendering** Node, unless it is used by multiple **Rendering** Processes, in which case it SHOULD be located in the Process Group Node that contains the **Rendering** Process Nodes. Resources that link more than one Node SHOULD be placed in the parent Node of the siblings that are linked by the Resource.

A Process that needs additional detailed Process information specifying the creation of a Resource SHALL infer this information by explicitly linking to the appropriate Parameter Resource.

### 3.13.6 Pipe Resources

A Pipe describes the Resource dependency in which a Process begins to consume a Resource while it is being produced by another Process (e.g., stacking components while they are being printed) or consuming a data stream while it is being written by an upstream Process. Note that defining a Pipe Resource does not automatically set up communication between Processes. The Controllers/Agents that execute the Process SHALL still implement the protocol that defines the Pipe.

Using dynamic pipe control, a downstream Process can control the total quantity produced by an upstream Process, and/or the quantity buffered by an inter-Process transport Device (i.e., Conveyor belt). Additional description of pipes and Process communication via pipes is provided in Section 4.3.3, “Overlapping Processing Using Pipes”.

Resources MAY contain a string Attribute called *@PipeID* that declares the Resource to be a pipe, and identifies it in a dynamic-pipe messaging environment. A pipe that is also controlled by JMF pipe Messages is called **dynamic pipe**. For more information about dynamic pipes, see Section 4.3.3.1, “Dynamic Pipes”.

### 3.13.7 ResourceUpdate

New in JDF 1.1,

Deprecated in JDF 1.3

For details of the deprecated ResourceUpdate Element, see Section P.1.2, “ResourceUpdate” on page 1307.

## 3.14 ResourceLinkPool and ResourceLink

### 3.14.1 ResourceLinkPool

Each JDF Node contains a ResourceLinkPool Element that in turn contains all of the ResourceLink Elements that link the Node to the Resources it uses. The following table shows the contents of a ResourceLinkPool Element.

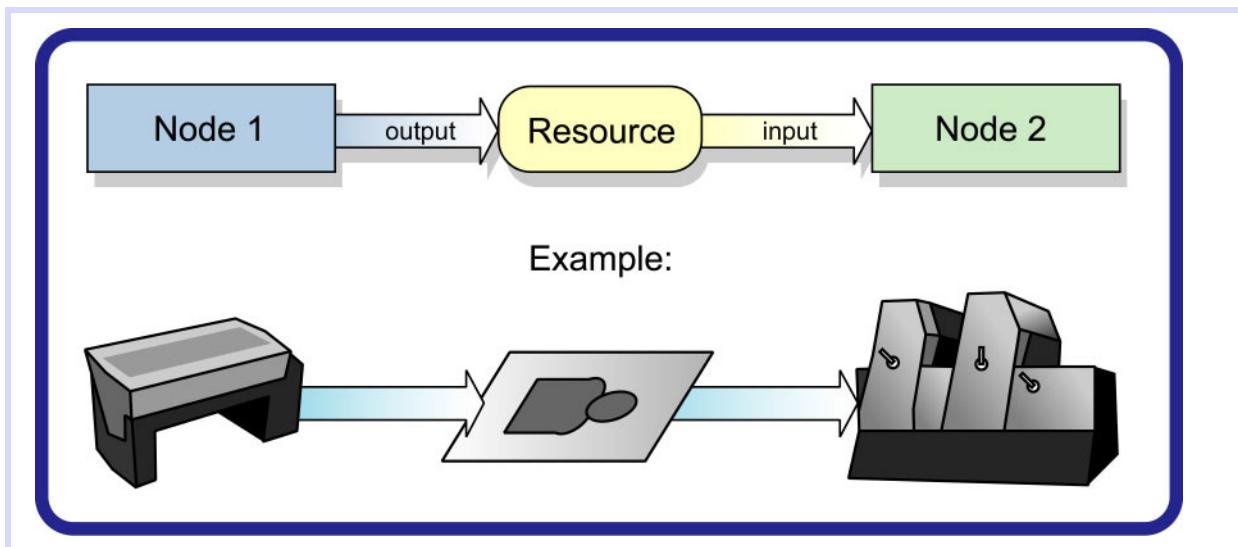
Table 3-22: ResourceLinkPool Element

Name	Data Type	Description
ResourceLink *	element	List of ResourceLink Elements. A ResourceLink Element is Abstract and is a placeholder for a concrete ResourceLink Element, such as MediaLink.

### 3.14.2 ResourceLink

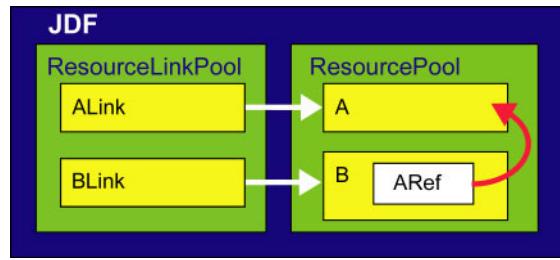
ResourceLink Elements describe what Resources a Node uses, and how it uses them. They also define whether the Resources are inputs or outputs. These inputs and outputs provide conceptual links between the execution Elements of JDF Nodes. Outputs of one Node can in turn become inputs in another Node, and a given Node SHALL NOT be executed before @Status all specified Input Resources is greater than or equal to ResourceLink/@MinStatus or ResourceLink/@MinLateStatus.<sup>1</sup> Figure 3.6 shows two Processes that are linked by a Resource. The Resource represents the output of Node 1, which in turn becomes an input for Node 2.

Figure 3-9: Nodes linked by a Resource



ResourceLink Elements also allow Node dependencies to be calculated. The following diagram summarizes Resource linking within a JDF Node. In this example there are two Resources, A and B, which are placed in the Node's ResourcePool. To reference the Resources, the Node has two ResourceLink Elements, ALink and BLink, in the ResourceLinkPool. A ResourceLink is named by appending "Link" to the type of Resource referenced. Resource B also contains a reference to Resource A, called ARef. References to Resources from within Resources are named by appending "Ref" to the type of Resource referenced (see Section 3.15.2, "ResourceRef – Element for Inter-Resource Linking and refelement").

1. The availability of a Resource that is consumed as a whole is given by the Resource Attribute **@Status = "Available"**. In the case of pipe Resources, the availability depends on the individual parameter defining the dynamics of a pipe. For details see Section 4.3.3, "Overlapping Processing Using Pipes".

**Figure 3-10: ResourceLink Elements and ResourceRef Elements**

The previous section describes Resources used by the Node in which it resides. This section describes how Resources can serve as links between Nodes. As was described in Section 2.2, “JDF XJDF Workflow”, any Resource that is the output of one Process will very likely serve as an input of a subsequent Process. Furthermore, some Resources are shared between ancestor Nodes and their child Nodes.

ResourceLink Elements MAY also contain Attributes to select a part of a Resource, such as a single separation. A detailed description of Resource Partitioning is given in Section 3.15.5, “Description of Partitioned Resources”.

Because implementation ResourceLink Elements define the usage of a specific Device during the course of a Job, situations can arise where that Resource is not needed during the whole processing time. For instance, a forklift that only has to transport the completed components need not be available during the entire Process run, only during the times when it is needed. This means that, contrary to the general rule that all Resources SHALL be “Available” for Node execution to commence, a Node can commence when ImplementationResources are still “InUse” by other Processes if @Start or @StartOffset are specified. ResourceLink Elements always have a @Usage of “Input”.

ProcessGroup and Product Intent Nodes can be defined without the knowledge of the individual Process Nodes that define a specific workflow. In this case, these intermediate Nodes will contain ResourceLink Elements that link the appropriate Resources. For example, a prepress Node might be defined that produces a set of plates. When the Processes for creating the plates are defined in detail, the Agent that writes the Nodes might remove the ResourceLink Elements from the intermediate Node. Removing the ResourceLink specifies that the intermediate Node can execute (i.e., it can be sent to the appropriate Controller or department), even though the specific Resources are not yet available. If the ResourceLink Elements are not removed, the intermediate Node cannot execute until the linked Input Resources become available.

ResourceLink Elements MAY be used for Process control. For example, if a proof Input Resource is needed for a print Process, a print run can commence only when the proof is signed. The JDF format specification also includes a complete specification of how Resources are managed when JDF tickets are spawned and merged.

In some cases, determining whether to store information in an input or an Output Resource can be difficult, as the distinction can be ambiguous. For example, is the definition of the color of a separation in the RIP Process a property of the output separation or a parameter that describes the RIP Process? In order to reduce this ambiguity, the following rules have been defined for input and Output Resources of Processes (see Chapter 6, “Processes” and Chapter 8, “Resources”).

- Product Intent and Process parameters are generally Input Resources, except when one Process defines the parameters of a subsequent Process.
- Consumable Resources SHALL always be Input Resources.
- Quantity Resources and Handling Resources are used both as Input Resources and Output Resources. Their usage is defined by the “natural” Process usage. For example, a printing plate is described as a Resource that is the output of a Process and the input of a Process.
- Processed material is exchanged from Node to Node using the **Component** Resource. Product Intent Nodes also create **Component** Output Resources.

- Every detailed Process description SHALL be defined as an input parameter of the first Process where it is referenced. This means that a Device SHALL NOT infer Process parameters from its Output Resources. For example, paper weight in grams MAY be defined in the **Component** Output Resource of the printing Process but SHALL be defined as an input parameter of the **Media** of the printing Process.
- Any Resource parameter that is used SHALL be referenced explicitly. Resource parameters cannot be inferred by following the chain of Nodes backwards. This would make spawning of Nodes non-local.
- The last Process in a chain of Processes SHALL define the Output Resource of its parent Process.
- In case of parallel Processing, the sum of the outputs of all parallel Subnodes SHALL define the output of the parent Node.

Like Resource Elements, ResourceLink Elements are an Abstract data type. The Class tree of Abstract ResourceLink Elements is further subdivided into Classes defined by the *@Class* Attribute of the Resource that it references. Individual instances of ResourceLink Elements are named by appending the suffix “Link” to the name of the referenced Resource. For example, the link to a **Component** Resource is entitled ComponentLink and the link to a **ScanParams** Resource is entitled ScanParamsLink.

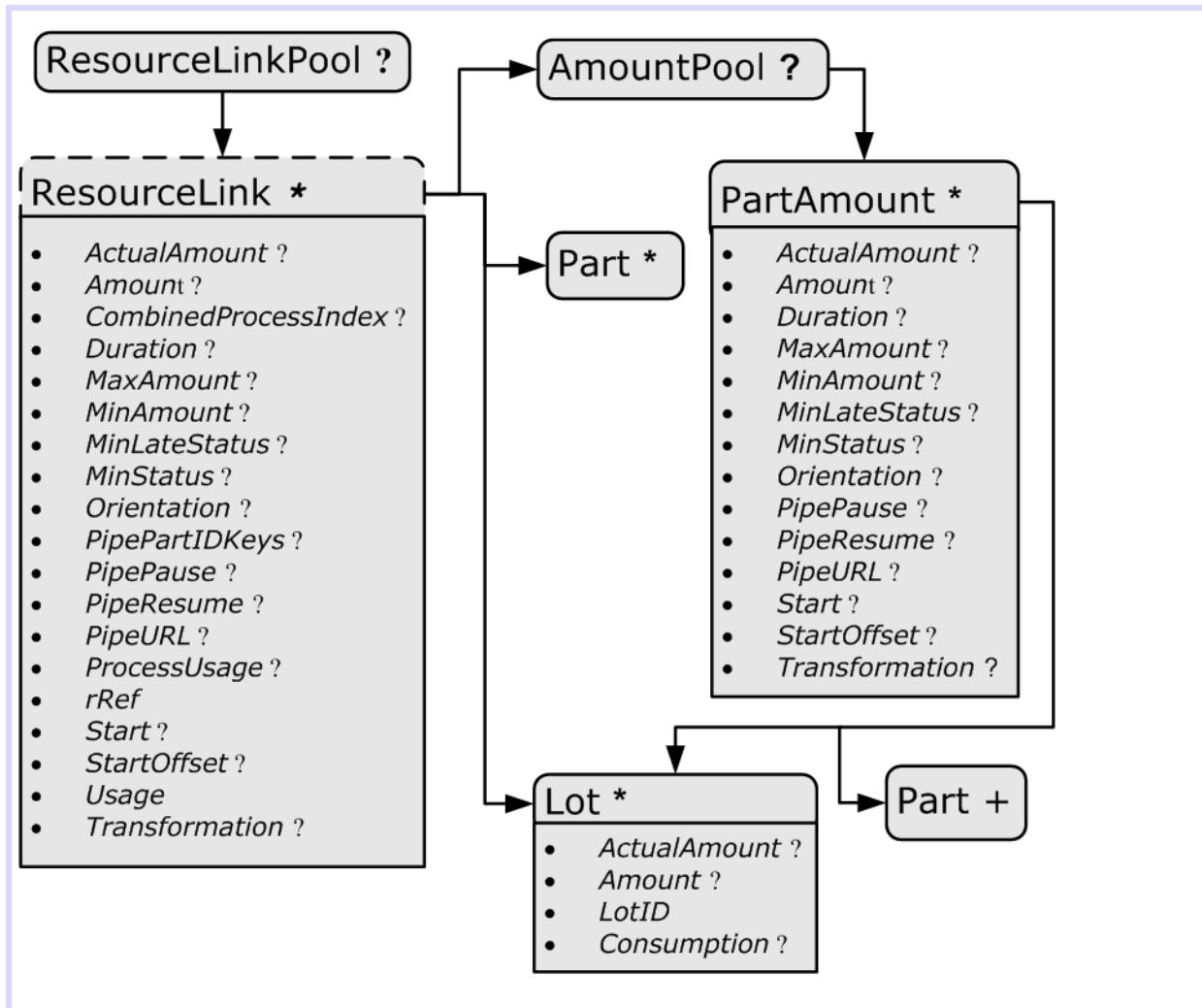
It is important to note that the order of occurrence of links to PhysicalResources MAY be significant. For example, a **Gathering** Process might have among its inputs, links to three **Component** Resources. The order of these links indicates the order in which the **Component** Resources are to occur in the new, gathered output **Component**.

**Note:** starting with JDF 1.5 ConsumableLink, HandlingLink, ImplementationLink, ParameterLink, PlaceHolderLink and QuantityLink have been removed and all their attributes and subelements moved to ResourceLink.

### 3.14.3 Structure Diagram

Figure 3-11 shows the Abstract types derived from the ResourceLink type.

Figure 3-11: **ResourceLinkPool and ResourceLink Element – a diagram of the structure**



The following table lists the possible contents of all ResourceLink Elements.

Table 3-23: ResourceLink Element (Sheet 1 of 6)

Name	Data Type	Description
ActualAmount ? <u>New in JDF 1.2</u>	double	Total amount of the Resource that has been produced (in a ResourceLink with <code>@Usage = "Output"</code> ) or consumed (in a ResourceLink with <code>@Usage = "Input"</code> ) by this Node in every execution. For details see <a href="#">Section 3.15.4, “Resource Amount”</a> . <b>Note:</b> in JDF 1.5, moved from deleted abstract PhysicalLink.

Table 3-23: ResourceLink Element (Sheet 2 of 6)

Name	Data Type	Description
<i>Amount</i> ?  <a href="#">New in JDF 1.1</a>	double	<p>For a link with a <i>@Usage</i> of "<i>Input</i>", specifies the amount of the Resource that is needed by the Process, <a href="#">in units as defined in the Resource</a>. For a link with a <i>@Usage</i> of "<i>Output</i>", specifies the amount of the Resource that is to be produced by the Process, <a href="#">in units as defined in the Resource</a>. Allows Resources to be only partially consumed or produced (see Section 3.15.4, "Resource Amount"). If not specified, <i>ResourceLink/@Amount</i> defaults to <i>Resource/@Amount</i>.</p> <p><b>Note:</b> in JDF 1.5, moved from deleted abstract PhysicalLink.</p>
<i>CombinedProcessIndex</i> ?  <a href="#">New in JDF 1.1</a>	IntegerList	<p>Combined Process Nodes and Process Group Nodes MAY contain Resources from multiple Process Nodes. The <i>@CombinedProcessIndex</i> Attribute specifies the indices of individual Processes in the <i>@Types</i> Attribute to which a <i>ResourceLink</i> in a Combined Process Nodes or Process Group Node belongs. Multiple entries in <i>@CombinedProcessIndex</i> specify that the <i>ResourceLink</i> is used by the respective multiple Processes in the Combined Process Node. It SHALL be specified when multiple Resources of the same name and <i>ResourceLink/@Usage</i> are specified in one JDF Node. If <i>@CombinedProcessIndex</i> is not specified, even though multiple Processes in the Combined Process Node or Process Group Node MAY link to the Resource, the <i>ResourceLink</i> applies to all of these Processes.</p>
<i>CombinedProcessType</i> ?  <a href="#">Deprecated in JDF 1.1</a>	NMTOKEN	<p>Combined Process Nodes contain Input Resources from multiple Process Nodes. The <i>@CombinedProcessType</i> Attribute specifies the name individual Process to which a <i>ResourceLink</i> in a Combined Process Node belongs. It SHALL match one of the entries in the <i>@Types</i> Attribute of the Node.</p> <p><b>Deprecation note:</b> replaced by <i>@CombinedProcessIndex</i> in JDF 1.1.</p>
<i>DraftOK</i> ?  <a href="#">Deprecated in JDF 1.3</a>	boolean	<p>If "<i>true</i>", the Process can commence with a draft Resource. Default = "<i>false</i>". Replaced with <i>@MinLateStatus</i> and <i>@MinStatus</i> in JDF 1.3 and beyond.</p>
<i>Duration</i> ?  <a href="#">Modified in JDF 1.4</a>	duration	<p>Estimated duration during which the Resource will be used.</p> <p><b>Modification note:</b> starting with JDF 1.4, this Attribute is moved from Abstract ImplementationLink table, which is deleted in JDF 1.5.</p>
<i>MaxAmount</i> ?  <a href="#">New in JDF 1.3</a>	double	<p>Defines the planned <i>@Amount</i> including the maximum overage. <a href="#">If not specified, defaults to a system specified value based on @Amount</a>.</p> <p><b>Note:</b> in JDF 1.5, moved from deleted abstract PhysicalLink.</p>
<i>MinAmount</i> ?  <a href="#">New in JDF 1.3</a>	double	<p>Defines the planned <i>@Amount</i> including the maximum underage that the Customer is willing to accept. <a href="#">If not specified, defaults to a system specified value based on @Amount</a>.</p> <p><b>Note:</b> in JDF 1.5, moved from deleted abstract PhysicalLink.</p>

Table 3-23: ResourceLink Element (Sheet 3 of 6)

Name	Data Type	Description
<i>MinLateStatus</i> ? <a href="#">New in JDF 1.3</a>	enumeration	Minimum value of <code>Resource/@Status</code> for the execution of this Node to commence when deadlines are endangered (i.e., when the time defined by <code>NodeInfo/@LastStart</code> or implied by <code>NodeInfo/@LastEnd</code> is approaching). <b>Default value is from:</b> <code>@MinStatus</code> . <b>Allowed values are from:</b> <code>Resource/@Status</code> .
<i>MinStatus</i> ? <a href="#">New in JDF 1.3</a>	enumeration	Minimum value of <code>Resource/@Status</code> for the execution of this Node to commence. <b>Default value is:</b> "Available" if <code>@Usage = "Input"</code> and "Unavailable" if <code>@Usage = "Output"</code> . <b>Allowed values are from:</b> <code>Resource/@Status</code> .
<i>Orientation</i> ? <a href="#">New in JDF 1.1</a>	Orientation	Named orientation describing the transformation of the orientation of a <code>PhysicalResource</code> relative to the ideal Process coordinate that uses this Resource as input or output. If <code>@Orientation</code> is specified for an Output Resource, the Node that processes the <code>PhysicalResource</code> is to manipulate the Resource in such a way as to reflect the transformation. The coordinate system of the Resource itself is <i>not</i> modified. At most one of <code>@Orientation</code> or <code>@Transformation</code> SHALL be specified. For details on coordinate systems, see Section 2.5, "Coordinate Systems in JDF XJDF". <b>Note:</b> in JDF 1.5, moved from deleted abstract <code>PhysicalLink</code> .
<i>PipePartIDKeys</i> ? <a href="#">Deprecated in JDF 1.6</a>	enumerations	Defines the granularity of a dynamic pipe for a Partitioned Resource. For instance, if a Resource were Partitioned by Sheet, surface and separation (i.e., <code>Resource/@PartIDKeys = "SheetName Side Separation"</code> ) and if the <code>ResourceLink/@PipePartIDKeys = "SheetName Side"</code> , then pipe requests would be issued only once per surface. The contents of <code>@PipePartIDKeys</code> SHALL be a subset of the <code>@PartIDKeys</code> Attribute of the Resource that is linked by this <code>ResourceLink</code> . <b>Default value is from:</b> the implied or explicit value of <code>@PipePartIDKeys</code> of the referenced Resource. <b>Allowed values are from:</b> <code>Resource/@PartIDKeys</code> .
<i>PipePause</i> ?	double	Parameter for controlling the pausing of a Process if the Resource amount in the pipe buffer passes the specified value. For details on using <code>@PipePause</code> , see Section 4.3.3, "Overlapping Processing Using Pipes". <b>Note:</b> in JDF 1.5, moved from deleted abstract <code>PhysicalLink</code> .

**Table 3-23: ResourceLink Element (Sheet 4 of 6)**

Name	Data Type	Description
<i>PipeProtocol</i> ? <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	NMTOKEN	<p>Defines the protocol use for pipe handling. See Section 4.3.3, Overlapping Processing Using Pipes. "<i>JMF</i>" and "<i>Internal</i>" are the only non-proprietary piping protocols that are supported. Proprietary pipe protocols MAY be specified in addition to those defined below but will not necessarily be interoperable.</p> <p><b>Default value is:</b> "<i>JMF</i>" (if <i>@PipeURL</i> is specified); otherwise referenced Resource/<i>@PipeProtocol</i>.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Internal</i> – Internal or virtual pipe used within a Combined Process. <a href="#">New in JDF 1.2</a></li> <li><i>JMF</i> – JMF-based PipePush / PipePull Messages.</li> <li><i>None</i> – No pipe support.</li> </ul> <p><b>Deprecation note:</b> starting with JDF 1.5, use Resource/<i>@PipeProtocol</i>.</p>
<i>PipeResume</i> ?	double	<p>Parameter for controlling the resumption of a Process if the Resource amount in the pipe buffer passes the specified value. For details on using <i>@PipeResume</i>, see Section 4.3.3, "Overlapping Processing Using Pipes".</p> <p><b>Note:</b> in JDF 1.5, moved from deleted abstract PhysicalLink.</p>
<i>PipeURL</i> ? <a href="#">Modified in JDF 1.2</a>	URL	<p>Pipe request URL. Dynamic pipe requests from this end of a pipe SHOULD be made to this URL. In most cases this URL is the URL of the Controller of the <i>other end</i> of the pipe. This might seem counterintuitive, but it allows parallel spawning and merging of Processes that represent a dynamic pipe without having to include the Node that describes the other end in the spawned file.</p> <p><b>Default value is:</b> referenced Resource/<i>@PipeURL</i></p> <p><b>Note:</b> this URL is only used for initiating pipe requests. Responses to a pipe request are issued to the URL that is defined in the PipePush or PipePull Message. For details on using <i>@PipeURL</i>, see Section 4.3.3, "Overlapping Processing Using Pipes".</p>
<i>ProcessUsage</i> ? <a href="#">Modified in JDF 1.4</a>	string	<p>Identifies a Process's usage of a Resource if multiple Resources of the same type can be supplied. For example, this Attribute appears when two <b>Component</b> Resources—one Cover and one Book-Block—are used in <b>CoverApplication</b>.</p> <p><b>Values include those from:</b> Table 3-24, "ProcessUsage Attribute Values" on page 105.</p> <p><b>Values include those from:</b> ICS documents <a href="#">New in JDF 1.4</a></p> <p><b>Note:</b> the values of <i>@ProcessUsage</i> can be derived from the appropriate Process descriptions in Section 6, "Processes". Section 6.2, "Process Template" defines the parenthesized notation for denoting the value of <i>@ProcessUsage</i> (e.g., <b>Component</b> (Cover)).</p>

Table 3-23: ResourceLink Element (Sheet 5 of 6)

Name	Data Type	Description
<a href="#">Recommendation ?</a> <a href="#">Deprecated in JDF 1.2</a>	boolean	If "true" and the request cannot be fulfilled, the change MAY be logged as a Modified Audit and the Job can continue. If "false", an error occurs if the request is not fulfilled. In JDF 1.2 and beyond use <a href="#">@SettingsPolicy</a> instead. <b>Note:</b> in JDF 1.5, moved from deleted abstract ImplementationLink.
<a href="#">RemotePipeEndPause ?</a> <a href="#">Deprecated in JDF 1.5</a>	double	Parameter for controlling the pausing of a Process at the other end of the pipe if the Resource amount in the pipe buffer passes the specified value. For details on using <a href="#">@RemotePipeEndPause</a> , see Section 4.3.3, “Overlapping Processing Using Pipes”. <b>Note:</b> in JDF 1.5, moved from deleted abstract PhysicalLink. <b>Deprecation note:</b> starting with JDF 1.5, use <a href="#">@PipePause</a> .
<a href="#">RemotePipeEndResume ?</a> <a href="#">Deprecated in JDF 1.5</a>	double	Parameter for controlling the resumption of a Process at the other end of the pipe if the Resource amount in the pipe buffer passes the specified value. For details on using <a href="#">@RemotePipeEndResume</a> , see Section 4.3.3, “Overlapping Processing Using Pipes”. <b>Note:</b> in JDF 1.5, moved from deleted abstract PhysicalLink. <b>Deprecation note:</b> starting with JDF 1.5, use <a href="#">@PipeResume</a> .
<i>rRef</i>	IDREF	Link to the target Resource.
<i>rSubRef?</i> <a href="#">Deprecated in JDF 1.2</a>	IDREF	Link to a Subelement within the Resource. In JDF 1.2 and beyond, a ResourceLink is able to reference a Resource only if it is a direct child of a ResourcePool.
<i>Start ?</i> <a href="#">Modified in JDF 1.4</a>	dateTime	Time and date when the usage of the Resource starts. <b>Note:</b> in JDF 1.4, moved from abstract ImplementationLink, which was deleted in JDF 1.5.
<i>StartOffset ?</i> <a href="#">Modified in JDF 1.4</a>	duration	Offset time when the Resource is needed after processing has begun. If both <a href="#">@Start</a> and <a href="#">@StartOffset</a> are specified, <a href="#">@Start</a> has precedence. <b>Note:</b> in JDF 1.4, moved from deleted (in JDF 1.5) abstract ImplementationLink.
<i>Usage</i>	enumeration	Resource usage within this JDF Node. <b>Allowed values are:</b> <i>Input</i> – The Resource is an input. <i>Output</i> – The Resource is an output.
<i>Transformation ?</i> <a href="#">New in JDF 1.1</a>	matrix	Matrix describing the transformation of the orientation of a <a href="#">PhysicalResource</a> relative to the ideal Process coordinate using this Resource as input or output. If <a href="#">@Transformation</a> is specified for an Output Resource, the Node that processes the <a href="#">PhysicalResource</a> is to manipulate the Resource in such a way as to reflect the transformation. The coordinate system of the Resource itself is <i>not</i> modified. At most one of <a href="#">@Orientation</a> or <a href="#">@Transformation</a> SHALL be specified. For details on coordinate systems, see Section 2.5, “Coordinate Systems in JDF XJDF”. <b>Note:</b> in JDF 1.5, moved from deleted abstract PhysicalLink.

**Table 3-23: ResourceLink Element (Sheet 6 of 6)**

Name	Data Type	Description
AmountPool ? <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.2</a>	element	Definition of partial amounts and pipe parameters for this ResourceLink. The allowed contents of the AmountPool are described for the various Subclasses of ResourceLink in the sections below. If AmountPool is specified, ResourceLink SHALL NOT contain any of @Amount, @ActualAmount, @MaxAmount or @MinAmount
Lot * <a href="#">New in JDF 1.3</a>	element	Group of identifiers that uniquely identifies one lot of a Resource. If multiple Resource lots are planned to be consumed by a Process, this Element MAY appear multiple times to identify each Resource lot. Examples of Resource lots are individual rolls of paper, boxes of paper, cans of ink, etc. See Section 3.14.5, "Identification of PhysicalResources" for details. For Resources that are solely identified by @ProductID, Lot Element(s) NEED NOT be specified. <b>Note:</b> in JDF 1.5, moved from deleted abstract PhysicalLink.
Part *	element	The Part Elements identify the parts of a Partitioned Resource that are referenced by the ResourceLink. The structure of the Part Element is defined in Table 3-33, "Part Element" on page 129. For details on Partitioned Resources, see Section 3.15.5, "Description of Partitioned Resources".

**— Attribute: ProcessUsage****Table 3-24: ProcessUsage Attribute Values (Sheet 1 of 2)**

Value	Description
Accepted	Used for <b>Resource Resource</b> in an Output <b>Resource Resource</b> of <b>Approval</b>
Application	Used for <b>Component</b> in an Input Resource of <b>BoxFolding</b>
BackEndSheet	Used for <b>Component</b> in an Input Resource of <b>EndSheetGluing</b>
Book	Used for <b>Component</b> in an Input Resource of <b>Jacketing</b>
BookBlock	Used for <b>Component</b> in an Input Resource of <b>ChannelBinding</b> , <b>EndSheetGluing</b> and <b>LooseBinding RingBinding</b>
Box	Used for <b>Component</b> in an Input Resource of <b>BoxPacking</b>
Case	Used for <b>Component</b> in an Input Resource of <b>CasingIn</b>
Child	Used for <b>Component</b> in an Input Resource of <b>Inserting</b>
Cover	Used for <b>Component</b> in an Input Resource of <b>ChannelBinding LooseBinding</b> and <b>CoverApplication</b> .
CoverBoard	Used for <b>Media</b> in an Input Resource of <b>CaseMaking</b> .
CoverMaterial	Used for <b>Component</b> and <b>Media</b> in an Input Resource of <b>CaseMaking</b> .
Cylinder	Used for <b>ExposedMedia</b> in an Input Resource of <b>ConventionalPrinting</b> .
Document	Used for <b>RunList</b> in an Input Resource of <b>Imposition</b> , <b>LayoutPreparation</b> and <b>Stripping</b> and used for <b>RunList</b> in an Output Resource of <b>Stripping</b> .
FrontEndSheet	Used for <b>Component</b> in an Input Resource of <b>EndSheetGluing</b> .
Good	Used for <b>Component</b> in an Output Resource of <b>ConventionalPrinting</b> and <b>DigitalPrinting</b> .

**Table 3-24: ProcessUsage Attribute Values (Sheet 2 of 2)**

<b>Value</b>	<b>Description</b>
<i>Input</i>	Used for <b>Component</b> in an Input Resource of <b>ConventionalPrinting</b> and <b>DigitalPrinting</b> .
<i>Jacket</i>	Used for <b>Component</b> in an Input Resource of <b>Jacketing</b> .
<i>Label</i>	Used for <b>Component</b> in an Input Resource of <b>Labeling</b> .
<i>Marks</i>	Used for <b>RunList</b> in an Input Resource <b>Resource</b> of <b>Imposition</b> , <b>LayoutPreparation</b> and <b>Tiling</b> , and used for <b>RunList</b> in an Output Resource of <b>LayoutPreparation</b> and <b>Stripping</b> .
<i>Mother</i>	Used for <b>Component</b> in an Input Resource of <b>Inserting</b> .
<i>Plate</i>	Used for <b>ExposedMedia</b> in an Input Resource of <b>ConventionalPrinting</b> .
<i>Proof</i>	Used for <b>Component</b> in an Input Resource of <b>ConventionalPrinting</b> and <b>DigitalPrinting</b> , and used for <b>ExposedMedia</b> in an Input Resource of <b>ConventionalPrinting</b> .
<i>Rejected</i>	Used for <b>Resource Resource</b> in an Output Resource of <b>Approval</b> .
<i>RingBinder</i>	Used for <b>Component</b> in an Input Resource of <b>RingBinding LooseBinding</b> .
<i>SpineBoard</i>	Used for <b>Media</b> in an Input Resource of <b>CaseMaking</b> .
<i>Surface</i>	Used for <b>RunList</b> in an Input Resource of <b>Tiling</b> .
<i>Tie</i>	Used for <b>Media</b> in an Input Resource of <b>BoxPacking</b> .
<i>Underlay</i>	Used for <b>Media</b> in an Input Resource of <b>BoxPacking</b> .
<i>Waste</i>	Used for <b>Component</b> in an Output Resource of <b>ConventionalPrinting</b> and <b>DigitalPrinting</b> .

### Example 3-8: EmployeeLink

The following example shows how the operator Smith is linked to a **ConventionalPrinting** Process as the only valid operator.

```
<ResourcePool>
  <Employee Class="Implementation" ID="L1" Status="Available"
    PersonalID="007">
    <Person FamilyName="Smith" JobTitle="Press Operator"/>
  </Employee>
</ResourcePool>
<ResourceLinkPool>
  <EmployeeLink Usage="Input" rRef="L1"/>
</ResourceLinkPool>
```

#### 3.14.3.1 AmountPool and PartAmount

New in JDF 1.1

Whereas **ResourceLink/Part** identifies the Resource that the Process is consuming or producing, **AmountPool** is a container for the amount-related metadata of the Resource. Thus Process routing is described by **ResourceLink/PartAmount/Part** whereas tracking of amount related Attributes are described by **AmountPool/PartAmount**. **AmountPool/PartAmount/Part** SHALL refer to existing Partitions or non-existing sub-partitions of existing partitions that are implicitly or explicitly referred to by **ResourceLink/Part**. For instance, if a **ResourceLink** refers to a partition with **@SheetName="Sheet1"**, **AmountPool/PartAmount** MAY refer to Sheet1 or any existing or non-existing child of Sheet1, but NOT to Sheet2 or any existing or non-existing child of Sheet2.

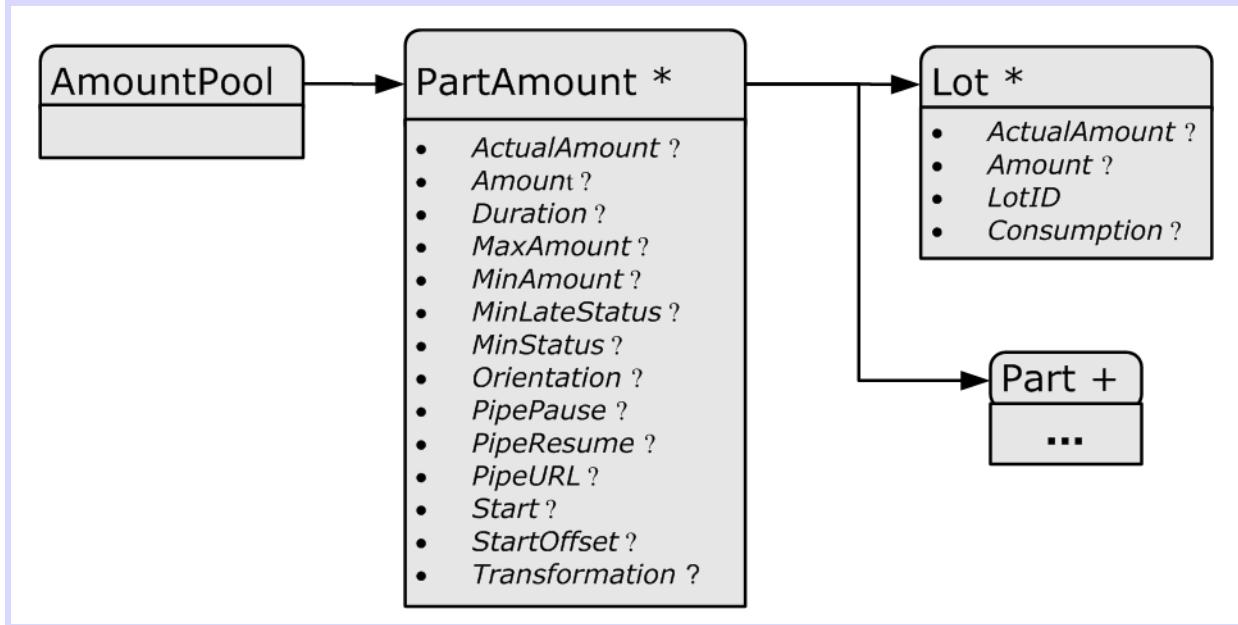
### 3.14.3.1.1 AmountPool

The following table lists the generic contents of an **AmountPool** Element. Further parameters of the **AmountPool** are described in the sections below.

**Table 3-25: AmountPool Element**

Name	Data Type	Description
PartAmount *	element	Element that defines the amounts and pipe parameters for a Partitioned Resource. The contents of a PartAmount depends on the type of the ResourceLink

**Figure 3-12: AmountPool – a Diagram of its Structure**



### 3.14.3.1.2 PartAmount

The following table lists the generic contents of a **PartAmount** Element. Note that **PartAmount** inherits values from its parent **ResourceLink**.

**Table 3-26: PartAmount Element (Sheet 1 of 4)**

Name	Data Type	Description
ActualAmount ? New in JDF 1.2	double	Total amount of the Resource that has been produced (in a <b>ResourceLink</b> with <b>@Usage = "Output"</b> ) or consumed (in a <b>ResourceLink</b> with <b>@Usage = "Input"</b> ) by this Node in every execution. For details see <a href="#">Section 3.15.4, “Resource Amount”</a> . <b>Note:</b> in JDF 1.5, moved from deleted abstract <b>PhysicalLink</b> .

**Table 3-26: PartAmount Element (Sheet 2 of 4)**

Name	Data Type	Description
<i>Amount</i> ?  <a href="#">Deprecated in JDF 1.3</a>	double	For a link with a <i>@Usage</i> of " <i>Input</i> ", specifies the amount of the Resource that is needed by the Process, <a href="#">in units as defined in the Resource</a> . For a link with a <i>@Usage</i> of " <i>Output</i> ", specifies the amount of the Resource that is to be produced by the Process, <a href="#">in units as defined in the Resource</a> . Allows Resources to be only partially consumed or produced (see Section 3.15.4, "Resource Amount"). If not specified, <a href="#">ResourceLink/@Amount defaults to Resource/@Amount</a> .  <b>Note:</b> in JDF 1.5, moved from deleted abstract PhysicalLink.
<i>DraftOK</i> ?  <a href="#">Deprecated in JDF 1.3</a>	boolean	If "true", the Process can commence with a draft Resource Partition.  Replaced with <i>@MinLateStatus</i> and <i>@MinStatus</i> in JDF 1.3 and beyond.
<i>Duration</i> ?  <a href="#">Modified in JDF 1.4</a>	duration	Estimated duration during which the Resource will be used.  <b>Note:</b> in JDF 1.4, moved from deleted (in JDF 1.5) abstract ImplementationLink.
<i>MaxAmount</i> ?  <a href="#">New in JDF 1.3</a>	double	Defines the planned <i>@Amount</i> including the maximum overage. <a href="#">If not specified, defaults to a system specified value based on @Amount</a> .  <b>Note:</b> in JDF 1.5, moved from deleted abstract PhysicalLink.
<i>MinAmount</i> ?  <a href="#">New in JDF 1.3</a>	double	Defines the planned <i>@Amount</i> including the minimum underage that the Customer is willing to accept. <a href="#">If not specified, defaults to a system specified value based on @Amount</a> .  <b>Note:</b> in JDF 1.5, moved from deleted abstract PhysicalLink.
<i>MinLateStatus</i> ?  <a href="#">New in JDF 1.3</a>	enumeration	Minimum value of <a href="#">Resource/@Status</a> for the execution of this Node to commence when deadlines are endangered (i.e., when the time defined by <a href="#">NodeInfo/@LastStart</a> or implied by <a href="#">NodeInfo/@LastEnd</a> is approaching).  <b>Default value is from:</b> <i>@MinStatus</i> .  <b>Allowed values are from:</b> <a href="#">Resource/@Status</a> .
<i>MinStatus</i> ?  <a href="#">New in JDF 1.3</a>	enumeration	Minimum value of <a href="#">Resource/@Status</a> for the execution of this Node to commence.  <b>Default value is:</b> "Available" if <i>@Usage</i> = " <i>Input</i> " and "Unavailable" if <i>@Usage</i> = " <i>Output</i> ".  <b>Allowed values are from:</b> <a href="#">Resource/@Status</a> .
<i>Orientation</i> ?  <a href="#">New in JDF 1.1</a>	Orientation	Named orientation describing the transformation of the orientation of a <a href="#">PhysicalResource</a> relative to the ideal Process coordinate that uses this Resource as input or output. If <i>@Orientation</i> is specified for an Output Resource, the Node that processes the <a href="#">PhysicalResource</a> is to manipulate the Resource in such a way as to reflect the transformation. The coordinate system of the Resource itself is <i>not</i> modified. At most one of <i>@Orientation</i> or <i>@Transformation</i> SHALL be specified. For details on coordinate systems, see Section 2.5, "Coordinate Systems in JDF XJDF".  <b>Note:</b> in JDF 1.5, moved from deleted abstract PhysicalLink.

**Table 3-26: PartAmount Element (Sheet 3 of 4)**

Name	Data Type	Description
PipePause ?  <a href="#">Deprecated in JDF 1.5</a>	double	Parameter for controlling the pausing of a Process if the Resource amount in the pipe buffer passes the specified value. For details on using <code>@PipePause</code> , see Section 4.3.3, “Overlapping Processing Using Pipes”. <b>Note:</b> in JDF 1.5, moved from deleted abstract <code>PhysicalLink</code> .
PipeResume ?  <a href="#">Deprecated in JDF 1.5</a>	double	Parameter for controlling the resumption of a Process if the Resource amount in the pipe buffer passes the specified value. For details on using <code>@PipeResume</code> , see Section 4.3.3, “Overlapping Processing Using Pipes”. <b>Note:</b> in JDF 1.5, moved from deleted abstract <code>PhysicalLink</code> .
PipeURL ?  <a href="#">Deprecated in JDF 1.5</a>	URL	Pipe request URL for this Partition. Dynamic pipe requests from this end of a pipe SHOULD be made to this URL. Note that this URL is only used for initiating pipe requests. Responses to a pipe request are issued to the URL that is defined in the <code>PipePush</code> or <code>PipePull</code> Message. For details on using <code>@PipeURL</code> , see Section 4.3.3, “Overlapping Processing Using Pipes”. <b>Note:</b> in most cases this is the URL of the Controller of the <i>other end</i> of the pipe. This might seem counterintuitive, but it allows parallel spawning and merging of Processes that represent a dynamic pipe without having to include the Node that describes the other end in the spawned file.
RemotePipeEndPause ?  <a href="#">Deprecated in JDF 1.5</a>	double	Parameter for controlling the pausing of a Process at the other end of the pipe if the Resource amount in the pipe buffer passes the specified value. For details on using <code>@RemotePipeEndPause</code> , see Section 4.3.3, “Overlapping Processing Using Pipes”. <b>Note:</b> in JDF 1.5, moved from deleted abstract <code>PhysicalLink</code> . <b>Deprecation note:</b> starting with JDF 1.5, use <code>@PipePause</code> .
RemotePipeEndResume ?  <a href="#">Deprecated in JDF 1.5</a>	double	Parameter for controlling the resumption of a Process at the other end of the pipe if the Resource amount in the pipe buffer passes the specified value. For details on using <code>@RemotePipeEndResume</code> , see Section 4.3.3, “Overlapping Processing Using Pipes”. <b>Note:</b> in JDF 1.5, moved from deleted abstract <code>PhysicalLink</code> . <b>Deprecation note:</b> starting with JDF 1.5, use <code>@PipeResume</code> .
Start ?  <a href="#">Modified in JDF 1.4</a>	dateTime	Time and date when the usage of the Resource starts. <b>Note:</b> in JDF 1.4, moved from deleted (in JDF 1.5) abstract <code>ImplementationLink</code> .
StartOffset ?  <a href="#">Modified in JDF 1.4</a>	duration	Offset time when the Resource is needed after processing has begun. If both <code>@Start</code> and <code>@StartOffset</code> are specified, <code>@Start</code> has precedence. <b>Note:</b> in JDF 1.4, moved from deleted (in JDF 1.5) abstract <code>ImplementationLink</code> .

**Table 3-26: PartAmount Element (Sheet 4 of 4)**

Name	Data Type	Description
<i>Transformation</i> ? <a href="#">New in JDF 1.1</a>	matrix	Matrix describing the transformation of the orientation of a <b>PhysicalResource</b> relative to the ideal Process coordinate using this Resource as input or output. If <i>@Transformation</i> is specified for an Output Resource, the Node that processes the <b>PhysicalResource</b> is to manipulate the Resource in such a way as to reflect the transformation. The coordinate system of the Resource itself is <i>not</i> modified. At most one of <i>@Orientation</i> or <i>@Transformation</i> SHALL be specified. For details on coordinate systems, see Section 2.5, “Coordinate Systems in JDF XJDF”. <b>Note:</b> in JDF 1.5, moved from deleted abstract <b>PhysicalLink</b> .
Lot * <a href="#">New in JDF 1.3</a>	element	Group of identifiers that uniquely identifies one lot of a Resource. If multiple Resource lots are planned to be consumed by a Process, this Element MAY appear multiple times to identify each Resource lot. Examples of Resource lots are individual rolls of paper, boxes of paper, cans of ink, etc. See Section 3.14.5, “Identification of <b>PhysicalResources</b> ” for details. For Resources that are solely identified by <i>@ProductID</i> , Lot Element(s) NEED NOT be specified. <b>Note:</b> in JDF 1.5, moved from deleted abstract <b>PhysicalLink</b> .
Part + <a href="#">Modified in JDF 1.3</a>	element	Specifies the selected parts that the <b>PartAmount</b> is valid for. The granularity of <b>Part</b> shall be at least that of a leaf Partition of the Resource. For instance, a <b>Component</b> MAY be Partitioned by <i>@SheetName</i> and <b>PartAmount</b> could refer to <i>@SheetName</i> and <i>@Condition</i> . Multiple <b>Part</b> Elements specify that the referenced Elements have been Processed in one step, for instance two separations on a press run of a two color press.

**Example 3-9: PartAmount**

The following example shows an InkLink with an AmountPool/.

```

<ResourcePool>
  <Ink Brand="NoName" Class="Consumable" ID="Link0015"
    PartIDKeys="Separation" Status="Available">
    <Ink ColorName="Cyan" Separation="Cyan"/>
    <Ink ColorName="Magenta" Separation="Magenta"/>
    <Ink ColorName="Yellow" Separation="Yellow"/>
    <Ink ColorName="Black" Separation="Black"/>
    <Ink ColorName="Heidelberg Spot Blau"
      Separation="Heidelberg Spot Blau"/>
  </Ink>
</ResourcePool>
<ResourceLinkPool>
  <InkLink Usage="Input" rRef="Link0015">
    <AmountPool>
      <PartAmount Amount="1000">
        <Part Separation="Cyan"/>
      </PartAmount>
      <PartAmount Amount="1200">
        <Part Separation="Magenta"/>
      </PartAmount>
      <PartAmount Amount="700">
        <Part Separation="Yellow"/>
      </PartAmount>
    </AmountPool>
  </InkLink>
</ResourceLinkPool>

```

```

<PartAmount Amount="3000">
    <Part Separation="Black"/>
</PartAmount>
<PartAmount Amount="300">
    <Part Separation="Heidelberg Spot Blau"/>
</PartAmount>
</AmountPool>
</InkLink>
</ResourceLinkPool>

```

### 3.14.4 Resource Amount

The *@Amount* Attribute of an AmountPool/PartAmount Element contains the planned amount of a given Resource. The units used in the *@Amount* Attribute of a Resource Element is defined by the unit of the Resource Element to which the link refers.

Note that for Resources which are the output of Processes, AmountPool/PartAmount/*@Amount* determines the quantity of the Resource to be produced. For example, in a **DigitalPrinting** Process that included a **RunList** as its input with 16 pages to be printed and a Component to its output, *@Amount* would indicate the number of copies of those 16 pages that the Process would produce.

#### 3.14.4.1 Specifying Amount for a Partially-Completed Process

A Process can be interrupted before the requested amount of output has been produced. When the Job is resent from the Controller to the Device, the Controller SHALL specify only the remaining *@Amount* that the Device SHALL produce in the resent job run.

### 3.14.5 Identification of PhysicalResources

New in JDF 1.3

MIS systems frequently include functionality for managing inventory. Many **PhysicalResources** **Resources** that are consumed by production Processes are things that are tracked for inventory management purposes. This allows estimating the value of the Resources, ensuring that sufficient quantities are on hand, and tracking which specific Resources are used in production of which Jobs. At the most basic level, these **PhysicalResources** **Resources** MAY be identified in **XJDF** **JDF** with **Resource/@ProductID****Resource/@ExternalID**.

Some MIS systems track these Resources at lower levels of detail, tracking individual Resource lots. An example of this might include tracking the individual rolls or boxes of paper. While it is theoretically possible to track individual Resource lots using a single identifier, many MIS users choose to track them with more than one identifier. Examples of some of these identifiers include roll numbers, lot numbers, purchase order numbers, receipt dates.

Because the required identifiers may be different from site to site, or even from one type Resource to another, it is not possible to track these Resources with multiple identifiers using **JDF** **XJDF**. Conveying the identification requirements to Devices would be too complex. Instead, a single identifier is used in **JDF** **XJDF**. In cases where multiple identifiers are normally used, the MIS SHALL generate a unique identifier for each unique Resource lot. This unique identifier SHALL then be mapped back to the correct unique Resource lot by the MIS.

#### 3.14.5.0.1 Element: **Lot**

In the case of identifying Resources that are planned to be consumed, **Lot** Elements for each unique Resource lot are placed in the associated **ResourceLink** or a **PartAmount** Element, See Table 3.14.2, “**ResourceLink**” on page 97 and Table 3.14.3.1.2, “**PartAmount**” on page 107.

**Table 3-27: Lot Element**

Name	Data Type	Description
<i>ActualAmount</i> ?	double	Total amount of the Resource that has been consumed from this Resource lot. The sum of all values of <i>@ActualAmount</i> for all <b>Lot</b> Elements SHOULD equal the <i>@ActualAmount</i> specified in the parent <b>ResourceLink</b> of the <b>Lot</b> Elements.
<i>Amount</i> ?	double	Total amount of the Resource that is planned to be consumed from this Resource lot. The sum of all values of <i>@Amount</i> for all <b>Lot</b> Elements SHOULD equal the <i>@Amount</i> specified in the parent <b>ResourceLink</b> of the <b>Lot</b> Elements.
<i>LotID</i>	string	Unique identifier related to this Resource lot. The identifier SHALL be unique within the scope of all Resource lots for the related <i>@ProductID</i> . An MIS that uses multiple identifiers to identify a Resource lot SHALL assign a single unique ID to each lot, and SHALL map this single unique ID to the appropriate set of multiple identifiers.
<i>Consumption</i> ?	enumeration	<p>Used for indicating level of consumption for the <b>Lot</b>. This Attribute SHALL NOT be specified for Resources that are produced. It MAY only be specified for Resources that are partially or fully consumed.</p> <p>This information is used by readers for auditing <b>Consumable Resources</b> to identify shortages and overages. For example, a Roll of paper that was supposed to have 10,000 feet on it may be marked as fully consumed, yet only 9,400 feet of paper were consumed.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Full</i></li> <li><i>Partial</i></li> </ul>

In the case of identifying Resources after they have been consumed, **Lot** Elements are specified within the first **ResourceLink** in the **ResourceAudit**, or in the **AmountPool** that can appear inside the **ResourceLink**. See Section 3.16.3.12, “ResourceAudit” for the structure of the **ResourceAudit** Element.

### Example 3-10: MediaLink with Lot

The following is an example of a **ResourceLink** used to report that a substitute Resource was used:

```
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" Type="ConventionalPrinting"
      Status="Completed" ID="ID100" JobPartID="ID345" Version="1.4">
  <ResourcePool>
    <Media ID="RI007" Class="Consumable" ProductID="3002" Status="Unavailable"
          Brand="Coated Roll Stock" Dimension="2520 8640000"
          MediaType="Paper" Thickness="36"/>
    <ConventionalPrintingParams ID="RI008" Class="Parameter" Status="Available"/>
    <Component ID="RI009" Class="Quantity" Status="Unavailable"
               ComponentType="Sheet"/>
  </ResourcePool>
  <ResourceLinkPool>
    <MediaLink rRef="RI007" Amount="9800" ActualAmount="9703" Usage="Input">
      <Lot ActualAmount="5250" Consumption="Full"
           LotID="LN1040788312RN2005091-04"/>
      <Lot ActualAmount="4453" Consumption="Partial"
           LotID="LN1040788339RN2005091-01"/>
    </MediaLink>
    <ConventionalPrintingParamsLink rRef="RI008" Usage="Input"/>
  </ResourceLinkPool>
</JDF>
```

```

<ComponentLink rRef="RI009" Usage="Output"/>
</ResourceLinkPool>
</JDF>

```

## 3.15 ResourcePool and ResourceLinkPool – Deep Structure

This section describes the deep structure of a ResourcePool and ResourceLinkPool. In particular this section describes the ResourceRef which references a Resource from inside another Resource. This section also describes Resource sets and the Partitioning of them.

### 3.15.1 ResourceElement – Subelement of a Resource

#### 3.15.1.1 ResourceElement

A ResourceElement is always a Subelement of a Resource or Subelement of a JMF Message

#### 3.15.1.2 Abstract ResourceElement

An Abstract ResourceElement is defined in the Table 3-28 below. A ResourceElement does not inherit from the Abstract Resource. Examples of ResourceElement Resources are SeparationSpec and MISDetails.

Table 3-28: Abstract ResourceElement

Name	Data Type	Description
<i>ID</i> ? <u>Deprecated in JDF 1.2</u>	ID	Unique identifier of a Resource Element. In JDF 1.2 and beyond, an Element that is not a direct child of a ResourcePool SHOULD NOT contain an <i>@ID</i> . This <i>@ID</i> SHALL NOT be referenced by ResourceRef/@rRef or ResourceLink/@rRef because a ResourceRef or ResourceLink Element is able to reference a Resource only if it is a direct child of a ResourcePool.

### 3.15.2 ResourceRef – Element for Inter-Resource Linking and refelement

#### 3.15.2.1 ResourceRef

In some cases, it is necessary to reference a Resource Element directly from another Element in order to reuse information. Such a reference is a ResourceRef Element. A ResourceRef Element's name is generated by appending the string “Ref” to the Element's name. Candidate Elements for inter-Resource linking have a data type of **refelement** in the content description tables of this chapter and Chapter 8, “Resources”. A data type of **refelement** allows either a ResourceRef or an inline Resource Element. In the latter case, the Resource Element inherits Attributes and Elements from the Abstract Resource and (where appropriate) from the Abstract Parameter Resource or the Abstract PhysicalResource. Note that some Attributes and Elements in these Abstract Elements have rules for inline Resource Subelements that differ from the rules for a Resource root.

#### 3.15.2.2 Abstract ResourceRef

The following table defines the Attributes of the Abstract ResourceRef Element (see also Figure 3-6 and ResourceElement in Table 3-10, “Abstract Resource Element” on page 75).

The Part Element in a ResourceRef defines the part of the target that this ResourceRef references. If both the Resource that contains ResourceRef Element and the target Resource are Partitioned, the ResourceRef does *not* implicitly reference the part of the target with the same Partitioning Attributes, but rather the parts of the target Resource that are explicitly specified by the Part Element within the ResourceRef.

When a ResourceRef references a Partitioned Resource Node that is not a Resource leaf, the children of the referenced Resource are ignored. See Example 3-11 and Example 3-12 for an illustration of this equivalence. Otherwise, the referenced structure would be a Partitioned Element and thus invalid when inlined. See Example 3-13.

**Table 3-29: Abstract ResourceRef Element**

Name	Data Type	Description
rRef	IDREF	Reference to the Resource. The linked Resource SHALL be a direct child of a ResourcePool.
rSubRef? <i>Deprecated in JDF 1.2</i>	IDREF	Reference to a Subelement of the Resource. In JDF 1.2 and beyond, a ResourceRef Element is able to reference a Resource only if it is a direct child of a ResourcePool
Part? <i>New in JDF 1.1</i>	element	Definition of the Partition that this ResourceRef references.

**Example 3-11: MediaRef to Partitioned Media**

MediaRef references **Media** and its children are ignored:

```
<Media Class="Consumable" Dimension="72 72" ID="MediaID" PartIDKeys="Location"
      Status="Available">
  <Comment Name="foo">bar</Comment>
  <Media Location="desk"/>
  <Media Location="drawer"/>
</Media>
<Layout Class="Parameter" ID="Sheet" Status="Available">
  <MediaRef rRef="MediaID"/>
</Layout>
```

**Example 3-12: Equivalent Inline Media**

Media is inline in **Layout**. This is equivalent to the preceding Example 3-11 with MediaRef:

```
<Layout Class="Parameter" ID="Sheet" Status="Available">
  <Media Dimension="72 72">
    <Comment Name="foo">bar</Comment>
  </Media>
</Layout>
```

**Example 3-13: Invalid Inline Partitioned Media**

This example takes the **Media** from Example 3-11 and make it be inline in **Layout**. The result is an invalid Partition:

```
<Layout Class="Parameter" ID="Sheet" Status="Available">
  <Media Dimension="72 72" PartIDKeys="Location">
    <Comment Name="foo">bar</Comment>
    <Media Location="desk"/>
    <Media Location="drawer"/>
  </Media>
</Layout>
```

**3.15.2.3 ResourceRef Elements in the AncestorPool/Ancestor Element**

ResourceRef Elements MAY also occur in the AmountPool/PartAmount Element of a JDF Node. Resources that are referenced SHALL reside in a ResourcePool. The restrictions on locations of Resource Elements described in Section 3.13.5, “Position of Resources within JDF Nodes” that apply to ResourceLink Elements similarly apply to ResourceRef Elements.

### 3.15.2.4 Status of a Resource that Contains an rRef Reference

The `@Status` of a Resource that contains an `@rRef` Attribute is defined by the lowest `@Status` of all recursively referenced Resources. The ordering is defined in Table 3-10, “Abstract Resource Element” on page 75:

Thus, if any referenced Resource has a `@Status` of “Incomplete”, the complete Resource has a calculated `@Status` of “Incomplete”, even though its own `@Status` Attribute might be “Unavailable”, “Draft”, “Available”, etc.

### 3.15.2.5 Alignment of ResourceLink and ResourceRef

New in JDF 1.1A

`ResourceRef` Elements SHALL NOT contain any of the Attributes and Elements that are specified in the `ResourceLink` as defined in Section 3.14, “`ResourceLinkPool` and `ResourceLink`”. The value of these properties is implied from the value of the properties for the appropriate part in the `AmountPool` of the `ResourceLink`.

#### Example 3-14: MediaLink and MediaRef

The following example illustrates the alignment of a `MediaLink` and `MediaRef` in a `DigitalPrinting` Node.

```
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="n20020626134204"
      Status="Waiting" JobPartID="ID345" Type="DigitalPrinting" Version="1.4">
  <ResourcePool>
    <!-- Media is partitioned so that it can be referenced
         from the AmountPool
    -->
    <Media Class="Consumable" ID="r0006" PartIDKeys="RunIndex"
          Status="Available">
      <Media RunIndex="0 ~ -1"/>
      <Media RunIndex="1 ~ -2"/>
    </Media>
    <DigitalPrintingParams Class="Parameter" ID="r0007" PartIDKeys="RunIndex"
          Status="Available">
      <DigitalPrintingParams RunIndex="0 ~ -1">
        <!-- PartAmount with <Part RunIndex="0 ~ -1"/> contains
             the partition details for this MediaRef -->
        <MediaRef rRef="r0006">
          <Part RunIndex="0 ~ -1"/>
        </MediaRef>
      </DigitalPrintingParams>
      <DigitalPrintingParams RunIndex="1 ~ -2">
        <!-- PartAmount with <Part RunIndex="1 ~ -2"/>
             contains the partition details for this MediaRef
      -->
        <MediaRef rRef="r0006">
          <Part RunIndex="1 ~ -2"/>
        </MediaRef>
      </DigitalPrintingParams>
    </DigitalPrintingParams>
    <RunList Class="Parameter" ID="r0008" Status="Available" />
    <Component Class="Quantity" ID="c0008" Status="Unavailable"
              ComponentType="Sheet" />
  </ResourcePool>
  <ResourceLinkPool>
    <MediaLink Usage="Input" rRef="r0006">
      <!-- the AmountPool contains the ResourceLink partition details -->
      <AmountPool>
        <PartAmount Orientation="Flip180">
          <Part RunIndex="0 ~ -1"/>
        </PartAmount>
      </AmountPool>
    </MediaLink>
  </ResourceLinkPool>

```

```

<PartAmount Orientation="Rotate0">
  <Part RunIndex="1 ~ -2"/>
</PartAmount>
</AmountPool>
</MediaLink>
<DigitalPrintingParamsLink Usage="Input" rRef="r0007"/>
<RunListLink Usage="Input" rRef="r0008"/>
<ComponentLink Usage="Output" rRef="c0008"/>
</ResourceLinkPool>
</JDF>

```

### 3.15.3 Set of Resources and Partitioned Subsets Thereof

In many cases, a set of similar Resources—such as separation films, plates or **RunList** Resources—is produced by one Process and consumed by another. When this occurs, it is convenient to define one Resource Element that describes the complete set and allows individual subsets to be referenced. This mechanism also removes Process ambiguity if multiple input ResourceLink Elements and multiple output ResourceLink Elements exist that are to be unambiguously correlated.

In other cases, there can be a need to change some Attribute of a Parameter Resource for some subset of the processing to be done by a Device. For instance, when printing a document using **DigitalPrinting**, it would be a common application to change the dimensions of the media to be selected based on the actual media box changes in a PDF file.

Resource Elements and ResourceLink Elements have OPTIONAL Attributes that enable an Agent to specify an explicit part of a structured Resource. There are two ways to reference a subset of a Resource. The first is by quantity (i.e., by specifying an Amount in a ResourceLink that is less than the Resource's Amount). The second is to select certain parts of a Partitioned Resource by supplying a filtering Part Element in the ResourceLink.

### 3.15.4 Resource Amount

Yet another flexible feature of Resources is that they can be only partially consumed. For example, in a scenario in which various versions of a product share identical parts—such as versioned books that all have the same cover—each version will only use as many copies of the cover as it needs to fulfill its Job requirement, even though all of the covers can be printed in one step for all versions. This feature is specified in the **@Amount** Attribute of the ResourceLink Elements and allows multiple JDF Nodes to share Resources. It allows both the sharing of Output Resources (when a binding Process consumes identical Sheets from multiple press lines) and the sharing of Input Resources (when the covers for multiple Jobs are identical and are all printed in one press run).

The **@Amount** Attribute of a PhysicalResource Element contains the actual amount of a given Resource. It is adjusted by the production or consumption amount of every Process that is executed and refers to that amount in the corresponding ResourceLink Element. Thus the value of the **@Amount** Attribute of a Resource that is consumed as an input SHOULD be reduced by the amount that is consumed. It is up to the Agent that writes a JDF Job to ensure that the **@Amount** Attributes of Resources and the ResourceLink Elements that reference them are consistent. The units used in the **@Amount** Attribute of a ResourceLink Element is defined by the unit of the Resource Element to which the link refers. The definition of **@Amount** for Partitioned Resources is explained in detail in Section 3.15.5, “Description of Partitioned Resources”.

Note that for Resources which are the output of Processes, the **@Amount** Attribute on the ResourceLink determines the quantity of the Resource to be produced. For example, in a **DigitalPrinting** Process that included a **RunList** as its input with 16 pages to be printed and a ComponentLink to its output, the **@Amount** and **@AmountProduced** Attributes would indicate the number of copies of those 16 pages that the Process would produce.

**NodeInfoLink/@Amount** and **NodeInfoLink/AmountPool/PartAmount/@Amount** describe the amount to be produced in general. This amount describes the number of products to be produced. For instance, on a conventional sheet-fed offset press, this would be press runs, and on a saddle stitcher it would be finished brochures.

### 3.15.4.1 Evaluating and Updating Amount-Related Attributes in a Device

`ResourceLink/@Amount` specifies the planned amount whereas `ResourceLink/@ActualAmount` specifies the actual production amount. When a Device executes a JDF Node that consumes and produces PhysicalResources with an amount, it SHALL calculate the needed production amount in the following order: Production Amount(`Output`) =

- 1 `NodeInfoLink/AmountPool/PartAmount/@Amount - NodeInfoLink/AmountPool/PartAmount/@ActualAmount`
- 2 `NodeInfoLink/@Amount - NodeInfoLink/@ActualAmount`
- 3 `ComponentLink("Output")/AmountPool/PartAmount/@Amount - ComponentLink("Output")/AmountPool/PartAmount/@ActualAmount`
- 4 `ComponentLink("Output")/@Amount - ComponentLink("Output")/@ActualAmount`
- 5 `Component("Output")/@Amount - ComponentLink("Output")/@ActualAmount`
- 6 `ResourceLink("Input")/AmountPool/PartAmount/@Amount - ResourceLink("Input")/AmountPool/PartAmount/@ActualAmount`
- 7 `ResourceLink("Input")/@Amount - ResourceLink("Input")/@ActualAmount`
- 8 `PhysicalResource("Input")/@Amount - ResourceLink("Input")/@ActualAmount`
- 9 Implied amount from consuming the complete Input Resource.

It is strongly RECOMMENDED for MIS systems to explicitly specify the desired production amount of a Process by specifying `ComponentLink("Output")/@Amount` or `ComponentLink("Output")/AmountPool/PartAmount/@Amount` in case of Partitioned Resources. The Device SHOULD increment `ResourceLink/@ActualAmount` or `ResourceLink/AmountPool/PartAmount/@ActualAmount` by the amount of actual consumption and production. An MIS system that receives a completed Process from a Device SHALL update `Resource/@Amount` by summing over all `ResourceLink` Elements that are linked from leaf Nodes:

`ComponentLink("Output")/AmountPool/PartAmount/@Amount`  
`- ComponentLink("Output")/AmountPool/PartAmount/@ActualAmount`

or

`ComponentLink("Output")/@Amount - ComponentLink("Output")/@ActualAmount`

and subtracting all links that are linked from leaf Nodes:

`ComponentLink("Input")/AmountPool/PartAmount/@Amount`  
`- ComponentLink("Input")/AmountPool/PartAmount/@ActualAmount`

or

`ComponentLink("Output")/@Amount - ComponentLink("Input")/@ActualAmount`

`ComponentLink` Elements from intermediate Nodes (`"ProcessGroup"` or `"Product"`) SHALL be ignored when summing, since they redundantly link to the same Resources without specifying an additional production amount.

### 3.15.4.2 Specifying Amount for a Partially-Completed Process

New in JDF 1.2

A Process can be interrupted before the requested amount of output has been produced. When the Job is resent from the Controller to the Device, it SHALL produce only the remaining `@Amount`. The following figure shows the various Processes, Resources and `ResourceLink` Elements and their corresponding entries in Table 3-30, “Example of actual amount and amount handling” on page 118 which summarizes the values of the `@Amount`,

**@AmountProduced** and **@AmountRequired** Attributes in the **Component**, the **@Amount** and **@ActualAmount** of ComponentLink in various steps of the Process. All planned amounts are multiples of 1000 whereas all actual amounts are randomly adjusted for waste and production overrun or underrun:

Figure 3-13: Amount handling

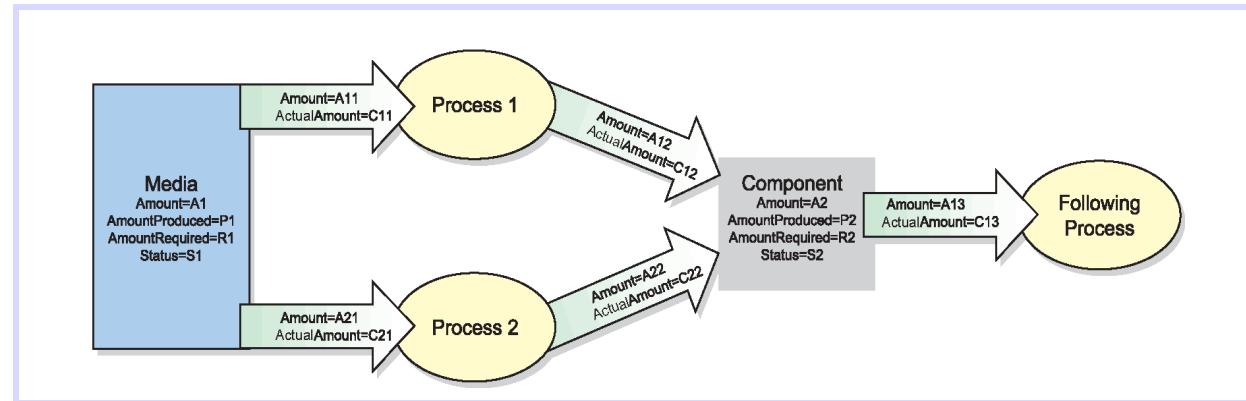


Table 3-30: Example of actual amount and amount handling (Sheet 1 of 2)

Process Step	A1 P1 R1 S1	A11 C11 A21 C21	A12 C12 A22 C22	A2 P2 R2 S2	A13 C13
Original JDF, no processing has commenced. A large Amount of Media (500000) is available. Plan 10% waste. The following Processes are not yet setup.	500000 — 110000 Available	110000 0 — —	100000 0 — —	0 0 — Unavailable	— — —
Break after producing exactly 30,000 good copies. Actual waste = 2957	467043 — 110000 Available	110000 32957 — —	100000 30000 — —	30000 30000 — Available	— — —
Break after producing exactly an additional 40,000 copies Accumulated actual waste = 6545	423455 — 110000 Available	110000 76545 — —	100000 70000 — —	70000 70000 — Available	— — —
Completed Overrun = 1234 Accumulated actual waste = 9323	390677 — 110000 Available	110000 109323 — —	100000 101234 — —	101234 101234 — Available	— — —
<b>Consumption of the output by a subsequent Process</b>					

**Table 3-30: Example of actual amount and amount handling (Sheet 2 of 2)**

Process Step	A1 P1 R1 S1	A11 C11 A21 C21	A12 C12 A22 C22	A2 P2 R2 S2	A13 C13
A following Process consumes 50,010 copies	390677 — 110000 Available	110000 109323 — —	100000 101234 — —	51224 101234 50000 Available	50000 50010 — —
<b>Additional Copy Request</b>					
A total of 120,000 copies are requested	390677 — 110000 Available	132000 109323 — —	120000 101234 — —	51224 101234 50000 Available	50000 50010 — —
The 20,000 copies are produced(- underrun) Accumulated actual waste = 12123	367877 — 132000 Available	132000 132123 — —	120000 119999 — —	69989 119999 50000 Available	50000 50010 — —
<b>Parallel Production by a second Device</b>					
30,000 additional copies of the same Resource are requested from a different Device. 20% waste is assumed	367877 — 168000 Available	132000 132123 36000 0	120000 119999 30000 0	69989 119999 50000 Available	50000 50010 — —
The 30,000 copies are produced	331856 — 168000 Available	132000 132123 36000 36021	120000 119999 30000 30100	100089 150099 50000 Available	50000 50010 — —
<b>Consumption by the following Process</b>					
The Consuming Node is set up to consume all available Components	331856 — 168000 Available	132000 132123 36000 36021	120000 119999 30000 30100	100089 150099 50000 Available	150000 50010 — —
All intermediate copies are consumed	331856 — 168000 Available	132000 132123 36000 36021	120000 119999 30000 30100	0 150099 150000 Unavailable	150000 150099 — —

### 3.15.5 Description of Partitioned Resources

Printing workflows contain a number of Processes that are repeated over a potentially large number of individual files, Sheets, surfaces or separations. In order to define a Partitioned Resource in a concise manner without having to create a large number of individual Nodes and Resources, a set of Resources might be Partitioned by factoring them by one or more Attributes. The common Elements and defaults are placed in the parent Element while Partition-specific Attributes and overrides are placed in the child Elements. This saves space. Also, by providing a single parent ID for the Resources, it allows easy access to the entire Resource or iteration over each part.

To reference part of a Resource, a **ResourceLink** references the parent Resource and supplies a **Part** Element that contains an actual value for a Partition. The result is all the child Elements with matching Partition values, including common values and defaults from the parent Resource. If **@PartUsage = "Implicit"**, the parent Attributes are returned if there is no matching Partition.

A Partitioned Resource MAY contain nested Elements, each with the same name as the Partitioned Resource root. The part-independent Resource Elements and Attributes are located in the root of the Resource, while the Partition-dependent Elements are located in the nested Elements. Thus one individual part is defined by the convolution of the Partition-independent Elements and Attributes with the Elements and Attributes contained in the appropriate nested Elements. The Attributes of nested part Elements are overwritten by the equivalent Attributes in descendant Elements.

Some Processes will enumerate a Resource in XML order and use its Partition Key values and actually set the values of those Partition Keys during its processing. Other Processes will treat the Resource as a random access Resource and look up leaf Nodes based on the current settings of **@PartIDKeys** values. For example, the **RunList** Resource can be used by the **Impose** Process to define key values (such as the **@Run** Partition Key during consumption of the **RunList**, and the **Layout** Resource uses Partitioning to define a set of templates chosen based on the current content from the **RunList** being processed.

#### 3.15.5.1 Subelements in Partitioned Resources

Subelements of a Partitioned Resource are inherited by a descendant Element if and only if no equivalent Subelements exist in the descendant Element. Subelements are completely replaced by those in descendant Elements even if cardinality of the Subelement allows multiple occurrences.

#### Example 3-15: Inheritance for Subelements of a Partitioned Resource

For example, the following **SeparationSpec** is two color duo-tone (only "*Black*" and *SpotGreen*) in the part with **@PageNumber = "1"**. For additional examples and restrictions, see also Section 8.87.19.1.2, “Position of PlacedObject Elements in Layout” on page 746 which contains Example 8-21 and Example 8-22.

```
<LayoutElement Class="Parameter" ID="ID1" PartIDKeys="PageNumber"
    Status="Available">
    <SeparationSpec Name="Cyan"/>
    <SeparationSpec Name="Magenta"/>
    <SeparationSpec Name="Yellow"/>
    <SeparationSpec Name="Black"/>
    <FileSpec/>
    <LayoutElement PageNumber="0"/>
    <LayoutElement PageNumber="1">
        <!--These two SeparationSpec Elements completely replace the
            CMYK in the root
        -->
        <SeparationSpec Name="Black"/>
        <SeparationSpec Name="SpotGreen"/>
    </LayoutElement>
</LayoutElement>
```

### 3.15.5.2 Amount in Partitioned Resources

New in JDF 1.2

The *@Amount* Attribute of a Partitioned Resource is treated formally exactly in the same manner as any other Attribute. This implies that the amount specified refers to the amount defined by one leaf and not to the amount defined by the sum of leaves in a branch. The *@Amount* Attribute defined in the example below is, therefore, two, even though 24 physical plates are described.

#### Example 3-16: Partitioned ExposedMedia

The following example defines two sets of 12 plates for two Sheets with three surfaces. Each has a common brand Attribute called “Gooey”. Each individual separation has its own *@ProductID*. Furthermore, the *Status* Attribute varies from part to part. For example, if a yellow plate breaks, only it will need to be remade and, therefore, set to “*Unavailable*”; the others, meanwhile, can remain “*Available*”.

```
<ExposedMedia Amount="2" Brand="Gooey" Class="Handling" ID="L1"
    PartIDKeys="SheetName Side Separation" Status="Available">
    <Media Dimension="500 600" MediaType="Plate"/>
    <ExposedMedia SheetName="S1">
        <ExposedMedia Side="Front">
            <ExposedMedia ProductID="S1FCPlateJ42" Separation="Cyan"/>
            <ExposedMedia ProductID="S1FMPlateJ42" Separation="Magenta"/>
            <ExposedMedia ProductID="S1FYPlateJ42" Separation="Yellow"
                Status="Unavailable"/>
            <ExposedMedia ProductID="S1FKPlateJ42" Separation="Black"/>
        </ExposedMedia>
        <ExposedMedia Side="Back">
            <ExposedMedia ProductID="S1BCPlateJ42" Separation="Cyan"/>
            <ExposedMedia ProductID="S1BMPlateJ42" Separation="Magenta"/>
            <ExposedMedia ProductID="S1BYPlateJ42" Separation="Yellow"/>
            <ExposedMedia ProductID="S1BKPlateJ42" Separation="Black"/>
        </ExposedMedia>
    </ExposedMedia>
    <ExposedMedia SheetName="S2">
        <ExposedMedia Side="Front">
            <ExposedMedia ProductID="S2FCPlateJ42" Separation="Cyan"/>
            <ExposedMedia ProductID="S2FMPlateJ42" Separation="Magenta"/>
            <ExposedMedia ProductID="S2FYPlateJ42" Separation="Yellow"/>
            <ExposedMedia ProductID="S2FKPlateJ42" Separation="Black"/>
        </ExposedMedia>
    </ExposedMedia>
</ExposedMedia>
```

### 3.15.5.3 Relating PartIDKeys and Partitions

New in JDF 1.2

The *@PartIDKeys* Attribute (see Section 3.15.6, “PartIDKeys Attribute and Partition Keys”) describes the Partition Keys that occur in a Partitioned Resource. The sequence and number of keys is restricted in order and cardinality to ensure interoperability. The first entry in the *@PartIDKeys* list defines the Partition closest to the root, the next entry defines the next intermediate Partition Node and so forth until the last entry, which defines the Partition leaves. Each Partition Key SHALL occur exactly once in the *@PartIDKeys* list. Note that some of the restrictions specified in this section were assumed to be in place in versions before JDF 1.2 but were not explicitly stated in the specification.

### 3.15.5.3.1 Incomplete Partitions

New in JDF 1.2

Partitioned Resources MAY be Partitioned by a restricted subset of keys in the `@PartIDKeys` list. Keys from the back of the list MAY be omitted in individual Partitions. If a key is omitted, all following keys SHALL also be omitted.

#### Example 3-17: Legal Incomplete Partition

The following example demonstrates a legal incomplete Partition. It is incomplete because the `Preview` that is Partitioned by `@PreviewType = "ThumbNail"` is not also Partitioned by `@Separation`. It is legal because the omitted key `@Separation` is at the end of the `@PartIDKeys` list:

```
<Preview Class="Parameter" ID="P1" PartIDKeys="PreviewType Separation"
    URL="File:///aaa.pdf" Status="Available">
    <Preview PreviewType="Separation">
        <Preview Separation="Cyan"/>
        <Preview Separation="Magenta"/>
    </Preview>
    <Preview PreviewType="ThumbNail"/>
</Preview>
```

#### Example 3-18: Illegal Incomplete Partition

The following example demonstrates an illegal incomplete Partition since the omitted keys are not at the end of the `@PartIDKeys` list:

```
<Preview Class="Parameter" ID="P2" PartIDKeys="PreviewType Separation"
    Status="Available">
    <Preview Separation="Cyan"/>
    <Preview Separation="Magenta"/>
</Preview>
```

### 3.15.5.3.2 Number of Partition Keys per Partitioned Leaf or Node

New in JDF 1.2

Exactly one Partition Key SHALL be specified per leaf or Node, excluding the Root Node. This allows XPath-type searches on Partitioned leaves.

#### Example 3-19: Legal Complete Partition

The following example demonstrates a legal Partition:

```
<Preview Class="Parameter" ID="P3" PartIDKeys="PreviewType Separation"
    URL="File:///aaa.pdf" Status="Available">
    <Preview PreviewType="Separation">
        <Preview Separation="Cyan"/>
    </Preview>
</Preview>
```

#### Example 3-20: Illegal Partition

The following example demonstrates an illegal Partition since more than one Partition Key is specified in the leaf, namely, `@PreviewType` and `@Separation`:

```
<Preview Class="Parameter" ID="P4" PartIDKeys="PreviewType Separation"
    URL="File:///aaa.pdf" Status="Available">
    <Preview PreviewType="Separation" Separation="Cyan"/>
</Preview>
```

### 3.15.5.3.3 Degenerate Partitions

New in JDF 1.2

A Partitioned Resource SHALL NOT contain Partition Keys in the root. Mapping Partitioned parameters to non-Partitioned Resources is achieved by Partitioning the Resource with exactly one leaf.

#### Example 3-21: Degenerate Partition

The following example specifies that only "c1" be folded:

```
<Component Class="Quantity" ID="c1" PartIDKeys="SheetName" Status="Available"
    ComponentType="Sheet">
    <Component SheetName="Sheet 1"/>
</Component>
<Component Class="Quantity" ID="c2" PartIDKeys="SheetName" Status="Available"
    ComponentType="Sheet">
    <Component SheetName="Sheet 2"/>
</Component>
<FoldingParams Class="Parameter" ID="fold" NoOp="true" PartIDKeys="SheetName"
    Status="Available">
    <FoldingParams NoOp="false" SheetName="Sheet 1"/>
</FoldingParams>
```

#### Example 3-22: Invalid Degenerate Partition

The **Component** Elements in the following example are NOT valid:

```
<Component Class="Quantity" ID="c12" PartIDKeys="SheetName" SheetName="Sheet 1"
    Status="Available" ComponentType="Sheet"/>
<Component Class="Quantity" ID="c22" PartIDKeys="SheetName" SheetName="Sheet 2"
    Status="Available" ComponentType="Sheet"/>
<FoldingParams Class="Parameter" ID="fold2" NoOp="true" PartIDKeys="SheetName"
    Status="Available">
    <FoldingParams NoOp="false" />
</FoldingParams>
```

### 3.15.5.4 Partitioning of Resource Subelements

New in JDF 1.2

Only Resources can be Partitioned. If a Resource contains Subelements, the Subelements SHALL NOT be Partitioned. Subelements SHALL always be specified completely in that part where they occur. The content of Subelements is not convoluted with the content of Subelements in parts closer to the root. Five examples are provided below. The first and the fourth example are valid, the second, third and fifth are invalid.

#### Example 3-23: Partitioned ExposedMedia with Media Subelements

In the first example, the **ExposedMedia** Resource is Partitioned.

```
<ExposedMedia Class="Handling" ID="L1" PartIDKeys="Separation"
    Status="Available">
    <Media Brand="foo" MediaType="Film"/>
    <ExposedMedia Separation="Cyan"/>
    <ExposedMedia Separation="Magenta">
        <Media Brand="bar" MediaType="Film"/>
    </ExposedMedia>
</ExposedMedia>
```

#### Example 3-24: Partitioned ExposedMedia with Incomplete Media Subelements

In this incomplete example, the **Media** in the leaves is not complete because it does not contain the **@MediaType** Attribute. **@MediaType** is *not* inherited from the **Media** Element in the root Resource because in this case **Media** is not the Partitioned Resource.

```

<ExposedMedia Class="Handling" ID="L21" PartIDKeys="Separation"
    Status="Available">
    <Media MediaType="Film"/>
    <ExposedMedia Separation="Cyan">
        <Media Brand="foo"/>
    </ExposedMedia>
    <ExposedMedia Separation="Magenta">
        <Media Brand="bar" Class="Consumable"/>
    </ExposedMedia>
</ExposedMedia>

```

### Example 3-25: Partitioned ExposedMedia with Invalid Partitioning of Media Subelements

In this invalid example, **Media** is a Subelement that SHALL NOT be Partitioned.

```

<ExposedMedia Class="Handling" ID="L31" PartIDKeys="Separation" Status="Available">
    <Media MediaType="Film">
        <Media Brand="foo" Separation="Cyan"/>
        <Media Brand="bar" Separation="Magenta"/>
    </Media>
</ExposedMedia>

```

### Example 3-26: Partitioned ExposedMedia with MediaRef Subelements

Partitioning MAY be combined with inter-Resource links (i.e., ResourceRef Elements). In the following valid example, each **MediaRef** is equivalent to an in-lined leaf with the explicit **Part** Elements to define the Partition (i.e., it is equivalent to the valid Example 3-23).

```

<Media Class="Consumable" ID="MediaID" MediaType="Film" PartIDKeys="Separation"
    Status="Available">
    <Media Brand="foo" Separation="Cyan"/>
    <Media Brand="bar" Separation="Magenta"/>
</Media>
<ExposedMedia Class="Handling" ID="L41" PartIDKeys="Separation"
    Status="Available">
    <ExposedMedia Separation="Cyan">
        <!--equivalent to <Media MediaType="Film" Brand="foo"/> -->
        <MediaRef rRef="MediaID">
            <Part Separation="Cyan"/>
        </MediaRef>
    </ExposedMedia>
    <ExposedMedia Separation="Magenta">
        <!--equivalent to <Media MediaType="Film" Brand="bar"/> -->
        <MediaRef rRef="MediaID">
            <Part Separation="Magenta"/>
        </MediaRef>
    </ExposedMedia>
</ExposedMedia>

```

### Example 3-27: Partitioned ExposedMedia with Invalid MediaRef Subelements

In this invalid example, **MediaRef** does not reference the leaves of **Media** but, rather, to the root of **Media**. It is equivalent to the invalid Example 3-25.

```

<Media Class="Consumable" ID="MediaID2" MediaType="Film"
    PartIDKeys="Separation" Status="Available">
    <Media Brand="foo" Separation="Cyan"/>
    <Media Brand="bar" Separation="Magenta"/>
</Media>
<ExposedMedia Class="Handling" ID="L51" PartIDKeys="Separation"

```

```

    Status="Available">
  <MediaRef rRef="MediaID2"/>
</ExposedMedia>

```

### 3.15.5.5 Logical Partitions and the Identical Element

New in JDF 1.3

Partitioning is a mechanism for describing a complete set of similar Resources, but always leads to a tree structure of Resources. Sometimes it is necessary to describe a set of Resources that are not a tree, but where some Partitions of the set are 'identical' to another Partition. A set of **ExposedMedia** Resources where the same plate for the separation 'CompanySpot' is reused for all Sheets is a practical example.

#### 3.15.5.5.1 Element: **Identical**

Any Partitioned Resource MAY contain an Identical Subelement. The Resource Partition containing the Identical Element is called the logical Partition or slave Partition. Linking a logical Partition using a **ResourceLink** or referencing a logical Partition using a **ResourceRef** is semantically the same as linking/referencing the master Partition.

All Attributes except for the Attributes specified in **@PartIDKeys** and all Subelements of the Resource (see Section 3-10, “Abstract Resource Element” on page 75) specified or inherited in the logical Partition SHALL be ignored and replaced by the Attributes and Subelements of the master Partition.

**Table 3-31: Identical Element**

Name	Data Type	Description
Part	element	Identifies the physical Partition which will be used instead of the logical Partition. The logical Partition is defined by the Resource Partition containing the Identical Element.

#### Example 3-28: Partitioning with the Identical Element

In the following example the back side of Sheet S2 is identical to the back side of Sheet S1:

```

<ExposedMedia Class="Handling" ID="L1" PartIDKeys="SheetName Side Separation"
  Status="Available">
  <Media Class="Consumable" MediaType="Film"/>
  <ExposedMedia SheetName="S1">
    <ExposedMedia Side="Front">
      <ExposedMedia ProductID="1" Separation="Cyan"/>
      <ExposedMedia ProductID="2" Separation="Magenta"/>
      <ExposedMedia ProductID="3" Separation="Yellow"/>
      <ExposedMedia ProductID="4" Separation="Black"/>
    </ExposedMedia>
    <!-- Master partition that is referenced by an Identical Element -->
    <ExposedMedia Side="Back">
      <ExposedMedia ProductID="5" Separation="Cyan"/>
      <ExposedMedia ProductID="6" Separation="Magenta"/>
      <ExposedMedia ProductID="7" Separation="Yellow"/>
      <ExposedMedia ProductID="8" Separation="Black"/>
    </ExposedMedia>
  </ExposedMedia>
  <ExposedMedia SheetName="S2">
    <ExposedMedia Side="Front">
      <ExposedMedia ProductID="9" Separation="Cyan"/>
      <ExposedMedia ProductID="10" Separation="Magenta"/>
      <ExposedMedia ProductID="11" Separation="Yellow"/>
      <ExposedMedia ProductID="12" Separation="Black"/>
    </ExposedMedia>
    <!-- Logical partition with an Identical Element -->

```

```

<ExposedMedia Side="Back">
  <Identical>
    <Part SheetName="S1" Side="Back"/>
  </Identical>
</ExposedMedia>
</ExposedMedia>

```

### 3.15.5.5.2 Restrictions when using Identical Elements

The Identical Element SHALL contain exactly one Part Subelement, which identifies the physical or master Partition that is identical to the logical Partition.

The logical Partition SHALL have no other Subelements than the Identical Element and no additional Attributes other than those specified by `@PartIDKeys`.

The master Partition identified by Identical/Part SHALL be either a Partition leaf or at the same Partition level of the logical Partition. Such a master Partition SHALL NOT contain an Identical element. In this way, the logical Partition obeys the rules described in Section 3.15.5.3, “Relating PartIDKeys and Partitions”.

### Example 3-29: ResourceLink with Part Element

The **ExposedMedia** example above is valid, because both the logical and physical Partition level equals the `@Side` Partition level. The following ResourceLink illustrates a valid Partition sequence:

```

<ExposedMediaLink Usage="Input" rRef="L1">
  <Part SheetName="S2" Side="Back" Separation="Black"/>
</ExposedMediaLink>

```

### Example 3-30: Partitioning with an Invalid Identical Element

This example illustrates an INVALID logical Partition, because logical and physical Partition level are not equal and the physical Partition level is not a leaf.

```

<ExposedMedia Class="Handling" ID="L2" PartIDKeys="SheetName Side Separation"
  Status="Available">
  <ExposedMedia SheetName="S1">
    <ExposedMedia Side="Front">
      <ExposedMedia ProductID="1" Separation="Cyan"/>
      <ExposedMedia ProductID="2" Separation="Magenta"/>
      <ExposedMedia ProductID="3" Separation="Yellow"/>
      <ExposedMedia ProductID="4" Separation="Black"/>
    </ExposedMedia>
    <ExposedMedia Side="Back">
      <ExposedMedia ProductID="5" Separation="Cyan"/>
      <ExposedMedia ProductID="6" Separation="Magenta"/>
      <ExposedMedia ProductID="7" Separation="Yellow"/>
      <ExposedMedia ProductID="8" Separation="Black"/>
    </ExposedMedia>
  </ExposedMedia>
  <ExposedMedia SheetName="S2">
    <ExposedMedia Side="Front">
      <ExposedMedia ProductID="9" Separation="Cyan">
        <!--This Identical is invalid because it references from a Separation
          partition to a Surface partition -->
        <Identical>
          <Part SheetName="S1" Side="Back"/>
        </Identical>
      </ExposedMedia>
    </ExposedMedia>
  </ExposedMedia>

```

```
</ExposedMedia>
</ExposedMedia>
</ExposedMedia>
```

### 3.15.6 PartIDKeys Attribute and Partition Keys

New in JDF 1.2

#### 3.15.6.1 Partitionable Resource

In addition to the usual Resource Attributes and Elements, the Partitionable Resource Element has Partition-specific Attributes and Elements in its root. Specifying `@PartIDKeys` in the root defines a Partitioned Resource. Throughout this document, the term “Partition Key” (depending on the context) refers to either

- an enumeration value of the `@PartIDKeys` Attribute (e.g., `"Side"`).

```
<ExposedMedia PartIDKeys = "Side" ...>
```

- an Attribute that with two specialized functions:

- can identify a Partition (e.g., `@Side`).

```
<ExposedMedia ID="XM" ...>
  <ExposedMedia Side="Front" ...>
    ...
  </ExposedMedia>
```

- can reference a Partition from within a `Part` Element (e.g., `@Side`).

```
<ExposedMediaLink rRef="XM" ...>
  <Part Side="Front" />
</ExposedMediaLink>
```

Further Attributes that apply to Partitioned Resources are listed in the following table.

**Table 3-32: Partitionable Resource Element (Sheet 1 of 2)**

Name	Data Type	Description		
<i>PartIDKeys</i> ? <a href="#">Modified in JDF 1.5</a>	enumerations	<p>List of Attribute names that are used to separate the individual parts. <i>@PartIDKeys</i> also defines the sequence from root to leaf in which the <i>@PartIDKeys</i> SHALL occur in the Partitioned Resource. Each entry in the <i>@PartIDKeys</i> list SHALL occur only once. <i>@PartIDKeys</i> SHALL NOT be specified below the root of a Partitioned Resource.</p> <p>For details, see Table 3-33, “Part Element” on page 129.</p> <p><b>Modification note:</b> before JDF 1.4, Part/<i>@Sorting</i> and Part/<i>@SortAmount</i> were not valid values of <i>@PartIDKeys</i>. Now they have been deprecated so all values of <i>@PartIDKeys</i> are also Elements of Part.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>BinderySignatureName</i></li> <li><i>BinderySignaturePaginationIndex</i></li> </ul>		
		<i>BlockName</i>	<i>LayerIDs</i>	<i>RunPage</i>
		<i>BundleItemIndex</i>	<i>Location</i>	<i>RunPageRange</i>
		<i>CellIndex</i>	<i>Metadata0</i>	<i>RunSet</i>
		<i>Condition</i>	<i>Metadata1</i>	<i>RunTags</i>
		<i>DeliveryUnit0</i>	<i>Metadata2</i>	<i>SectionIndex</i>
		<i>DeliveryUnit1</i>	<i>Metadata3</i>	<i>Separation</i>
		<i>DeliveryUnit2</i>	<i>Metadata4</i>	<i>SetCopies</i>
		<i>DeliveryUnit3</i>	<i>Metadata5</i>	<i>SetDocIndex</i>
		<i>DeliveryUnit4</i>	<i>Metadata6</i>	<i>SetIndex</i>
		<i>DeliveryUnit5</i>	<i>Metadata7</i>	<i>SetRunIndex</i>
		<i>DeliveryUnit6</i>	<i>Metadata8</i>	<i>SetSheetIndex</i>
		<i>DeliveryUnit7</i>	<i>Metadata9</i>	<i>SetTags</i>
		<i>DeliveryUnit8</i>	<i>Option</i>	<i>SheetIndex</i>
		<i>DeliveryUnit9</i>	<i>PageNumber</i>	<i>SheetName</i>
		<i>DocCopies</i>	<i>PageTags</i>	<i>Side</i>
		<i>DocIndex</i>	<i>PartVersion</i>	<i>SignatureName</i>
		<i>DocRunIndex</i>	<i>PlateLayout</i>	<i>StationName</i>
		<i>DocSheetIndex</i>	<i>PreflightRule</i>	<i>SubRun</i>
		<i>DocTags</i>	<i>ProductPart</i>	<i>TileID</i>
		<i>Edition</i>	<i>PreviewType</i>	<i>WebName</i>
		<i>EditionVersion</i>	<i>RibbonName</i>	<i>WebProduct</i>
		<i>FountainNumber</i>	<i>Run</i>	<i>WebSetup</i>
		<i>ItemNames</i>	<i>RunIndex</i>	

**Table 3-32: Partitionable Resource Element (Sheet 2 of 2)**

Name	Data Type	Description
PipePartIDKeys ? <a href="#">New in JDF 1.2</a>	enumerations	<p>Defines the granularity of a dynamic pipe for a Partitioned Resource. For instance, if a Resource were Partitioned by sheet, surface and separation (i.e., <code>Resource/@PartIDKeys = "SheetName Side Separation"</code>), and if the <code>ResourceLink/@PipePartIDKeys = "SheetName Side"</code>, then pipe requests would be issued only once per surface. The contents of <code>@PipePartIDKeys</code> SHALL be a subset of the <code>@PartIDKeys</code> Attribute of the Resource that is linked by this ResourceLink.</p> <p><b>Default value is from:</b> <code>@PartIDKeys</code> (i.e., maximum granularity). <code>@PipePartIDKeys</code> SHALL NOT be specified below the root of a Partitioned Resource. For details on Partitioned Resources, see Section 3.15.5, “Description of Partitioned Resources” on page 120.</p> <p><b>Allowed values are from:</b> <code>@PartIDKeys</code>.</p>
Identical ?	element	Cross reference to a logical Partition. For details on logical Partitions and the Identical Element, see Section 3.15.5.5, “Logical Partitions and the Identical Element”.
Resource*	element	Nested Resource Elements that contain the appropriate Partition Keys as specified in <code>@PartIDKeys</code> . These Elements SHALL be of the same name and type as the root Resource Element. They represent the individual parts or groups of parts.

### 3.15.6.2 Part

Partitionable Resources are uniquely identified by the Attribute Values listed in `@PartIDKeys` Attributes. The choice of which Attributes to use depends on how the Agent organizes the Job.

The following table lists the content of a **Part** Element, which contains a set of Attributes that have a well described meaning. Each of the Attributes, except `@Sorting`, MAY be used in the nested Resource Elements of Partitioned Resources as the Partition Key (see example above).

**Part** Elements match a given Partition when all of the Attributes of a **Part** Element match the Attributes of the referenced Resource. This corresponds to Boolean AND operation. Note that a **Part** Element MAY specify a subset of the Partition Keys (e.g., only lower level Partition Keys) and thus implicitly select multiple Partitions leaves or Nodes from a Partitioned Resource (see Section 3.15.7.4, “Implicit, Sparse and Explicit PartUsage in Partitioned Resources”). If multiple **Part** Elements are specified, the result is a Boolean OR of the multiple parts. A **Part** Element with no Attributes explicitly references the root Resource.

Some Attributes of Part (`@Separation`, `@SheetName`, `@SignatureName`) have a data type of string. Future versions of this specification may restrict the data type to NMTOKEN. Therefore implementations SHOULD write values as NMTOKEN. Compliant implementations SHALL be capable of reading string values.

**Table 3-33: Part Element (Sheet 1 of 10)**

Name	Data Type	Description
BinderySignatureName ? <a href="#">New in JDF 1.2</a>	NMTOKEN	Name of the <b>BinderySignature</b> used in a <b>StrippingParams</b> description.

**Table 3-33: Part Element (Sheet 2 of 10)**

Name	Data Type	Description
<i>BinderySignaturePaginationIndex ?</i> <a href="#">New in JDF 1.4</a>	IntegerRangeList	@BinderySignaturePaginationIndex defines indices of the pages of the pagination sequence of <b>StrippingParams</b> / <b>StripCellParams</b> Elements or <b>BinderySignature</b> / <b>SignatureCell</b> Elements. Elements are counted by their pagination index. The index is zero based and is local in the <b>BinderySignature</b> , not the pagelist of the Job.
<i>BlockName ?</i> <a href="#">New in JDF 1.1</a>	NMTOKEN	Identifies a <b>CutBlock</b> from a <b>Cutting</b> Process. The value of this Attribute SHALL match the value of the @BlockName Attribute of a <b>CutBlock</b> .
<i>BundleItemIndex ?</i> <a href="#">New in JDF 1.2</a>	IntegerRangeList	The @BundleItemIndex Attribute selects a set of BundleItem Elements from a <b>Component</b> Resource.
<i>CellIndex ?</i> <a href="#">New in JDF 1.2</a>	IntegerRangeList	Index of <b>SignatureCell</b> Elements in a <b>StrippingParams</b> or <b>BinderySignature</b> . <b>SignatureCell</b> Elements are counted starting from lower left. Each row is indexed from left to right before moving up to the next row.
<i>Condition ?</i> <a href="#">New in JDF 1.2</a>	NMTOKEN	The @Condition Attribute was added to JDF 1.2 to allow users of JDF-enabled systems to define and track different kinds of waste for improved error reporting and production statistics. <b>Values include those from:</b> Table 3-34, “Condition Attribute Values” on page 138.
<i>DeliveryUnit0 ?</i> <a href="#">New in JDF 1.3</a>	NMTOKEN	Specifies a hierarchical manifest of delivery packages where @DeliveryUnit0 specifies the most granular bundle. @DeliveryUnit<N+1> specifies the next most granular bundle in packing after @DeliveryUnit<N>. Bundles can be packaged with varying numbers of products. @DeliveryUnit<N+1> SHALL occur before @DeliveryUnit<N> in @PartIDKeys. Note that N is a placeholder for the values 0 through 9.
<i>DeliveryUnit1 ?</i> <a href="#">New in JDF 1.3</a>	NMTOKEN	See @DeliveryUnit0.
<i>DeliveryUnit2 ?</i> <a href="#">New in JDF 1.3</a>	NMTOKEN	See @DeliveryUnit0.
<i>DeliveryUnit3 ?</i> <a href="#">New in JDF 1.3</a>	NMTOKEN	See @DeliveryUnit0.
<i>DeliveryUnit4 ?</i> <a href="#">New in JDF 1.3</a>	NMTOKEN	See @DeliveryUnit0.
<i>DeliveryUnit5 ?</i> <a href="#">New in JDF 1.3</a>	NMTOKEN	See @DeliveryUnit0.
<i>DeliveryUnit6 ?</i> <a href="#">New in JDF 1.3</a>	NMTOKEN	See @DeliveryUnit0.
<i>DeliveryUnit7 ?</i> <a href="#">New in JDF 1.3</a>	NMTOKEN	See @DeliveryUnit0.
<i>DeliveryUnit8 ?</i> <a href="#">New in JDF 1.3</a>	NMTOKEN	See @DeliveryUnit0.

Table 3-33: Part Element (Sheet 3 of 10)

Name	Data Type	Description
<i>DeliveryUnit9</i> ? <a href="#">New in JDF 1.3</a>	NMTOKEN	See @ <i>DeliveryUnit0</i> .
<i>DocCopies</i> ?	IntegerRangeList	Identifies a set of document copies to which the Partition applies.
<i>DocIndex</i> ?	IntegerRangeList	The @ <i>DocIndex</i> Attribute selects a set of logical Instance Documents from a <b>RunList</b> Resource.
<i>DocRunIndex</i> ?	IntegerRangeList	The @ <i>DocRunIndex</i> Attribute selects a set of logical pages from Instance Documents of a <b>RunList</b> Resource. For example, @ <i>DocRunIndex</i> = "0 -1" specifies the first and last page of every copy of every selected Instance Document (assuming that additional Partitioning using @ <i>DocCopies</i> and/or @ <i>DocIndex</i> is not also specified). The index always refers to entries of the entire <b>RunList</b> and SHALL NOT be modified if only a part of the <b>RunList</b> is spawned. Specifying @ <i>DocRunIndex</i> does not modify the index of a <b>RunList</b> entry and therefore does not reposition pages on a <b>Layout</b> .
<i>DocSheetIndex</i> ?	IntegerRangeList	The @ <i>DocSheetIndex</i> Attribute selects a set of logical Sheets from individual Instance Documents. For example @ <i>DocSheetIndex</i> = "0 -1" specifies the first and last Sheet of every selected copy of every Instance Document (assuming that additional Partitioning using @ <i>DocCopies</i> and/or @ <i>DocIndex</i> is not also specified). The index always refers to entries of the entire <b>RunList</b> and SHALL NOT be modified if only a part of the <b>RunList</b> is spawned. Specifying @ <i>DocSheetIndex</i> does not modify the index of a <b>RunList</b> entry and therefore does not reposition pages on a <b>Layout</b> .
<i>DocTags</i> ? <a href="#">New in JDF 1.3</a> <a href="#">Modified in JDF 1.4</a>	NameRangeList	List of tags of documents in a multi-document <b>RunList</b> . Used to Partition Resources that are linked from Processes that also have a <b>RunList</b> as input. The Partition is selected if the implied value (i.e., from the PDL) of the document in the <b>RunList</b> matches any of the entries in @ <i>DocTags</i> Note that being a multi-set <b>RunList</b> implies being a multi-document <b>RunList</b> as well. <b>Modification note:</b> starting with JDF 1.4, the data type was expanded from NMTOKENS to NameRangeList.
<i>Edition</i> ? <a href="#">New in JDF 1.3</a>	NMTOKEN	An @ <i>Edition</i> addresses a subset of a published product (e.g., newspaper issue). The content of all copies of one edition is the same. Usually, an edition is published for a specific region and/or publishing time (e.g., Asia/Europe edition or Morning/Evening edition).
<i>EditionVersion</i> ? <a href="#">New in JDF 1.3</a>	NMTOKEN	An edition version is an OPTIONAL subset of a single edition. In order to ship inserts, editions might be subdivided into edition versions.
<i>FountainNumber</i> ?	integer	Zero-based position index of the fountain. Used to Partition fountains along the axis of a roller; can be used for Web Printing.
<i>ItemNames</i> ? <a href="#">New in JDF 1.2</a>	NMTOKENS	List of items to select from a <b>Bundle</b> . <b>Default behavior:</b> all <b>BundleItem</b> Elements are processed.

**Table 3-33: Part Element (Sheet 4 of 10)**

Name	Data Type	Description
<i>LayerIDs ?</i> <a href="#">New in JDF 1.1</a>	IntegerRangeList	The <i>@LayerIDs</i> Attribute selects a set layers that are defined by <i>@LayerID</i> .  <b>Default behavior:</b> all layers are processed.
<i>Location ?</i> <a href="#">Modified in JDF 1.3</a>	NMTOKEN	Name of the location (e.g., in MIS). This part key allows to describe distributed Resources. Note that this name does not define the location by itself. See Section 3.15.6.4, “Locations of PhysicalResources” for details on specifying locations.  <b>Values include those from:</b> Table C-21, “Input Tray and Output Bin Names” on page 1147.  <b>Note:</b> the specified values are for printer locations.
<i>Metadata0 ?</i> <a href="#">New in JDF 1.4</a>	NameRangeList	Metadata extracted from a PDL using <b>RunList/MetadataMap</b> Elements. See Section 10.30, “MetadataMap” on page 1074.
<i>Metadata1 ?</i> <a href="#">New in JDF 1.4</a>	NameRangeList	See <i>@Metadata0</i> .
<i>Metadata2 ?</i> <a href="#">New in JDF 1.4</a>	NameRangeList	See <i>@Metadata0</i> .
<i>Metadata3 ?</i> <a href="#">New in JDF 1.4</a>	NameRangeList	See <i>@Metadata0</i> .
<i>Metadata4 ?</i> <a href="#">New in JDF 1.4</a>	NameRangeList	See <i>@Metadata0</i> .
<i>Metadata5 ?</i> <a href="#">New in JDF 1.4</a>	NameRangeList	See <i>@Metadata0</i> .
<i>Metadata6 ?</i> <a href="#">New in JDF 1.4</a>	NameRangeList	See <i>@Metadata0</i> .
<i>Metadata7 ?</i> <a href="#">New in JDF 1.4</a>	NameRangeList	See <i>@Metadata0</i> .
<i>Metadata8 ?</i> <a href="#">New in JDF 1.4</a>	NameRangeList	See <i>@Metadata0</i> .
<i>Metadata9 ?</i> <a href="#">New in JDF 1.4</a>	NameRangeList	See <i>@Metadata0</i> .
<i>Option ?</i> <a href="#">Modified in JDF 1.3</a>	NMTOKEN	Generic option that MAY be semantic free. MAY also be used for options from an RFQ in an intent resource.
<i>PageNumber ?</i>	IntegerRangeList	Page number in a <b>Component</b> or document (e.g., <b>FileSpec</b> that is not described as a <b>RunList</b> ). References an index in a <b>PageList</b> .
<i>PageTags ?</i> <a href="#">New in JDF 1.3</a> <a href="#">Modified in JDF 1.4</a>	NameRangeList	List of tags of pages in a multi-page <b>RunList</b> . Used to Partition Resources that are linked from Processes that also have a <b>RunList</b> as input. The Partition is selected if the implied value (i.e., from the PDL) of the page in the <b>RunList</b> matches any of the entries in <i>@PageTags</i> .  <b>Modification note:</b> starting with JDF 1.4, the data type was expanded from NMTOKENS to NameRangeList.

**Table 3-33: Part Element (Sheet 5 of 10)**

Name	Data Type	Description
<i>PartVersion</i> ? <a href="#">Modified in JDF 1.3</a>	NMTOKENS	Version identifier (e.g., the language version of a catalog). Compatibility note: The data type of <i>@PartVersion</i> was changed from string to NMTOKENS in JDF 1.3 in order to accommodate Resources that contain Elements from multiple versions (e.g., Sheets with two language versions).
<i>PlateLayout</i> ? <a href="#">New in JDF 1.3</a>	NMTOKEN	Identifier of a single plate layout (mainly used for newspaper processes, where multiple plates are needed for one cylinder)
<i>PreflightRule</i> ? <a href="#">New in JDF 1.2</a> <a href="#">Modified in JDF 1.3</a>	NMTOKEN	Definition of the specific parts of a <b>PreflightReportRulePool/PRRule</b> used in preflight applications.
<i>PreviewType</i> ? <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.5</a>	enumeration	<p>Preview specifies the type and usage of a <b>Preview</b>. <i>@PreviewType</i> SHALL NOT be specified for Resources other than <b>Preview</b> or <b>PreviewGenerationParams</b>.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Animation</i> – animated previews for 3D display. <a href="#">New in JDF 1.5</a></li> <li><i>Identification</i> – <b>Preview</b> is used as a visual help to identify one or more products, e.g. on a gang form. <a href="#">New in JDF 1.5</a></li> <li><i>SeparatedThumbnail</i> – Very low resolution separated preview.</li> <li><i>Separation</i> – Separated preview in medium resolution.</li> <li><i>SeparationRaw</i> – Separated preview in medium resolution with no compensation. <a href="#">New in JDF 1.2</a></li> <li><i>Static3D</i> – static 3D model. <a href="#">New in JDF 1.5</a></li> <li><i>Thumbnail</i> – Very low resolution RGB preview.</li> <li><i>Viewable</i> – RGB preview in medium resolution.</li> </ul>
<i>ProductPart</i> ? <a href="#">New in JDF 1.5</a>	NMTOKEN	References the Product/@ID that this <b>Part</b> <b>Part</b> applies to.
<i>RibbonName</i> ? <a href="#">Modified in JDF 1.3</a>	NMTOKEN	A string that uniquely identifies each ribbon. Multiple ribbons are created out of one Web after dividing in case of Web Printing.
<i>Run</i> ? <a href="#">Modified in JDF 1.3</a>	NMTOKEN	The <i>@Run</i> Attribute selects an individual <b>RunList</b> Partition from a <b>RunList</b> Resource.

**Table 3-33: Part Element (Sheet 6 of 10)**

Name	Data Type	Description
<i>RunIndex</i> ?  <a href="#">New in JDF 1.1</a>	IntegerRangeList	The <i>@RunIndex</i> Attribute selects a set of logical pages from a <b>RunList</b> Resource in a manner that is independent from the internal structure of the <b>RunList</b> . It contains an array of mixed ranges and individual indices separated by whitespace. Each range consists of two indices connected with a tilde (~). For example, <i>@RunIndex</i> = "2 ~ 5 8 10 22 ~ -1". Negative numbers reference pages from the back of a file in base-1 counting. In other words, -1 is the last page, -2 the second to last, etc. Thus <i>@RunIndex</i> = "0 ~ -1" refers to a complete range of pages, from first to last. The index always refers to entries of the entire <b>RunList</b> and SHALL NOT be modified if only a part of the <b>RunList</b> is spawned. Specifying <i>@RunIndex</i> does not modify the index of a <b>RunList</b> entry and therefore does not reposition pages on a <b>Layout</b> .
<i>RunPage</i> ?  <a href="#">New in JDF 1.1</a>	integer	Zero-based page number. Used when a document/file-based <b>RunList</b> is broken down into a page based <b>RunList</b> . For instance, a 2-page document <b>RunList</b> :  <code>&lt;RunList URL="doc.pdf" (...) /&gt;</code> is split into: <code>&lt;RunList PartIDKeys="RunPage" (...) &gt;</code> <code>  &lt;RunList URL="doc_page0.pdf"</code> <code>    RunPage="0" (...) /&gt;</code> <code>  &lt;RunList URL="doc_page1.pdf"</code> <code>    RunPage="1" (...) /&gt;</code> <code>&lt;/RunList&gt;</code>
<i>RunPageRange</i> ?  <a href="#">New in JDF 1.4</a>	IntegerRangeList	Used when splitting <b>RunList</b> Resources into larger chunks that are not yet based on <b>PageList</b> indices.
<i>RunSet</i> ?  <a href="#">New in JDF 1.3</a>	NMTOKEN	Generic group of Elements in a <b>RunList</b> . If Partitioning a <b>RunList</b> by <i>@RunSet</i> and <i>@Run</i> , then <i>@RunSet</i> SHOULD be specified closer to the root.

**Table 3-33: Part Element (Sheet 7 of 10)**

Name	Data Type	Description
<i>RunTags</i> ? <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.4</a>	NameRangeList	<p>List of names in a named <b>RunList</b>. Used to Partition Resources that are linked from Processes that also have a <b>RunList</b> as input when the sequence of the <b>RunList</b> is undefined. The Partition is selected if the explicit or implied (e.g., from the PDL) value of <i>@RunTag</i> of the <b>RunList</b> matches any of the entries in <i>@RunTags</i>.</p> <p><b>Note:</b> the difference between <i>@RunTags</i> and <i>@PageTags</i>, <i>@DocTags</i> or <i>@SetTags</i>. <i>@PageTags</i> is used to identify classes of individual pages having differing JDF parameterization. Similarly, <i>@DocTags</i> is used to identify classes of individual documents and <i>@SetTags</i> is used to identify classes of individual sets each having differing JDF parameterization.</p> <p><i>@RunTags</i> is used to identify collections of pages, often thought of as a document or a piece of a document, but not limited to that. Also, <i>@RunTags</i> MAY be explicitly set for an entire <b>RunList</b> by use of the <i>@RunTag</i> Attribute. The <i>@SetTags</i>, <i>@DocTags</i> and <i>@PageTags</i> Partition Keys are always set implicitly and always refer to the granularity within a <i>@RunList</i> implied by their names.</p> <p><b>Modification note:</b> starting with JDF 1.4, the data type was expanded from NMTOKENS to NameRangeList.</p>
<i>SectionIndex</i> ? <a href="#">New in JDF 1.2</a>	IntegerRangeList	List of sections in a <b>StrippingParams</b> .

**Table 3-33: Part Element (Sheet 8 of 10)**

Name	Data Type	Description
<i>Separation</i> ?  <a href="#">New in JDF 1.5</a>	string	<p>Identifies the separation name.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Composite</i> – Non-separated Resource.</li> <li><i>Separated</i> – The Resource is separated, but the separation definition is handled internally by the Resource, such as a PDF file that contains <b>SeparationInfo</b> dictionaries.</li> <li><i>Cyan</i> – Process color.</li> <li><i>Magenta</i> – Process color.</li> <li><i>Yellow</i> – Process color.</li> <li><i>Black</i> – Process color.</li> <li><i>Red</i> – Additional process color.</li> <li><i>Green</i> – Additional process color.</li> <li><i>Blue</i> – Additional process color.</li> <li><i>Orange</i> – Additional process color.</li> <li><i>Spot</i> – Generic spot color. Used when the exact nature of the spot color is unknown.</li> <li><i>Varnish</i> – Varnish.</li> <li><i>None</i> – explicit reference to a skipped module (i.e., no separation).</li> </ul> <p><b>Note:</b> other values include any separation name defined in the <a href="#">@Name Attribute of a Color Element in the ColorPool</a> the <a href="#">XXX</a>.</p> <p><b>Note:</b> when <i>@Separation</i> is applied to a <a href="#">ColorantControlLink</a> <b>ColorantControl</b>, it defines an implicit Partition that selects a subset of separations for the Process that is described by the <b>ColorantControl</b>. For details, see Section 8.23, “ColorantControl” on page 557.</p>
<i>SetCopies</i> ?  <a href="#">New in JDF 1.5</a>	IntegerRangeList	Identifies a collection of set copies to which the Partition applies.
<i>SetDocIndex</i> ?  <a href="#">New in JDF 1.2</a>	IntegerRangeList	The <i>@SetDocIndex</i> Attribute selects a set of logical Instance Documents from Instance Document Sets of a <b>RunList</b> Resource. For example, <i>@SetDocIndex = "0 -1"</i> specifies the first and last document of every copy of every selected Instance Document Set. The index always refers to entries of the entire <b>RunList</b> and SHALL NOT be modified if only a part of the <b>RunList</b> is spawned. Specifying <i>@SetDocIndex</i> does not modify the index of a <b>RunList</b> entry and therefore does not reposition pages on a <b>Layout</b> .
<i>SetIndex</i> ?  <a href="#">New in JDF 1.1</a>	IntegerRangeList	The <i>@SetIndex</i> Attribute selects a set of logical Instance Document Sets from a <b>RunList</b> Resource. The index always refers to entries of the entire <b>RunList</b> and SHALL NOT be modified if only a part of the <b>RunList</b> is spawned. Specifying <i>@SetIndex</i> does not modify the index of a <b>RunList</b> entry and therefore does not reposition pages on a <b>Layout</b> .

**Table 3-33: Part Element (Sheet 9 of 10)**

Name	Data Type	Description
<i>SetRunIndex ?</i> <a href="#">New in JDF 1.2</a>	IntegerRangeList	The <i>@SetRunIndex</i> Attribute selects a set of logical pages from instance Document Sets of a <b>RunList</b> Resource. For example, <i>@SetRunIndex = "0 -1"</i> specifies the first and last page of every copy of every selected Instance Document Set. The index always refers to entries of the entire <b>RunList</b> and SHALL NOT be modified if only a part of the <b>RunList</b> is spawned. Specifying <i>@SetRunIndex</i> does not modify the index of a <b>RunList</b> entry and therefore does not reposition pages on a <b>Layout</b> .
<i>SetSheetIndex ?</i> <a href="#">New in JDF 1.2</a>	IntegerRangeList	The <i>@SetSheetIndex</i> Attribute selects a set of logical Sheets from individual sets of Instance Documents. For example <i>@SetSheetIndex = "0 -1"</i> specifies the first and last Sheet of every selected copy of every set. The index always refers to entries of the entire <b>RunList</b> and SHALL NOT be modified if only a part of the <b>RunList</b> is spawned. Specifying <i>@SetSheetIndex</i> does not modify the index of a <b>RunList</b> entry and therefore does not reposition pages on a <b>Layout</b> .
<i>SetTags ?</i> <a href="#">New in JDF 1.3</a> <a href="#">Modified in JDF 1.4</a>	NameRangeList	List of tags of pages in a multi-set <b>RunList</b> . Used to Partition Resources that are linked from Processes that also have a <b>RunList</b> as input. The Partition is selected if the implied value (i.e., from the PDL) of the set in the <b>RunList</b> matches any of the entries in <i>@SetTags</i> .  <b>Modification note:</b> starting with JDF 1.4, the data type was expanded from NMOKENS to NameRangeList.
<i>SheetIndex ?</i> <a href="#">Modified in JDF 1.4</a>	IntegerRangeList	The <i>@SheetIndex</i> Attribute selects a set of logical Sheets from a <b>RunList</b> Resource either implicitly or explicitly Partitioned by <i>@SheetIndex</i> . <i>@SheetIndex</i> is only valid when a <b>RunList</b> is describing sheet/surfaces.
<i>SheetName ?</i>	string	A string that uniquely identifies each Sheet.
<i>Side ?</i>	enumeration	Denotes the side of the Sheet. If <i>@Side</i> is specified, the <b>Part</b> Element refers to one surface of the Sheet. If it is not specified, it refers to both sides. In case of Web Printing, " <i>Front</i> " is a synonym for the upper side and " <i>Back</i> " for the down side of the Web.  <b>Allowed values are:</b> <i>Front</i> <i>Back</i>
<i>SignatureName ?</i>	string	A string that uniquely identifies the Signature within the Partitioned Resource.

**Table 3-33: Part Element (Sheet 10 of 10)**

Name	Data Type	Description
<i>Sorting ?</i> <a href="#">Deprecated in JDF 1.4</a>	IntegerRangeList	Mapping from the implied Partitioned Resource order to a Process order. The indices refer to the Elements of the complete Partitioned Resource, not to the index in the selection of parts defined by the <b>Part</b> Element. If not specified the part order is the same as the sorting order. <b>@Sorting</b> SHALL NOT be used as a Partition Key. <b>Note:</b> <b>@Sorting</b> and <b>@SortAmount</b> are semantically different from the other Attributes in this table as they define the ordering of parts, whereas the other Attributes define the selection of parts. <b>Deprecation note:</b> the order of the <b>Part</b> Elements contained in a <b>ResourceLink</b> is significant, and selects each specified subset of the Resource in the XML order of the <b>Part</b> Elements.
<i>SortAmount ?</i> <a href="#">Deprecated in JDF 1.4</a>	boolean	If a sorted Resource has an <b>@Amount</b> Attribute and <b>@SortAmount = "true"</b> , each Resource SHALL be processed completely. If <b>@SortAmount = "false"</b> (the default), each <b>Part</b> Element SHALL be processed the number of times specified in the <b>@Amount</b> Attribute before starting the next <b>Part</b> . <b>@SortAmount</b> SHALL NOT be used as a Partition Key. <b>Deprecation note:</b> see <b>@Sorting</b> .
<i>StationName?</i> <a href="#">New in JDF 1.3</a>	string	The name of the 1-up design in a <b>DieLayout</b> .
<i>SubRun?</i> <a href="#">New in JDF 1.3</a>	NMTOKEN	Defines individual sub-runs in a Production Run. For instance, <b>Media</b> might vary over the duration of a longer run. The variation might be only stock numbers, but physical characteristics might also vary.
<i>TileID ?</i> <a href="#">Modified in JDF 1.3</a>	XYPair	XYPair of integer values that identifies the tile. Tiles are identified by their X and Y indexes. Values are zero-based and expressed in the PS coordinate system. So " <b>0 0</b> " is the lower left tile and " <b>1 0</b> " is the tile next to it on the right. <b>Tile</b> Resources are described in detail in the Section 8.160, "Tile". In JDF 1.3 and beyond, <b>@TileID</b> SHOULD NOT be used to specify multiple plates per cylinder. Instead the new Resource <b>CylinderLayout</b> SHOULD be used.
<i>WebName ?</i> <a href="#">Modified in JDF 1.3</a>	NMTOKEN	A string that uniquely identifies each Web.
<i>WebProduct ?</i> <a href="#">New in JDF 1.3</a>	NMTOKEN	Name of a product that will be produced on a Web Press. Multiple WebProducts MAY be produced simultaneously on one Web Press.
<i>WebSetup ?</i> <a href="#">New in JDF 1.3</a>	NMTOKEN	Defines one setup of a Web Press that MAY produce multiple WebProducts.

**— Attribute: Condition****Table 3-34: Condition Attribute Values (Sheet 1 of 2)**

Value	Description
<b>Good</b>	All correct components.

**Table 3-34: Condition Attribute Values (Sheet 2 of 2)**

<b>Value</b>	<b>Description</b>
<i>Waste</i>	General waste.
<i>Overrun</i>	Excess <b>Component</b> Resource(s) that were produced by running the Device after the specified amount has been produced.
<i>xxxGood</i>	Like "Good" above, but where "xxx" can be the name of any JDF Process (e.g., "FeedingGood", "TrimmingGood", etc.). In the case of a Combined Process or Process Group, the name of the last JDF Process in the Process chain is used.
<i>xxxWaste</i>	Like "Waste" above, but where "xxx" can be the name of any JDF Process (e.g., "FeedingWaste", "TrimmingWaste", etc.). In the case of a Combined Process or Process Group, the name of the last JDF Process in the Process chain is used.
<i>AuxiliarySheet</i> <a href="#">New in JDF 1.4</a>	This Partition identifies <b>Media</b> that was consumed as specified by <i>InsertSheet/@SheetType</i> = "AccountingSheet", "ErrorSheet", "JobSheet" or "SeparatorSheet".
<i>BindingQualityTestFailed</i>	Failed binding quality test. The <b>Component</b> Resource(s) with this <i>@Condition</i> belong to the batch of <b>Component</b> Resource(s) that did not pass the test.
<i>BindingQualityTestPassed</i>	Passed binding quality test. The <b>Component</b> Resource(s) with this <i>@Condition</i> belong to the batch of <b>Component</b> Resource(s) that passed the test but were not destroyed in the Process.
<i>BindingQualityTestWaste</i>	Passed binding quality test. The <b>Component</b> Element(s) with this <i>@Condition</i> belong to the batch of <b>Component</b> Element(s) that passed the test but were destroyed in the Process.
<i>CaliperWaste</i>	Waste by caliper on gathering / collecting.
<i>DoubleFeedWaste</i>	Waste by double feeds on feeders.
<i>IncorrectComponentWaste</i>	Waste by the attempted use of an incorrect components (e.g., on a feeder).
<i>BadFeedWaste</i>	Waste caused by a bad feed
<i>ObliqueSheetWaste</i>	Waste by oblique Sheets on gathering / collecting chains.
<i>PaperJamWaste</i>	Waste by paper or other media jam.
<i>Reusable</i> <a href="#">New in JDF 1.4</a>	Waste to be used for setup in the next process.
<i>WhitePaperWaste</i>	White paper waste.

### 3.15.6.3 Options in Intent Resources

JDF defines "*Option*" as a Partition Key in order to specify multiple options (e.g., for multiple quotes in a non-redundant manner). A ResourceLink that links to a Resource with an "*Option*" Partition but has no Part Element to choose the "*Option*" defaults to the root Resource.

### 3.15.6.4 Locations of PhysicalResources

Unlike other kinds of Resources, PhysicalResources can be stored at multiple, distributed locations. This is specified by including a Location Element in the Resource Element. A @Location Partition Key is provided to define multiple locations of one Resource. The Partition Key carries no semantic meaning and does not by itself define the name of a location.

**Example 3-31: ExposedMedia with Location Elements**

The following example describes a set of plates that are distributed over two locations. (Note: See Section C.5, “Input Tray and Output Bin Names” on page 1147 for additional detail on locating PhysicalResources)

```
<ResourcePool>
  <ExposedMedia Class="Handling" ID="L1" PartIDKeys="Location"
    Status="Available">
    <ExposedMedia Amount="42" Location="dd1">
      <Location LocID="PP_01234" LocationName="Desk Drawer 1"/>
    </ExposedMedia>
    <ExposedMedia Amount="100" Location="dd2">
      <Location LocID="PP_01235" LocationName="Desk Drawer 2"/>
    </ExposedMedia>
    <Media/>
  </ExposedMedia>
</ResourcePool>
<ResourceLinkPool>
  <ExposedMediaLink Amount="50" Usage="Input" rRef="L1">
    <Part Location="dd2"/>
    <!-- Note that @Location can but need not match
        Location/@LocationName
    -->
  </ExposedMediaLink>
</ResourceLinkPool>
```

**Example 3-32: Media with Location Elements**

The following example describes two different Media in the top and bottom tray of a **LayoutPreparation** Process. The Media is selected for the cover and inside pages respectively.

```
<Media Class="Consumable" ID="TopMedia" Status="Available">
  <Location LocationName="Top"/>
</Media>
<Media Class="Consumable" ID="BottomMedia" Status="Available">
  <Location LocationName="Bottom"/>
</Media>
<LayoutPreparationParams Class="Parameter" ID="L1" PartIDKeys="RunIndex"
  Sides="TwoSidedFlipY" Status="Available">
  <!-- Partition that defines the first and last page of the document -->
  <LayoutPreparationParams RunIndex="0 1 -2 -1">
    <MediaRef rRef="TopMedia"/>
  </LayoutPreparationParams>
  <!-- Partition that defines the inside pages of the document -->
  <LayoutPreparationParams RunIndex="2 ~ -3">
    <MediaRef rRef="BottomMedia"/>
  </LayoutPreparationParams>
</LayoutPreparationParams>
```

**3.15.7 Linking to Resources**

**Modification note:** starting with JDF 1.4, all text up to Section 3.15.7.3 is new and replaces now-deleted text that was present in JDF 1.3

A JDF Node can specify a reordering or subset of a Resource by including one or more **Part** Elements in the **ResourceLink** Element that links to that Resource. For details of the **Part** Element, please refer to Table 3-33, “**Part Element**” on page 129.

### 3.15.7.1 Linking to Subsets of Resources

Each ResourceLink/Part Element selects a subset of the Resource, where the aggregation of each selected subset (in the case of multiple ResourceLink/Part Elements) creates a “virtual” Resource that will then be used during Node processing. This feature is often useful to reproduce part of the Job described by a Node, as the default interpretation of the Part Elements maintains the context as if the Node had been executed without any ResourceLink Partitioning.

#### Example 3-33: Linking to Subsets of Resources

For instance, if an **Imposition** Process outputs multiple sheets, and each sheet has dynamic marks placed on the sheet based on the value of **@SheetIndex**, selecting a single sheet to be processed by **Imposition** would produce that sheet using the original **@SheetIndex** value. This example would generate the imposed sheet #5 followed by the imposed sheet #1, where all dynamic marks on both sheets retain the context in which **@SheetIndex** would have been defined when processing the full **RunList** Resource.

```
<ResourcePool>
  <RunList Class="Parameter" ID="SheetSurfacesGeneratedByImposition"
    PartIDKeys="SheetIndex" Status="Available">
    <RunList SheetIndex="1"/>
    <RunList SheetIndex="3"/>
    <RunList SheetIndex="5"/>
  </RunList>
</ResourcePool>
<ResourceLinkPool>
  <RunListLink rRef="SheetSurfacesGeneratedByImposition" Usage="Output">
    <!-- output of imposition -->
    <Part SheetIndex="5"/>
    <Part SheetIndex="1"/>
  </RunListLink>
</ResourceLinkPool>
```

### 3.15.7.2 Reordering the Processing of Resources

ResourceLink Partitioning may also be used to reorder the processing order of content described by a **RunList**. This is done by using the **RunList/@IgnoreContext** Attribute, which specifies which Part Element Partition Keys' Job context should be ignored during processing. For more information and an example of this, see **RunList/@IgnoreContext** in Section 8.134, “RunList” on page 871 and following the **RunList** table, see Example 10-5, “RunList/MetadataMap” on page 1077.

### 3.15.7.3 Handling Amount in a ResourceLink to a Partitioned Resource

The **@Amount** specified in a ResourceLink to a PhysicalResource specifies the sum of individual Resource Partitions. Individual amounts are specified in the PartAmount Elements of the AmountPool.

#### Example 3-34: @Amount in an ExposedMediaLink to a Partitioned ExposedMedia

The following example shows the ResourceLink that refers to Example 3-16, “Partitioned ExposedMedia” on page 121 for a total of five plates.

```
<ExposedMediaLink Usage="Input" rRef="E1">
  <Part Separation="Cyan" SheetName="S1"/>
  <Part Separation="Magenta" SheetName="S1"/>
  <AmountPool>
    <PartAmount>
      <Part Separation="Cyan" SheetName="S1" Side="Front"/>
    </PartAmount>
    <PartAmount>
      <Part Separation="Cyan" SheetName="S1" Side="Back"/>
    </PartAmount>
    <PartAmount>
```

```

<Part Separation="Magenta" SheetName="S1" Side="Front"/>
</PartAmount>
<PartAmount Amount="2">
    <Part Separation="Magenta" SheetName="S1" Side="Back"/>
</PartAmount>
</AmountPool>
</ExposedMediaLink>

```

### 3.15.7.4 Implicit, Sparse and Explicit PartUsage in Partitioned Resources

New in JDF 1.2

The `@PartUsage` Attribute defines how over-specified ResourceLink Elements SHALL be resolved.

If `@PartUsage = "Explicit"`, ResourceLink Elements that do not point to an explicitly defined Partition of a Resource are an error.

If `@PartUsage = "Implicit"`, ResourceLink Elements that do not point to an explicitly defined Partition of a Resource refer to the closest matching Resource Partition, regardless of the existence of sibling Partitions with identical keys but mismatching values.

If `@PartUsage = "Sparse"`, ResourceLink Elements that do not point to an explicitly defined Partition of a Resource refer to the closest matching Resource Partition, if no sibling Partitions with identical keys but mismatching values exist. If sibling Partitions with identical keys but mismatching values exist, ResourceLink Elements that do not point to an explicitly defined Partition of a Resource are in error.

#### Example 3-35: PartUsage in a Partitioned Resource

Table 3-35 below describes the behavior of the JDF example that follows. Table 3-35 shows the `@ProductID` of the Resource Partition that is selected for various values of `@SheetName`, `@Side`, `@Separation` and `@PartVersion` for `@PartUsage = "Implicit"`, `"Explicit"` and `"Sparse"`, respectively. Note the effects of the Identical Element in S2B.

Table 3-35: PartUsage Attribute examples

SheetName	Side	Separation	PartVersion	Implicit	Explicit	Sparse
—	—	—	—	Root	Root	Root
S1	—	—	—	S1	S1	S1
S2	—	—	—	S2	S2	S2
S3	—	—	—	Root	—	—
S2	Back	Cyan	—	S1BC	S1BC	S1BC
S1	Back	Cyan	—	S1BC	S1BC	S1BC
S1	Back	Orange	—	S1B	—	—
S2	Back	Orange	—	S1B	—	—
S1	—	Cyan	—	S1BC, S1FC	S1BC, S1FC	S1BC, S1FC
S1	Back	Cyan	Deutsch	S1BC	—	S1BC
S2	Back	Cyan	Deutsch	S1BC	—	S1BC
S2	Front	Cyan	Deutsch	S2FC	—	S2FC
S1	Back	Black	Deutsch	S1BKD	S1BKD	S1BKD

Note: the example below has `@PartUsage = "Implicit"` and explicit values for `ExposedMediaLink/Part` Attributes, but Table 3-35 above describes the behavior for all values of `@PartUsage` and all values of `ExposedMediaLink/Part`. The example

```
<ResourceLinkPool>
```

```

<ExposedMediaLink Usage="Input" rRef="XM_ID">
    <Part SheetName="S1" Side="Front" Separation="Black" PartVersion="Deutsch"/>
</ExposedMediaLink>
</ResourceLinkPool>
<ResourcePool>
    <ExposedMedia Brand="Gooey" Class="Handling" ID="XM_ID"
        PartIDKeys="SheetName Side Separation PartVersion"
        PartUsage="Implicit" ProductID="Root" Status="Available">
        <Media Dimension="500 600" MediaType="Plate"/>
        <ExposedMedia ProductID="S1" SheetName="S1">
            <ExposedMedia ProductID="S1F" Side="Front">
                <ExposedMedia ProductID="S1FC" Separation="Cyan"/>
                <ExposedMedia ProductID="S1FM" Separation="Magenta"/>
                <ExposedMedia ProductID="S1FY" Separation="Yellow"/>
                <ExposedMedia ProductID="S1FK" Separation="Black">
                    <ExposedMedia ProductID="S1FKD" PartVersion="Deutsch"/>
                    <ExposedMedia ProductID="S1FKE" PartVersion="English"/>
                </ExposedMedia>
            </ExposedMedia>
            <ExposedMedia ProductID="S1B" Side="Back">
                <ExposedMedia ProductID="S1BC" Separation="Cyan"/>
                <ExposedMedia ProductID="S1BM" Separation="Magenta"/>
                <ExposedMedia ProductID="S1BY" Separation="Yellow"/>
                <ExposedMedia ProductID="S1BK" Separation="Black">
                    <ExposedMedia ProductID="S1BKD" PartVersion="Deutsch"/>
                    <ExposedMedia ProductID="S1BKE" PartVersion="English"/>
                </ExposedMedia>
            </ExposedMedia>
        </ExposedMedia>
        <ExposedMedia ProductID="S2" SheetName="S2">
            <ExposedMedia ProductID="S2F" Side="Front">
                <ExposedMedia ProductID="S2FC" Separation="Cyan"/>
                <ExposedMedia ProductID="S2FM" Separation="Magenta"/>
                <ExposedMedia ProductID="S2FY" Separation="Yellow"/>
                <ExposedMedia ProductID="S2FK" Separation="Black"/>
            </ExposedMedia>
            <ExposedMedia Side="Back">
                <Identical>
                    <Part SheetName="S1" Side="Back"/>
                </Identical>
            </ExposedMedia>
        </ExposedMedia>
    </ExposedMedia>
</ResourcePool>

```

### 3.15.7.5 Referencing Multiple Resources of the Same Type

Some Processes (e.g., **Collecting**, **Gathering**) allow multiple Input Resources of the same type. These multiple Input Resources MAY be represented by multiple individual Resources or by Partitioned Resources or by a mixture of both. If ordering is significant, the order of the leaves in a Partitioned Resource defines said ordering. Example 3-36 and Example 3-37 illustrate equivalent ways of gathering three input Sheets.

For **Gathering**, **Collecting**, **Inserting** and similar Processes that have multiple physical Input Resources, explicit links SHOULD be used to define how the output component is ordered. Implicit references of ordered Partitioned Resources are strongly discouraged since there is ambiguity if input components have multiple Partition levels.

**Example 3-36: Explicit Reference of Ordered Partitioned Resources**

```

<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="Link0037" Status="Waiting"
      Type="Gathering" JobPartID="ID345" Version="1.4" >
  <ResourcePool>
    <GatheringParams Class="Parameter" ID="Gath01" Locked="false"
                      Status="Available"/>
    <Component Class="Quantity" ComponentType="Sheet"
               DescriptiveName="printed insert sheets" ID="Sheets01"
               PartIDKeys="SheetName" Status="Available">
      <Component SheetName="Sheet1"/>
      <Component SheetName="Sheet2"/>
      <Component SheetName="Sheet3"/>
    </Component>
    <Component Class="Quantity" ComponentType="Sheet"
               ID="SheetsOut" Status="Available"/>
  </ResourcePool>
  <ResourceLinkPool>
    <GatheringParamsLink Usage="Input" rRef="Gath01"/>
    <!--three ComponentLink explicitly reference individual parts -->
    <ComponentLink Usage="Input" rRef="Sheets01">
      <Part SheetName="Sheet1"/>
    </ComponentLink>
    <ComponentLink Usage="Input" rRef="Sheets01">
      <Part SheetName="Sheet2"/>
    </ComponentLink>
    <ComponentLink Usage="Input" rRef="Sheets01">
      <Part SheetName="Sheet3"/>
    </ComponentLink>
    <ComponentLink Usage="Output" rRef="SheetsOut"/>
  </ResourceLinkPool>
</JDF>

```

**Example 3-37: Implicit Reference of Ordered Partitioned Resources**

```

<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="Link0037" Status="Waiting"
      Type="Gathering" JobPartID="ID345" Version="1.4" >
  <ResourcePool>
    <GatheringParams Class="Parameter" ID="Gath01" Locked="false"
                      Status="Available"/>
    <Component Class="Quantity" ComponentType="Sheet"
               DescriptiveName="printed insert sheets" ID="Sheets01"
               PartIDKeys="SheetName" Status="Available">
      <Component SheetName="Sheet1"/>
      <Component SheetName="Sheet2"/>
      <Component SheetName="Sheet3"/>
    </Component>
    <Component Class="Quantity" ComponentType="Sheet"
               ID="SheetsOut" Status="Available"/>
  </ResourcePool>
  <ResourceLinkPool>
    <GatheringParamsLink Usage="Input" rRef="Gath01"/>
    <!--the ComponentLink implicitly references all three parts -->
    <ComponentLink Usage="Input" rRef="Sheets01"/>
    <ComponentLink Usage="Output" rRef="SheetsOut"/>
  </ResourceLinkPool>
</JDF>

```

### 3.15.8 Splitting and Combining Resources

Depending on the circumstances, it MAY be appropriate either to split a Resource into multiple new Nodes or to specify multiple locations or parts for an individual Resource. There are four possible methods for splitting and combining Resources. Two methods are shown in Figure 3-14 and Figure 3-15 and represent workflows that use the `@Amount` Attribute of their **ResourceLink** Elements to share Resources. This method is practical when one Controller controls all aspects of Resource consumption or production. In Figure 3-14, the Resource amount is split between subsequent Processes. In Figure 3-15, individual Processes produce amounts that are then combined into a unified Resource that is, in turn, used by a single Process. In both cases, a single, shared Resource is employed. To enable independent parallel Processing by multiple Controllers, however, independent Resources are needed. To create independent Resources from one Resource, the **Split** Process is used, as shown in Figure 3-16 (for further details, see Section 6.3.10, “Split”). This Process allows multiple Processes to be spawned off, after which multiple Processes can consume the same Resource in parallel and can therefore run in parallel. Figure 3-17 demonstrates the reverse situation, which occurs if Resources have been produced by multiple Processes and are then consumed, as a unified entity, by a single subsequent Process. To accomplish this, the **Combine** Process combines multiple Resources to create the single Resource.

Figure 3-14: Workflow for splitting shared Input Resources

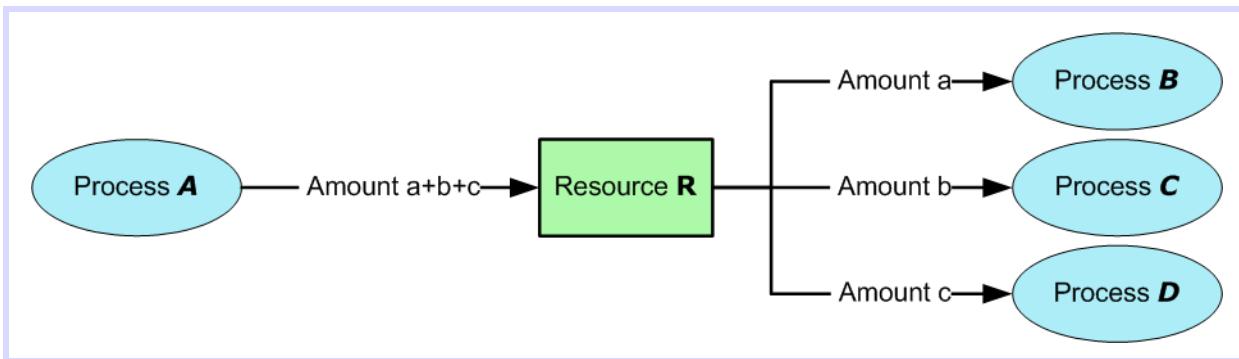


Figure 3-15: Workflow for combining shared Output Resources

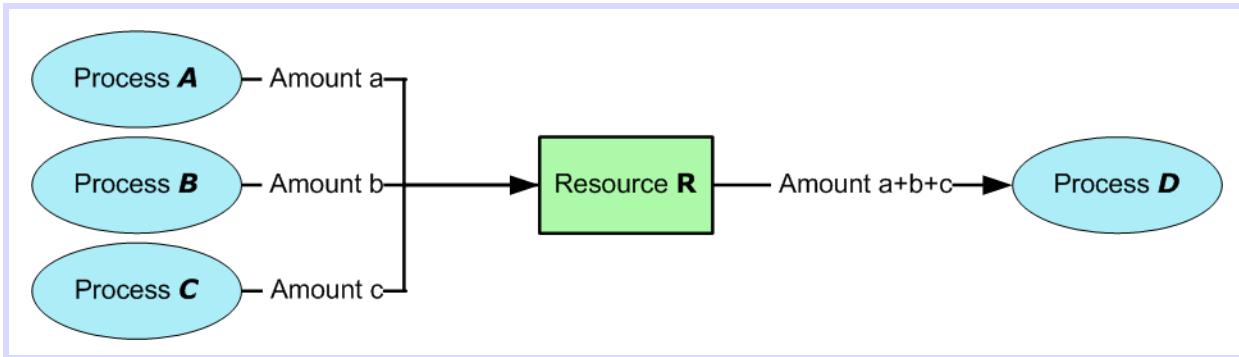
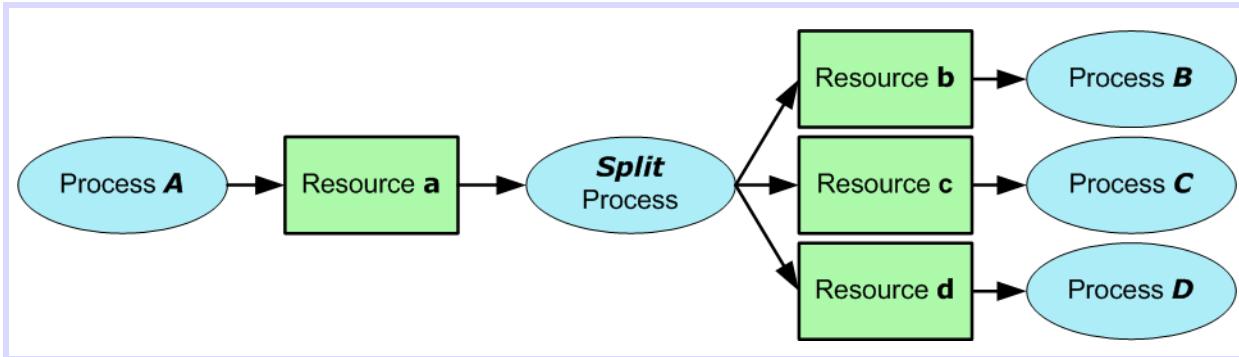
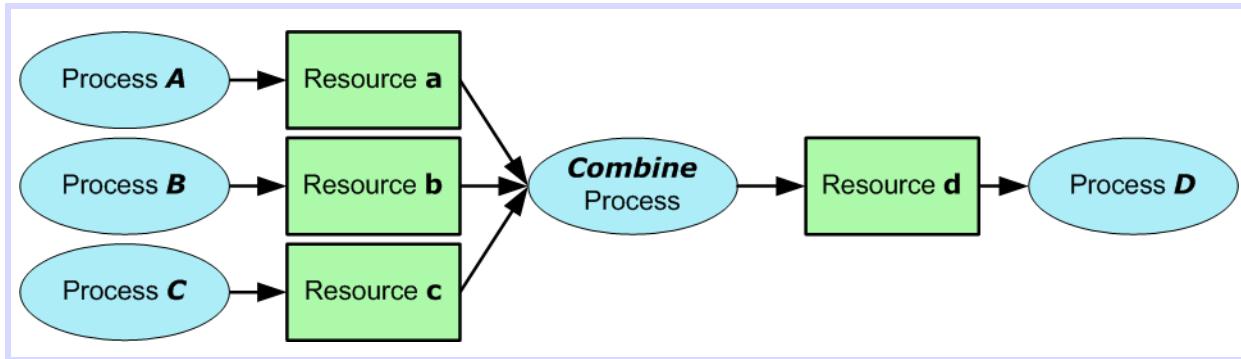


Figure 3-16: Workflow for splitting independent Input Resources



**Figure 3-17: Workflow for combining independent Output Resources**

### 3.16 AuditPool and Audit

Audit Elements contain the post-facto recorded results of a process such as the execution of a JDF Node or modification of the JDF itself. Audit elements become static after a process has been finished. They SHALL NOT be modified after the process has been aborted or completed. Therefore, if PhaseTime or ResourceAudit Audit elements link to resources, those resources SHOULD be locked in order to inhibit accidental modification of audited information, which is why JDF includes a locking mechanism for resources.

Audit Elements record any event related to the following situations:

- The creation of a JDF Node by a Created Audit.
- General information by a AuditNotification Audit.
- Spawning and merging, including Resource copying by spawned and merged Audits.
- Errors such as unnecessary ResourceLink Audits, wrongly linked Resources, missing Resources or missing links, which might be detected by Agents during a test run or by a Notification Audit.
- Actual data about the production and Resource consumption by a ResourceAudit AuditResource Audit.
- Any Process phase times. Examples include setting up a Device, maintenance and washing, as well as down-times as a result of failure, breaks or pauses. Changes of ImplementationResource usage, such as a change of operators by a PhaseTime Audit, would also constitute an example of a phase time.
- Actual final Process execution data. For example, the Process start and end times, as well as the final Process state, as determined by a ProcessRun Audit.
- Any modification of a JDF Node not covered by the preceding items, as recorded by a Modified or Deleted Audit.

Audit information might be used by MIS for operations such as evaluation or invoicing. The Figure 3-18 Figure 3-19 depicts the structure of the AuditPool and concrete Audit Elements, such as Created, derived from the Abstract Audit Element. Audit entries are ordered chronologically, with the last entry in the AuditPool representing the newest. A ProcessRun element shall finalize each Workstep containing the scheduling data finalizes each process run. All subsequent entries in the AuditPool belong to the next Workstep run.

#### 3.16.1 AuditPool

The following table defines the contents of the AuditPool element. In contrast to most other elements in XJDF the child elements of AuditPool SHALL be ordered chronologically from oldest to newest rather than alphabetically.



#### AuditPool Elements

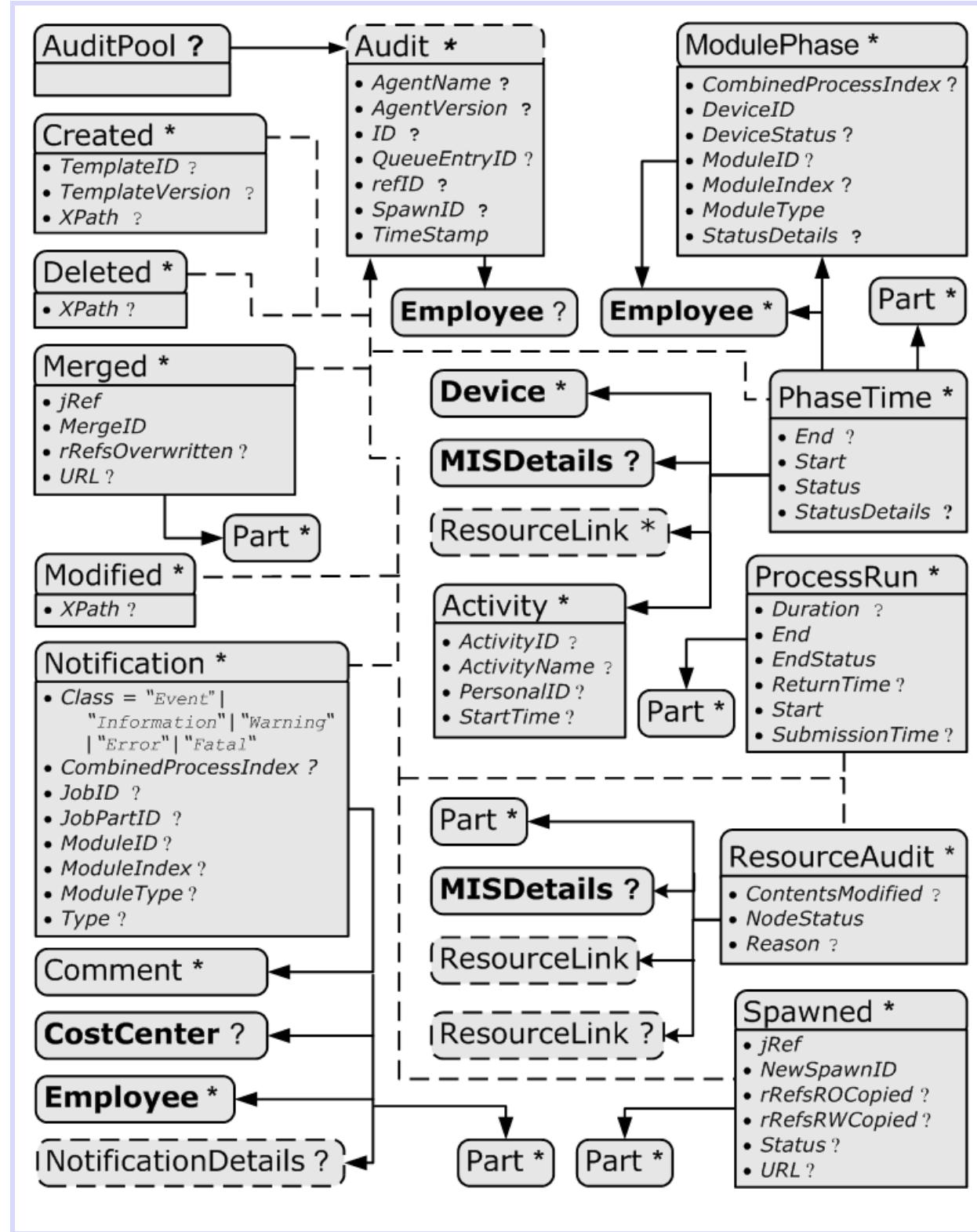
Audit information is the Job's history and can support your daily, quality control and troubleshooting management reporting needs.

**Table 3-36: AuditPool Element**

Name	Data Type	Description
<i>rRefs</i> ? <i>Deprecated in JDF 1.2</i>	IDREFS	List of all Resources that are referenced from within the <b>AuditPool</b> . In JDF 1.2 and beyond, it is up to the implementation to maintain references.
Audit *	element	Chronologically ordered list of <b>Audit Elements</b> . The <b>Audit Elements</b> are Abstract and serve as placeholders for any concrete Element derived from the <b>Abstract Audit Element</b> . <b>Audit Elements</b> are described in the sections that follow.
AuditNotification *	element	Logs individual events that occurred during processing.
AuditResource *	element	Describes the usage of resources during execution of a <b>XJDF</b> or the modification of the intended usage of a resource.
AuditStatus *	element	Logs start and end times of any process states and sub-states, denoted as phases. Phases can reflect any arbitrary subdivisions of a process.
Created *	element	Logs creation of <b>XJDF</b> node or resource.
ProcessRun *	element	Summarizes one complete execution run of a <b>XJDF</b> or delimits a group of <b>Audit elements</b> for each individual process run.

### 3.16.2 Structure Diagram

Figure 3-18: AuditPool and Abstract Audit Element – a diagram of the structure



All Audit Elements inherit the content from the Abstract Audit Element, described in the following table.

**Table 3-37: Abstract Audit Element**

Name	Data Type	Description
<i>AgentName</i> ? <a href="#">New in JDF 1.2</a>	string	The name of the Agent application that added the <b>Audit Element</b> to the <b>AuditPool</b> (and was responsible for the creation or modification). Both the company name and the product name MAY appear, and SHOULD be consistent between versions of the application.
<i>AgentVersion</i> ? <a href="#">New in JDF 1.2</a>	string	The version of the Agent application that added the <b>Audit Element</b> to the <b>AuditPool</b> (and was responsible for the creation or modification). The format of the version string MAY vary from one application to another, but SHOULD be consistent for an individual application.
<i>Author</i> ? <a href="#">Modified in JDF 1.2</a> <a href="#">Deprecated in JDF 1.4</a>	string	Text that identifies the person who made the entry. Prior to JDF 1.2, <i>@Author</i> also contained information that is now encoded in <i>@AgentName</i> and <i>@AgentVersion</i> . <b>Deprecation note:</b> starting with JDF 1.4, use <b>Employee</b> .
<i>ID</i> ? <a href="#">New in JDF 1.2</a>	ID	<i>@ID</i> of the <b>Audit</b> . <i>@ID</i> SHALL be specified if there is support to subsequently create correction <b>Audit Elements</b> .
<i>QueueEntryID</i> ? <a href="#">New in JDF 1.4</a>	string	<i>@QueueEntryID</i> of the <b>QueueEntry</b> during which this <b>Audit</b> was generated.
<i>refID</i> ? <a href="#">New in JDF 1.2</a>	IDREF	Reference to a previous <b>Audit</b> that this <b>Audit</b> corrects. The referenced <b>Audit</b> SHALL reside in the same <b>AuditPool</b> .
<i>SpawnID</i> ? <a href="#">New in JDF 1.1</a>	NMOKEN	Text that identifies the spawned processing step when the entry was generated. This is a copy of the <i>@SpawnID</i> Attribute of the root <b>JDF Node</b> of the Process that generates the <b>Audit</b> at the time the <b>Audit</b> is generated.
<i>TimeStamp</i>	dateTime	For <b>Audit Elements</b> <b>Created</b> , <b>Modified</b> , <b>Spawned</b> , <b>Merged</b> and <b>Notification</b> , this Attribute records the date and time when the related event occurred. For <b>Audit Elements</b> <b>PhaseTime</b> , <b>ProcessRun</b> and <b>ResourceAudit</b> , the Attribute describes the time when the entry was appended to the <b>AuditPool</b> .
<i>Employee</i> ? <a href="#">New in JDF 1.4</a>	element	Employee who created this <b>Audit Element</b> .

### 3.16.3 Audit

The following Elements are derived from the **Abstract Audit Element**:

**Table 3-38: List of Audit Elements (Sheet 1 of 2)**

Name	Page	Description
<b>Created</b>	page 151	Logs creation of <b>JDF Node</b> or <b>Resource</b>
<b>Deleted</b>	page 152	Logs deletion of <b>JDF Node</b> or <b>Resource</b>
<b>Merged</b>	page 152	Logs the merging of a spawned <b>Node</b>
<b>Modified</b>	page 153	Logs modifications affecting a <b>JDF Node</b> or its Subelements when the modification is not covered by other <b>Audit Elements</b>
<b>Notification</b>	page 153	Logs individual events that occurred during processing
<b>PhaseTime</b>	page 156	Logs start and end times of any <b>Process</b> states and substates, denoted as phases. Phases can reflect any arbitrary subdivisions of a <b>Process</b> .
<b>ProcessRun</b>	page 161	Summarizes one complete execution run of a <b>Node</b> or delimits a group of <b>Audit Elements</b> for each individual <b>Process run</b> .

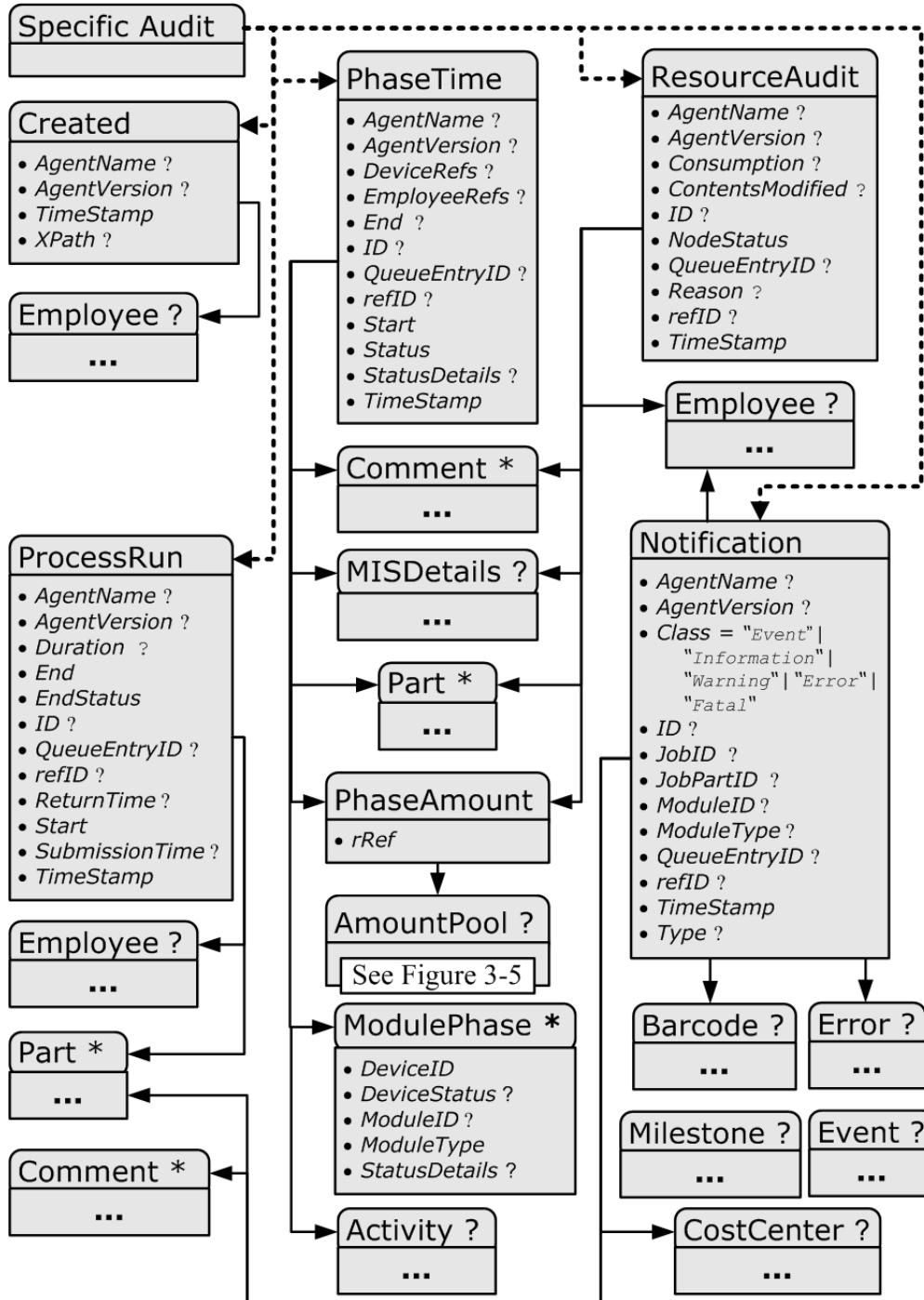
**Table 3-38: List of Audit Elements (Sheet 2 of 2)**

Name	Page	Description
ResourceAudit	page 162	Describes the usage of Resources during execution of a Node or the modification of the intended usage of a Resource
Spawned	page 167	Logs the spawning of a Node.

**3.16.3.1 Structure Diagram of Audit Elements**

shows Figure 3-19 the structure of the Audit. Arrows point to child elements. Arrows with dashed lines point to each Audit

Figure 3-19: Specific Audit - a Diagram of its Structure



### 3.16.3.2 Created

This element allows the creation of an XJDF or JDF node or resource to be logged. If the element refers to a JDF node, it can be located in the AuditPool element of the node that has been created or in any ancestor node. If the element refers to a resource, it SHALL be located in the node where the resource resides so that the spawning and merging mechanism can work effectively.

**Table 3-39: Created Audit Element**

Name	Data Type	Description
<i>AgentName</i> ?	string	The name of the application that added the <i>Created</i> Element to the <i>AuditPool</i> (and was responsible for the creation or modification). Both the company name and the product name MAY appear, and SHOULD be consistent between versions of the application.
<i>AgentVersion</i> ?	string	The version of the application that added the <i>Created</i> Element to the <i>AuditPool</i> (and was responsible for the creation or modification). The format of the version string MAY vary from one application to another, but SHOULD be consistent for an individual application.
<i>Employee</i> ? <i>ContactRef</i> ?	elementIDREF	Employee who created this <i>Created</i> Element.
<i>ref</i> ? <i>Deprecated in JDF 1.2</i>	IDREF	Represents the ID of the created Element. Defaults to the ID of the local JDF Node. Replaced with <i>@XPath</i> in JDF 1.2 and beyond.
<i>TemplateID</i> ? <i>New in JDF 1.2</i>	string	Defines the template JDF that was used as the template to create the Node.
<i>TemplateVersion</i> ? <i>New in JDF 1.2</i>	string	Defines the version of template JDF that was used as the template to create the Node.
<i>TimeStamp</i>	dateTime	Records the date and time when the Element referred to by this <i>Created</i> Audit was created.
<i>XPath</i> ? <i>New in JDF 1.2</i>	XPath	<i>@XPath</i> SHALL refer to Location of the created elements or attributes relative to the parent JDF Node of the <i>Created</i> Element.

### 3.16.3.3 Deleted

*New in JDF 1.2*

This Element allows any deletions of a JDF Node or Element to be logged. If the corresponding *Created* Element was not deleted (e.g., in the *AuditPool* of a deleted JDF Node), the *Deleted* Element SHOULD reside in the same *AuditPool* as the corresponding *Created* Element, otherwise it SHOULD reside in an ancestor of the deleted Attribute or Element.

**Table 3-40: Deleted Audit Element**

Name	Data Type	Description
<i>XPath</i> ?	XPath	Location of the deleted Elements or Attributes relative to the parent JDF Node of the <i>Deleted</i> Element.

### 3.16.3.4 Merged

This Element logs a merging event of a spawned Node. For more details, see Section 4.4, “Spawning and Merging”.

**Table 3-41: Merged Audit Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Independent = "false"</i> <i>Deprecated in JDF 1.5</i>	boolean	Declares that independent Jobs are merged into a Big Job for common production. If it is set to <i>"true"</i> , the Attributes <i>@jRefSource</i> and <i>@rRefsOverwritten</i> have no meaning and SHOULD be omitted. <b>Deprecation note:</b> starting with JDF 1.5, use <i>SheetOptimizing</i> .
<i>jRef</i>	IDREF	ID of the JDF Node that has been returned or merged.

**Table 3-41: Merged Audit Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>jRefSource</i> ? <a href="#">Deprecated in JDF 1.5</a>	NMTOKEN	ID of the JDF Root Node of the Big Job from which the spawned structure has been returned.  Note: the data type is NMTOKEN and not IDREF because the Attribute refers to an external ID.  Deprecation note: starting with JDF 1.5, use <i>SheetOptimizing</i> .
<i>MergeID</i> <a href="#">New in JDF 1.1</a>	NMTOKEN	Copy of the <i>@SpawnID</i> of the merged Node. Note that a Merged Element MAY also contain a <i>@SpawnID</i> Attribute, which is the <i>@SpawnID</i> of the Node that this Audit is being placed into prior to merging.
<i>rRefsOverwritten</i> ?	IDREFS	Identifies the copied Resources that have been overwritten during merging. Resources are usually overwritten during return if they have been copied during spawning with read/write access.
<i>URL</i> ? <a href="#">New in JDF 1.1</a>	URL	Locator that specifies the location of the merged Node prior to merging by the merging Process.
Part *	element	Specifies the selected parts of the Resource that were merged in case of parallel spawning and merging of Partitionable Resources. See Section 3.15.5, “Description of Partitioned Resources”.

### 3.16.3.5 Modified

This Element allows any modifications affecting a JDF Node or its Subelements to be logged. Changes that can be logged by a more specialized Audit Element (e.g., *ResourceAudit* for Resource changes) SHALL NOT use this common log entry. The modification can be described textually by adding a generic *Comment* Element to the *Modified* Element. The *Modified* Element SHALL reside in the same *AuditPool* as the corresponding *Created* Element.

**Table 3-42: Modified Audit Element**

Name	Data Type	Description
<i>jRef</i> ? <a href="#">Deprecated in JDF 1.2</a>	IDREF	The ID of the modified Node. The <i>Modified</i> Element resides in the modified Node. Defaults to the ID of the local JDF Node. Replaced with <i>@XPath</i> in JDF 1.2 and beyond.
<i>XPath</i> ? <a href="#">New in JDF 1.2</a>	XPath	Location of the modified Elements or Attributes relative to the parent JDF Node of the <i>Modified</i> Element.

### 3.16.3.6 AuditNotification

#### 3.16.3.7 Notification

This Element *AuditNotification* contains information about individual events that occurred during processing. For a detailed discussion of event properties, see [Section 4.6, “Error Handling”](#) [Section 11.3.6, “Error Handling”](#).

*AuditNotification* is syntactically the same as *SignalNotification*. A device SHOULD write an *AuditNotification* element for every *SignalNotification* XJMF that it emits.

**Table 3-43: AuditNotification Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Author</i> ?	string	See Message/ <i>@Author</i> .
<i>DeviceID</i> ?	NMOKEN	See Message/ <i>@DeviceID</i> .
<i>ID</i>	ID	See Message/ <i>@ID</i> .

**Table 3-43: AuditNotification Element (Sheet 2 of 2)**

Name	Data Type	Description
PersonalID ?	NMTOKEN	See Message/@PersonalID.
refID ?	NMTOKEN	See Signal/@refID.
Time ?	dateTime	See Message/@Time.
Notification ?	element	Notification that describes the event. See Section 5.8.7.4.2, “Error” on page 244, Section 5.8.7.4.3, Event and Section 5.8.7.4.4, Milestone

**Table 3-44: Notification Audit Element (Sheet 1 of 3)**

Name	Data Type	Description
AgentName ?	string	The name of the Agent application that added the Notification Element to the AuditPool (and was responsible for the creation or modification). Both the company name and the product name MAY appear, and SHOULD be consistent between versions of the application..
AgentVersion ?	string	The version of the Agent application that added the Notification Element to the AuditPool (and was responsible for the creation or modification). The format of the version string MAY vary from one application to another, but SHOULD be consistent for an individual application.
Class	enumeration	<p>Class of the notification.</p> <p><b>Allowed values are</b> (in order of severity from lowest to highest):</p> <ul style="list-style-type: none"> <li><i>Event</i> – Indicates that a pure event due to certain operation-related activity has occurred (e.g., Machine events, operator activities, etc.). This Class is used for the transfer of conventional event Messages. In case of @Class = "Event", further event information is to be provided by the @Type Attribute and NotificationDetails Element. See Section C.3.2, “NotificationDetails” on page 1142.</li> <li><i>Information</i> – Any information about a Process which cannot be expressed by the other Classes (e.g., the beginning of execution). No user interaction is needed.</li> <li><i>Warning</i> – Indicates that a minor error has occurred, and an automatic fix was applied. Execution continues. The Node’s @Status is unchanged. This appears in situations such as A4-Letter substitutions when toner is low or when unknown extensions are encountered in a REQUIRED Resource.</li> <li><i>Error</i> – Indicates that an error has occurred that requires user interaction. Execution cannot continue until the problem has been fixed. The Node’s @Status is "Stopped". This value appears in situations such as when Resources are missing, when major incompatibilities are detected, or when the toner is empty.</li> <li><i>Fatal</i> – Indicates that a fatal error led to abortion of the Process. The Node’s @Status is "Aborted". This value is seen with most protocol errors or when major Device malfunction has occurred.</li> </ul>

**Table 3-44: Notification Audit Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>CombinedProcessIndex</i> ? <a href="#">New in JDF 1.4</a>	IntegerList	@ <i>CombinedProcessIndex</i> Attribute specifies the indices of individual Processes in the @ <i>Types</i> Attribute to which a <b>Notification</b> in a Combined Process Node or Process Group Node belongs. Multiple entries in @ <i>CombinedProcessIndex</i> specify that the Module specified by <b>Notification</b> is executing the respective multiple Processes in the Combined Process Node.
<b>Employee *ContactRefs</b> ?	refelementIDREFS	The employees associated with this event or creator of it.
<i>ID</i> ?	ID	@ <i>ID</i> of the <b>Notification</b> . @ <i>ID</i> SHALL be specified if there is support to subsequently create correction <b>Notification</b> Elements.
<i>JobID</i> ? <a href="#">New in JDF 1.3</a>	stringNMTO-KEN	@ <i>JobID</i> that this <b>Notification</b> applies to. @ <i>JobID</i> SHALL NOT be specified when <b>Notification</b> is used as an Audit Element. <b>Notification/@JobID</b> MAY be specified within a JMF Message.
<i>JobPartID</i> ? <a href="#">New in JDF 1.3</a>	stringNMTO-KEN	@ <i>JobPartID</i> that this <b>Notification</b> applies to. @ <i>JobPartID</i> SHALL NOT be specified when <b>Notification</b> is used as an Audit Element. <b>Notification/@JobPartID</b> MAY be specified within a JMF Message.
<i>ModuleID</i> ? <a href="#">New in JDF 1.4</a>	stringNMTO-KEN	@ <i>ModuleID</i> of the <b>Module</b> that this <b>Notification</b> relates to.
<i>ModuleIndex</i> ? <a href="#">New in JDF 1.4</a>	IntegerRangeList	0-based indices of the module or modules. The list is based on all modules of the Device. If multiple module types are available on one Device, each SHALL be unique in the scope of the Device. <b>Constraint:</b> At least one of @ <i>ModuleID</i> or @ <i>ModuleIndex</i> SHALL be specified.
<i>ModuleType</i> ? <a href="#">New in JDF 1.4</a>	NMTOKEN	Module description. <b>Values include those from:</b> Section C.2, “ModuleType Supported Strings” on page 1138. <b>Note:</b> the allowed values depend on the type of Device. Each type of Device has a separate table of values.
<i>QueueEntryID</i> ?	NMTOKEN	@ <i>QueueEntryID</i> of the QueueEntry during which this <b>Notification</b> was generated..
<i>refID</i> ?	IDREF	Reference to a previous <b>Notification</b> that this <b>Notification</b> corrects. The referenced <b>Notification</b> SHALL reside in the same AuditPool.
<i>TimeStamp</i>	dateTime	Records the date and time when the Element referred to by this <b>Notification Audit</b> was created.
<i>Type</i> ?	NMTOKEN	Identifies the type of notification. Also defines the name of the <b>Abstract NotificationDetails</b> Element. <b>Note:</b> @ <i>Type</i> allows parsers that do not have access to the schema to find the instance of <b>NotificationDetails</b> . <b>Values include those from:</b> Table C-11, “List of <b>NotificationDetails</b> Elements” on page 1143.

**Table 3-44: Notification Audit Element (Sheet 3 of 3)**

Name	Data Type	Description
Comment *	element	A Comment Element contains a verbose, human-readable description of the event. If the value of the <i>@Class</i> Attribute is one of "Information", "Warning", "Error" or "Fatal", at least one Comment Element SHOULD be specified. Otherwise (including for <i>@Class</i> = "Event"), Comment Elements are OPTIONAL.
CostCenter ?	element	The cost center to which this event is related to.
<b>Employee *ContactRefs</b> ?	refelementI-DREFS	The employees associated with this event or creator of it.
Error ?	element	See Barcode row above.
Event ?	element	See Barcode row above.
Milestone ?	element	See Barcode row above.
NotificationDetails ?	element	<b>NotificationDetails</b> is an Abstract Element that is a placeholder for additional structured information. Table C-11, "List of NotificationDetails Elements" on page 1143. It provides additional information beyond the <i>@Class</i> and <i>@Type</i> Attribute and beyond the Comment Element. For derived specific Elements see Table C-11, "List of NotificationDetails Elements" on page 1143.
<b>Part</b> * <b>Part</b> * <u>New in JDF 1.1</u>	element	Describes which parts of a Process this Notification belongs to. If <b>Part</b> is not specified for a Notification, it refers to all parts. For example, imagine a print Job that is to produce three different Sheets. All Sheets are described by one Partitioned Resource. The <b>Part</b> Elements define, unambiguously, the Sheet to which the <b>Audit Notification</b> refers.

### 3.16.3.8 PhaseTime

#### 3.16.3.9 AuditStatus

This Element **AuditStatus** contains audit information about the start and end times of any Process states and sub-states, denoted as phases. Phases can reflect any arbitrary subdivisions of a Process, such as maintenance, washing, plate changing, failures and breaks. **PhaseTime AuditStatus** Elements SHOULD be closed whenever a written for every significant status change that is detected. **AuditStatus** is syntactically the same as **SignalStatus**. Whereas XJMF/**SignalStatus** conveys the momentary status of a device and or job, **AuditStatus** conveys the status during an entire phase. A device SHALL not write new **AuditStatus** elements for every **SignalStatus** XJMF that it emits.

**PhaseTime AuditStatus** Elements MAY also be used to log the actual time spans when **ImplementationResources Resources** are used by a Process. For example, the temporary usage of a fork lift can be logged if an **PhaseTime AuditStatus** Element is added that contains an **AuditStatus/DeviceInfo/@DeviceID** of the fork lift a link to the fork lift Device Resource and specifies the actual start and end time of the usage of that fork lift.

**PhaseTime** Elements that apply to identical Partitions and contain at least one identical **ModulePhase** SHALL NOT overlap in time. **PhaseTime** Elements that apply to different Partitions MAY overlap in time in order to indicate parallel processing. **PhaseTime** Elements that apply to different modules MAY overlap in time in order to indicate independent processing with individual modules.

**Table 3-45: PhaseTime Audit Element (Sheet 1 of 2)**

Name	Data Type	Description
AgentName ?	string	The name of the application that added the PhaseTime Element to the AuditPool (and was responsible for the creation or modification). Both the company name and the product name MAY appear, and SHOULD be consistent between versions of the application.
AgentVersion ?	string	The version of the application that added the PhaseTime Element to the AuditPool (and was responsible for the creation or modification). The format of the version string MAY vary from one application to another, but SHOULD be consistent for an individual application.
Device *DeviceRefs ?	refelement-IDREFS	Links to Device Resources that are working during this phase. If one or more Device Resource(s) was used during this phase, this refelement SHOULD link to that/those Device Resource(s)
Employee *ContactRefs ?	refelement-IDREFS	Links to employee Contact Resources that are working during this phase. If one or more employee Contact Resource(s) was active during this phase, this IDREFS SHOULD link to that/those employee Contact Resource(s). The first Employee referenced in this list is the Employee who created this PhaseTime Element..
End ? <a href="#">Modified in JDF 1.3</a>	dateTime	Date and time of the end of the phase. If not specified, the PhaseTime is ongoing and the end of the phase has not yet occurred. This will generally be the case in the last PhaseTime of a snapshot XJDF JDF in a Status JMF XJMF. See Section 5.9.9, "Status" for details.,
ID ?	ID	@ID of thePhaseTime. @ID SHALL be specified if there is support to subsequently create correction PhaseTime Elements..
QueueEntryID ?	NMOKEN	@QueueEntryID of the QueueEntry during which this PhaseTime was generated.
refID ?	IDREF	Reference to a previous PhaseTime that this PhaseTime corrects. The referenced PhaseTime SHALL reside in the same AuditPool.
Start	dateTime	Date and time of the beginning of the phase.
Status <a href="#">Modified in JDF 1.3</a>	enumeration	<p>Status of the phase.</p> <p><b>Allowed values are</b> (a subset of <a href="#">JDF/@StatusNodeInfo/@NodeStatus</a>):</p> <ul style="list-style-type: none"> <li><a href="#">TestRunInProgress</a></li> <li><a href="#">Setup</a></li> <li><a href="#">InProgress</a></li> <li><a href="#">Cleanup</a></li> <li><a href="#">Spawned – Deprecated in JDF 1.3</a></li> <li><a href="#">Suspended – New in JDF 1.3</a></li> <li><a href="#">Stopped</a></li> </ul> <p><b>Note:</b> The values of this @Status Attribute are a subset of the possible state values <a href="#">JDF/@StatusNodeInfo/@NodeStatus</a>. For all possible states of a JDF Node<a href="#">NodeInfo</a> see Table 3.3, "JDF XJDF Node" on page 50Table 8.98, "NodeInfo" on page 805. The remaining set of states (i.e., "Ready", "FailedTestRun", "Aborted" and "Completed") are end states and are specified in ProcessRun/@EndStatus.</p>

**Table 3-45: PhaseTime Audit Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>StatusDetails</i> ?	string	Description of the status phase that provides details beyond the enumerative values given by the <i>@Status</i> Attribute. <b>Values include those from:</b> Section C.1, “StatusDetails Supported Strings” on page 1133.
<i>TimeStamp</i>	dateTime	Records the date and time when this PhaseTime Audit was appended to the AuditPool.
<i>Activity</i> * <i>New in JDF 1.5</i>	element	Operator and Device activities that are related to a specific job or job phase.
<i>Comment</i> *	element	Any human-readable text. The <i>Comment</i> Element is different from an XML comment <i>&lt;!-- XML Comment --&gt;</i> . The XJDF comment is meant for display in a user interface whereas the XML comment is used to add developers comments to the underlying XML.
<i>Device</i> * <i>DeviceRefs</i> ?	refelement-IDREFS	Links to <b>Device</b> Resources that are working during this phase. If one or more <b>Device</b> Resource(s) was used during this phase, this refelement SHOULD link to that/those <b>Device</b> Resource(s)
<i>Employee</i> * <i>ContactRefs</i> ? <i>New in JDF 1.2</i>	refelement-IDREFS	Links to <b>Employee</b> <i>employee Contact</i> Resources that are working during this phase. If one or more <b>Employee</b> <i>employee Contact</i> Resource(s) was active during this phase, this refelement IDREFS SHOULD link to that/those <b>Employee</b> <i>employee Contact</i> Resource(s). The first Employee referenced in this list is the Employee who created this Audit PhaseTime Element.
<i>MISDetails</i> ? <i>New in JDF 1.2</i>	element	Definition how the costs for the execution of this PhaseTime are to be charged.
<i>ModulePhase</i> *	element	Additional phase information of individual Device modules, such as print units.
<i>Part</i> *	element	Describes which parts of a Job is currently being logged. If a <i>Part</i> is not specified for a Node that modifies partitioned resources, <i>@PhaseTime</i> refers to all parts. For example, imagine a print Job that is to produce three different sheets. All sheets are described by one partitioned resource. In order to separate the different print phases for each sheet, the <i>Part</i> elements define, unambiguously, the sheet to which the Audit PhaseTime refers.
<i>ResourceLink</i> * <i>New in JDF 1.1</i>	element	These <i>ResourceLink</i> elements specify the actual consumption/usage or production of resources during this production phase. All attributes apply to production and consumption within this <i>PhaseTime</i> only, thus <i>ResourceLink/@ActualAmount</i> specifies the actual amount produced or consumed.

Note: *AuditStatus* is syntactically the same as *SignalStatus*.**Table 3-46: AuditStatus Element**

Name	Data Type	Description
<i>Author</i> ?	string	See Message/ <i>@Author</i> .
<i>DeviceID</i> ?	NMTOKEN	See Message/ <i>@DeviceID</i> .
<i>ID</i>	ID	See Message/ <i>@ID</i> .
<i>PersonalID</i> ?	NMTOKEN	See Message/ <i>@PersonalID</i> .

**Table 3-46: AuditStatus Element**

Name	Data Type	Description
refID ?	NMTOKEN	See Signal/@refID.
Time ?	dateTime	See Message/@Time.
DeviceInfo +	element	Describes the actual device Status. If multiple DeviceInfo Elements are specified, these describe multiple Devices. A sequential state change of an individual Device SHALL be encoded as 2 separate Signals.

**3.16.3.9.1 Activity**New in JDF 1.5

Activity Elements allow tracking of device and operator tasks.

**Table 3-47: Activity Element**

Name	Data Type	Description
ActivityID ?	stringN-MTOKEN	ID of the Activity being performed. This ID is unique, site specific and internal to the MIS.
ActivityName ?	string	Name of the Activity being performed.
PersonalID ?	stringN-MTOKEN	ID MIS identifier of the employee that performs the activity. This value SHALL match the @PersonalID of an Employee element that is contained in the Activity element's parent or ancestor element.
StartTime ?	dateTime	Date and time that the Employee started the Activity. This value MAY remain the same in multiple messages.

**3.16.3.9.2 ModulePhase**

It is possible to monitor the states of individual modules of a complex Device, such as a press with multiple print units, by defining ModulePhase Elements. One PhaseTime Element MAY contain multiple ModulePhase Elements and can, therefore, record the status of multiple units in a Device. ModulePhase Elements describe the set of modules that a given PhaseTime Audit Element applies to. ModulePhase Elements are defined in the following table.

**Table 3-48: ModulePhase Element (Sheet 1 of 3)**

Name	Data Type	Description
CombinedProcessIndex ? <u>New in JDF 1.3</u>	IntegerList	@CombinedProcessIndex Attribute specifies the indices of individual Processes in the @Types Attribute to which a ModulePhase in a Combined Process Node or Process Group Node belongs. Multiple entries in @CombinedProcessIndex specify that the Module specified by ModulePhase is executing the respective multiple Processes in the Combined Process Node.
DeviceID	stringNMTOKEN	ID of the Device that the module described by this ModulePhase belongs to. This SHALL be the @DeviceID Attribute of one of the Device Elements specified in the PhaseTime.

**Table 3-48: ModulePhase Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>DeviceStatus</i> ? <a href="#">Modified in JDF 1.3</a>	enumeration	<p>Status of the Device module.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Unknown</i>. – The module status is unknown.</li> <li><i>Idle</i> – The module is not used (e.g., a color print module that is inactive during a black-and-white print).</li> <li><i>Down</i> – The module cannot be used. It might be broken, switched off etc.</li> <li><i>Setup</i> – The module is currently being set up.</li> <li><i>Running</i> – The module is currently executing.</li> <li><i>Cleanup</i> – The module is currently being cleaned.</li> <li><i>Stopped</i> – The module has been stopped, but running might be resumed later. This status can indicate any kind of break, including a pause, maintenance or a breakdown, as long as running can be easily resumed.</li> </ul> <p><b>Note:</b> these states are analog to the Device states of Table 5-97, “ModuleStatus Element” on page 288.</p>
<i>End</i> ? <a href="#">Modified in JDF 1.3</a> <a href="#">Deprecated in JDF 1.4</a>	dateTime	<p>Date and time of the end of the module phase. If not specified, the ModulePhase is ongoing and the end of the phase has not yet occurred.</p> <p><b>Deprecation note:</b> starting with JDF 1.4, all Status information is recorded in PhaseTime. ModulePhase selects only the set of modules that a particular PhaseTime applies to.</p>
<i>ModuleID</i> ? <a href="#">New in JDF 1.3</a>	string <small>NMTOKEN</small>	<p>@ModuleID of the Module that this ModulePhase refers to. If not specified, the module is specified in @ModuleIndex.</p> <p><b>Constraint:</b> at least one of @ModuleID or @ModuleIndex SHALL be specified.</p>
<i>ModuleIndex</i> ? <a href="#">Modified in JDF 1.3</a>	IntegerRangeList	<p>0-based indices of the module or modules. The list is based on all modules of the Device. If multiple module types are available on one Device, each SHALL be unique in the scope of the Device.</p> <p><b>Constraint:</b> At least one of @ModuleID or @ModuleIndex SHALL be specified.</p>
<i>ModuleType</i> ? <a href="#">Modified in JDF 1.5</a>	NMTOKEN	<p>Module description.</p> <p><b>Values include those from:</b> Section C.2, “ModuleType Supported Strings” on page 1138.</p> <p><b>Note:</b> the allowed values depend on the type of Device. Each type of Device has a separate table of values.</p> <p><b>Modification note:</b> starting with JDF 1.5, @ModuleType is optional.</p>
<i>Start</i> <a href="#">Modified in JDF 1.3</a> <a href="#">Deprecated in JDF 1.4</a>	dateTime	<p>Date and time of the beginning of the module phase.</p> <p><b>Deprecation note:</b> starting with JDF 1.4, all Status information is recorded in PhaseTime. ModulePhase selects only the set of modules that a particular PhaseTime applies to.</p>

**Table 3-48: ModulePhase Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>StatusDetails</i> ?	string	Description of the module status phase that provides details beyond the enumerative values given by the <i>@DeviceStatus</i> Attribute. <b>Values include those from:</b> Section C.1, “StatusDetails Supported Strings” on page 1133.
<b>Employee</b> <b>*EmployeeRefs</b> ? <small>Deprecated in JDF 1.5</small>	refelementI-DREFS	References to <b>Employee</b> Resources that are working during this module phase on this module. (The module is specified by the Attributes <i>@ModuleIndex</i> and <i>@ModuleType</i> ). <b>Deprecation note:</b> starting with JDF 1.5, Employees SHOULD only be specified in the parent <i>PhaseTime</i> .

### 3.16.3.10 ProcessRun

This Audit Element serves two related functions.

The first function is to summarize one complete execution run of a Node. It contains Attributes that record the date and time of the start, the end time, the final Process state when the run is finished and, possibly, the Process duration of the Process run. These Attributes are described in Table 3-49.

The second function is to delimit a group of Audit Elements for each individual Process run. Every group of Audit Elements terminates with a ProcessRun Element, which contains the information described in Table 3-49. If a Process is repeated (e.g., as a result of a late change in the order), all Audit Elements belonging to the new run SHALL be appended after the last ProcessRun Element that terminates the Audit Elements of the previous run. The number of ProcessRun Elements is, therefore, always equivalent to the number of Process runs. If a Node describes Partitioned Resources, one ProcessRun MAY be specified for each individual part.

**ProcessRun** summarizes one execution of a process. A **ProcessRun** element SHALL be written each time an XJDF is returned to a Controller.

All Job related Amounts in subsequent Audit elements and XJMF messages SHALL restart at 0 when a Node is processed on a device after a ProcessRun has been sent.

**Table 3-49: ProcessRun Audit Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>AgentName</i> ?	string	The name of the application that added the ProcessRun Element to the AuditPool (and was responsible for the creation or modification). Both the company name and the product name MAY appear, and SHOULD be consistent between versions of the application.
<i>AgentVersion</i> ?	string	The version of the application that added the ProcessRun Element to the AuditPool (and was responsible for the creation or modification). The format of the version string MAY vary from one application to another, but SHOULD be consistent for an individual application.
<i>Duration</i> ?	duration	Time span of the effective Process runtime without intentional or unintentional breaks. That time span is the sum of all Process phases when the <i>@StatusNodeInfo/@NodeStatus</i> is “InProgress”, “Setup” or “Cleanup”.
<i>End</i>	dateTime	Date and time at which the Process ended.

**Table 3-49: ProcessRun Audit Element (Sheet 2 of 2)**

Name	Data Type	Description
<a href="#">EndStatus</a> <a href="#">Modified in JDF 1.3</a>	enumeration	The <a href="#">@Status NodeInfo/@NodeStatus</a> of the Process at the end of the run. For a description of Process states, see <a href="#">Table 3.3, “JDF XJDF Node” on page 50</a> <a href="#">Table 8-203, “NodeStatus Attribute Values” on page 808</a> .  <b>Allowed values are:</b> <i>Aborted</i> – The Node has been aborted before producing the desired result. <i>Completed</i> – The Node has been completed and the desired result has been produced. <i>FailedTestRun</i> <i>Ready</i> <i>Stopped</i> – The execution of the Node is stopped and might commence at a later time. In JDF 1.3 and beyond, “ <i>Stopped</i> ” is not an end state. <a href="#">Deprecated in JDF 1.3</a>
<i>ID</i> ?	ID	<i>@ID</i> of the ProcessRun. <i>@ID</i> SHALL be specified if there is support to subsequently create correction ProcessRun Elements.
<i>QueueEntryID</i> ?	NMTOKEN	<i>@QueueEntryID</i> of the QueueEntry during which this ProcessRun was generated.
<i>refID</i> ?	IDREF	Reference to a previous ProcessRun that this ProcessRun corrects.
<i>ReturnTime</i> ? <a href="#">New in JDF 1.4</a>	dateTime	Date and Time of the <i>ReturnQueueEntry</i> submission. If the JDF was returned via a Hot Folder, this time corresponds to the time when the JDF was placed into the Hot Folder.
<i>Start</i>	dateTime	Date and time at which the Process started.
<i>SubmissionTime</i> ? <a href="#">New in JDF 1.4</a>	dateTime	Date and Time of the <i>SubmitQueueEntry</i> submission. This value SHOULD be identical with <i>QueueEntry/@SubmissionTime</i> . If the JDF was submitted via a Hot Folder, this time corresponds to the time when the JDF was extracted from the Hot Folder.
<i>TimeStamp</i>	dateTime	Records the date and time when this ProcessRun Audit was appended to the AuditPool.
<i>Contact</i> ?	element	Employee who created this ProcessRun Element.
<i>Part</i> * <i>Part</i> * <a href="#">New in JDF 1.1</a>	element	Describes which parts of a Process this ProcessRun belongs to. If <i>Part</i> is not specified for a ProcessRun, it refers to all parts. For example, imagine a print Job that is to produce three different Sheets. All Sheets are described by one Partitioned Resource. The <i>Part</i> Elements define, unambiguously, the processing of the Sheet to which the ProcessRun refers.

### 3.16.3.11 [AuditResource](#)

### 3.16.3.12 [ResourceAudit](#)

The [ResourceAudit](#) [AuditResource](#) Element describes the usage of Resources during execution of a [Node process](#) or the modification of the intended usage of a Resource (i.e., the modification of a [ResourceLink](#)). It logs consumption and production amounts of any quantifiable Resources, accumulated over one Process run or one part of a Process run. It contains one or two Abstract [ResourceLink](#) Elements. The first is REQUIRED and specifies the actual consumption/usage or production of the Resource. The second [ResourceLink](#) is OPTIONAL and used to store information about the original [ResourceLink](#), which also refers to the original Resource. If the original Resource does not need to be saved, a Boolean [@ContentsModified](#) Attribute in the [ResourceAudit](#) SHOULD be specified as “*true*” to indicate that a change has been made. [AuditResource](#) is syntactically the same as [SignalResource](#). Whereas [XJMF/SignalResource](#) MAY convey the momentary consumption or production of a

Resource, AuditResource conveys the consumption or production of a Resource during an entire phase. A device SHALL write a copy of the last SignalResource that it emits during a ProcessRun as an AuditResource.

**Table 3-50: AuditResource Element**

Name	Data Type	Description
Author?	string	See Message/@Author.
DeviceID?	NMTOKEN	See Message/@DeviceID.
ID	ID	See Message/@ID.
PersonalID?	NMTOKEN	See Message/@PersonalID.
refID?	NMTOKEN	See Signal/@refID.
Time?	dateTime	See Message/@Time.
ResourceInfo*	element	Signal from a Command: contains information about the Resources after modification. Signal from a Query: contains the amount data of Resources and if requested, the Resources itself.

**Table 3-51: ResourceAudit Audit Element (Sheet 1 of 3)**

Name	Data Type	Description
AgentName?	string	The name of the Agent application that added the ResourceAudit Element to the AuditPool (and was responsible for the creation or modification). Both the company name and the product name MAY appear, and SHOULD be consistent between versions of the application.
AgentVersion?	string	The version of the Agent application that added the ResourceAudit Element to the AuditPool (and was responsible for the creation or modification). The format of the version string MAY vary from one application to another, but SHOULD be consistent for an individual application.
Consumption?	enumeration	Used for indicating level of consumption for the lot. This Attribute SHALL NOT be specified for Resources that are produced. It MAY only be specified for Resources that are partially or fully consumed. This information is used by readers for auditing Resource to identify shortages and overages. For example, a Roll of paper that was supposed to have 10,000 feet on it may be marked as fully consumed, yet only 9,400 feet of paper were consumed. <b>Allowed values are:</b> <i>Full</i> <i>Partial</i>
ContentsModified?	boolean	Specifies that a modification has occurred but that the original Resource has been deleted.
ID?	ID	@ID of the ResourceAudit. @ID SHALL be specified if there is support to subsequently create correction ResourceAudit Elements.

**Table 3-51: ResourceAudit Audit Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>NodeStatus</i> ? <a href="#">New in JDF 1.3</a>	enumeration	<p>Status of the node that was executed during production or consumption of the resource.</p> <p><b>Allowed values are from:</b> Section 8-203, “NodeStatus Attribute Values” on page 808 and ProcessRun/@EndStatus.</p> <p><b>Allowed values are (a subset of JDF/@Status):</b></p> <ul style="list-style-type: none"> <li><i>TestRunInProgress</i></li> <li><i>Setup</i></li> <li><i>InProgress</i></li> <li><i>Cleanup</i></li> <li><i>Suspended</i></li> <li><i>Stopped</i></li> </ul> <p><b>Note:</b> The values of this @Status Attribute are a subset of the possible state values JDF/@Status. For all possible states of a JDF Node see Table 3-4, “JDF XJDF Node” on page 52. The remaining set of states (i.e., “Ready”, “FailedTestRun”, “Aborted” and “Completed”) are end states and are specified in ProcessRun/@EndStatus.</p>
<i>QueueEntryID</i> ?	NMTOKEN	@QueueEntryID of the QueueEntry during which this ResourceAudit was generated..
<i>Reason</i> ? <a href="#">New in JDF 1.1</a>	enumeration	<p>Reason for the modification.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>OperatorInput</i> – Human update that corrects inconsistencies from automated data collection.</li> <li><i>PlanChange</i> – The Resource was modified due to a change of plan before actual processing.</li> <li><i>ProcessResult</i> – The actual consumption.</li> </ul>
<i>refID</i> ?	IDREF	Reference to a previous ResourceAudit that this ResourceAudit corrects. The referenced ResourceAudit SHALL reside in the same AuditPool.
<i>TimeStamp</i>	dateTime	Records the date and time when this ResourceAudit Audit was appended to the AuditPool.
<i>Comment</i> *	element	Any human-readable text. The Comment Element is different from an XML comment <!-- XML Comment -->. The XJDF comment is meant for display in a user interface whereas the XML comment is used to add developers comments to the underlying XML.
<i>Contact</i> ?	element	Employee who created this ResourceAudit Element.
<i>MISDetails</i> ? <a href="#">New in JDF 1.3</a>	element	Specifies how the costs associated with this ResourceAudit are to be charged.
<i>Part</i> * <i>Part</i> *	element	Describes which parts of a job is currently being logged. If a Part is not specified for a node that modifies partitioned resources, ResourceAudit refers to all parts.
<i>ResourceLink</i>	element	The first ResourceLink specifies the actual consumption/usage or production of a Resource. This current Resource after modification NEED NOT be set to @Locked="true".

**Table 3-51: ResourceAudit Audit Element (Sheet 3 of 3)**

Name	Data Type	Description
ResourceLink ?	element	The second ResourceLink, which is OPTIONAL, logs the modification of a ResourceLink and the modification of the Resource it refers to. It holds the planned ResourceLink which also refers to the planned Resource. The planned and actual Resource MAY be the same.

For details on ResourceLink Elements and ResourceLink Subclasses, see Section 3.14, “ResourceLinkPool and ResourceLink”. The Partitioning of Resources using Part Elements is defined in Section 3.15.5, “Description of Partitioned Resources”.

### 3.16.3.12.1 Logging Machine Data by Using the ResourceAudit

If a Resource is modified during processing, any Nodes that also reference the Resource MAY also be affected. The following logging procedure is RECOMMENDED in order to track the Resource modification and to insure consistency of the Job.

- 1 Create a copy of the original Resource with a new ID.
- 2 Modify the original Resource to reflect the changes.
- 3 Insert a ResourceAudit Element that references the modified original Resource with the first ResourceLink and the copied Resource with the second ResourceLink Attribute

### Example 3-38: ResourceAudit: Before Logging

The following example describes the logging of a modification of the media weight and amount. The **JDF XJDF** document before modification requests 400 copies of 80 gram media.

```
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="J1" Status="Waiting"
      Type="ConventionalPrinting" JobPartID="ID234" Version="1.4">
  <ResourceLinkPool>
    <MediaLink Amount="400" Usage="Input" rRef="RLink"/>
    <ConventionalPrintingParamsLink Usage="Input" rRef="R01"/>
    <ComponentLink Usage="Output" rRef="R02"/>
  </ResourceLinkPool>
  <ResourcePool>
    <Media ID="RLink" Class="Consumable" Status="Available"
          Amount="400" Weight="80"/>
    <ConventionalPrintingParams ID="R01" Class="Parameter" Status="Available"/>
    <Component ID="R02" Class="Quantity" Status="Unavailable"
               ComponentType="Sheet"/>
  </ResourcePool>
</JDF>
```

### Example 3-39: ResourceAudit: Logging of Consumption

The **JDF XJDF** after modification specifies that 421 copies of 90-gram media have been consumed.

```
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="J1" Status="Waiting"
      Type="ConventionalPrinting" JobPartID="ID234" Version="1.4">
  <ResourceLinkPool>
    <!-- Note that ActualAmount has been added to the ResourceLink -->
    <MediaLink ActualAmount="421" Amount="400" Usage="Input" rRef="RLink"/>
    <ConventionalPrintingParamsLink Usage="Input" rRef="R01"/>
    <ComponentLink Usage="Output" rRef="R02"/>
  </ResourceLinkPool>
  <ResourcePool>
    <Media ID="RPrev" Class="Consumable" Status="Available" Amount="400"
          Weight="80"/>
    <!--Copy of the original resource-->
    <Media ID="RLink" Class="Consumable" Status="Available" Amount="421"
          Weight="90"/>
  </ResourcePool>
</JDF>
```

```

<ConventionalPrintingParams ID="R01" Class="Parameter" Status="Available"/>
<Component ID="R02" Class="Quantity" Status="Unavailable"
    ComponentType="Sheet"/>
<!--modified resource-->
</ResourcePool>
<AuditPool>
    <ResourceAudit TimeStamp="2008-08-28T18:20:00Z">
        <MediaLink ActualAmount="421" Amount="400" Usage="Input" rRef="RLink"/>
        <MediaLink Amount="400" Usage="Input" rRef="RPrev"/>
    </ResourceAudit>
</AuditPool>
</JDF>

```

### 3.16.3.12.2 Logging Changes in Product Descriptions by Using the ResourceAudit

ResourceAudit Elements MAY also be used to store the original Intent Resources of a product specification in a change order or request for requote. The mechanism is the same as above.

#### Example 3-40: ResourceAudit: Logging Changes

The following example shows the structure of a **MediaIntent** with *@Option* Partitions, where a late change of options from Option1 (80 gram paper) to Option2 (90 gram paper) is requested.

```

<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="J1" Status="Waiting"
    Type="Product" JobPartID="ID234" Version="1.4">
    <ResourceLinkPool>
        <MediaIntentLink Usage="Input" rRef="id">
            <Part Option="Option2"/>
        </MediaIntentLink>
        <ComponentLink Usage="Output" rRef="R02"/>
    </ResourceLinkPool>
    <ResourcePool>
        <MediaIntent ID="id" PartIDKeys="Option">
            <!-- the common MediaIntent resource details -->
            <MediaIntent Option="Option1">
                <Weight Preferred="80" DataType="NumberSpan"/>
            </MediaIntent>
            <MediaIntent Option="Option2">
                <Weight Preferred="90" DataType="NumberSpan"/>
            </MediaIntent>
        </MediaIntent>
        <Component ID="R02" Class="Quantity" Status="Unavailable"
            ComponentType="Sheet"/>
    </ResourcePool>
    <AuditPool>
        <ResourceAudit>
            <!-- the actual MediaIntent ResourceLink -->
            <MediaIntentLink Usage="Input" rRef="id">
                <Part Option="Option2"/>
            </MediaIntentLink>
            <!-- the original MediaIntent ResourceLink -->
            <MediaIntentLink Usage="Input" rRef="id">
                <Part Option="Option1"/>
            </MediaIntentLink>
        </ResourceAudit>
    </AuditPool>
</JDF>

```

### 3.16.3.13 Spawning

This Element allows a Node that has been spawned to be logged in the AuditPool of the parent Node of the spawned Node or in the AuditPool of the Node that has been spawned in case of spawning of individual Partitions. For details about spawning and merging, see Section 4.4, “Spawning and Merging”.

**Table 3-52: Spawning Audit Element**

Name	Data Type	Description
<i>Independent = "false"?</i> <u>Deprecated in JDF 1.5</u>	boolean	Declares that independent Jobs that have previously been merged into a Big Job are spawned. If it is set to "true", the Attributes <i>@jRefDestination</i> , <i>@rRefsROCopied</i> and <i>@rRefsRCopied</i> have no meaning and SHOULD be omitted. <b>Deprecation note:</b> starting with JDF 1.5, use <i>SheetOptimizing</i> .
<i>jRef</i>	IDREF	ID of the JDF Node that has been spawned.
<i>jRefDestination ?</i> <u>Deprecated in JDF 1.5</u>	NMTOKEN	ID of the JDF Node to which the Job has been spawned. This Attribute SHALL be specified in the parent of the original Node if independent Jobs are spawned. <b>Note:</b> the data type is NMTOKEN and not IDREF because the Attribute refers to an external ID. <b>Deprecation note:</b> starting with JDF 1.5, use <i>SheetOptimizing</i> .
<i>NewSpawnID</i> <u>New in JDF 1.1</u>	NMTOKEN	Copy of the <i>@SpawnID</i> of the newly spawned Node. Note that a Spawning Audit MAY also contain a <i>@SpawnID</i> Attribute, which is the <i>@SpawnID</i> of the Node that this Audit is being placed into prior to spawning.
<i>rRefsROCopied ?</i>	IDREFS	List of IDs separated by whitespace. Identifies the Resources copied to the ResourcePool Element of the spawned JDF during spawning. These Resources SHOULD NOT be modified by the spawned JDF.
<i>rRefsRCopied ?</i>	IDREFS	List of IDs separated by white spaces. Identifies the Resources copied to the ResourcePool Element of the spawned JDF during spawning. These Resources MAY be modified by the spawned JDF and SHALL be copied back into their original location by the merging Agent. Resource copying is REQUIRED if Resources are referenced simultaneously from spawned Nodes and from Nodes in the original JDF document.
<i>Status ?</i> <u>New in JDF 1.1</u>	enumeration	<i>@Status</i> of the spawned Node at the time of spawning. . <b>Allowed values are from:</b> JDF/ <i>@Status</i> (Table 3-4, “JDF XJDF Node” on page 52).
<i>URL ?</i> <u>New in JDF 1.1</u>	URL	Locator that specifies the location where the spawned Node was stored by the spawning Process.
<i>Part *</i>	element	Identifies the parts that were selected for spawning in case of parallel spawning of Partitionable Resources. See Section 3.15.5, “Description of Partitioned Resources”.

## 3.17 XJDF Extensibility

### 3.18 JDF Extensibility

The XJDF specification aims to support plug-and-play as much as possible. None the less, **JDF XJDF** is meant to be flexible and therefore useful to any vendor, as each vendor may have specific data to include in the **JDF XJDF** files. However, foreign namespace extensions SHOULD NOT duplicate functionality of XJDF-defined Attributes and Elements. This section describes how **JDF XJDF** uses the XML extension mechanisms MAY be extended.

### 3.18.1 Namespaces in XML

**JDF XJDF** Extensibility is implemented using XML Namespaces [XMLNS]. XML namespaces are defined by `@xmlns` Attributes. A general example is provided below.

Namespaces are inserted in front of Attribute and Element names. The associated namespace of Element names with no prefix is the default namespace defined by the `xmlns` Attribute. The associated namespace of Attributes with no prefix is that one of the Element (see Section A.3.3, “Defined JDF XJDF enumeration Data Types”). All namespace prefixes SHALL be declared using the standard `@xmlns:prefix` Attribute declarations.



#### Using Namespaces in JDF

It is REQUIRED to define the JDF namespace in a JDF document, even if no non-JDF extensions are used. JDF can be defined either in the default namespace or in a qualified namespace.

#### Example 3-41: Namespaces in XML

The example illustrates how private namespaces are declared and used to extend an existing **JDF XJDF** Resource by adding private Attributes and a private Element.

```
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1"
      xmlns:foo="fooschema URI" ID="ID1" Status="Ready"
      JobPartID="ID345" Version="1.4" >
  <!-- ... -->
  <SomeJDFDefinedResource name="abc" foo:specialname="cba">
  <!-- ... -->
  <foo:PrivateStuff type="" />
  <!-- ... -->
  </SomeJDFDefinedResource>
  <!-- ... -->
</JDF>
```

#### 3.18.1.1 JDF XJDF Namespace

The official namespace URI for JDF Version 1.0 is: [http://www.CIP4.org/JDFSchema\\_1](http://www.CIP4.org/JDFSchema_1). The official namespace URI for JDF Version 1.1 through JDF 1.X is: [http://www.CIP4.org/JDFSchema\\_1\\_1](http://www.CIP4.org/JDFSchema_1_1). It is strongly RECOMMENDED to use either the default namespace with no prefix or a prefix of “jdf” as the JDF namespace prefix.

The official namespace URI for XJDF Version 2.0 is: [http://www.CIP4.org/XJDFSchema\\_2\\_0](http://www.CIP4.org/XJDFSchema_2_0). It is strongly RECOMMENDED to use either the default namespace with no prefix or a prefix of “jdf” as the XJDF namespace prefix.

#### 3.18.1.2 JDF Extension Namespace

CIP4 defines an extension namespace where new features that are anticipated to be included in a future version of the specification are defined. The official extension namespace URI for JDF Version 1.x is: [http://www.CIP4.org/JDFSchema\\_1\\_1\\_X](http://www.CIP4.org/JDFSchema_1_1_X). It is strongly RECOMMENDED to use a prefix of “jdfx” as the JDF extension namespace prefix.

### 3.18.2 Foreign Namespaces

Attributes in a foreign namespace MAY be added to any XJDF element. Elements in a foreign namespace SHALL NOT be specified in XJDF elements other than AuditNotification, Resource and Product Intent elements.

### 3.18.3 Creating Extension Assets:

New Assets may be defined by creating a `ResourceSet` with `@Name` referring to a proprietary xml namespace. The Extension Element SHALL reside in the appropriate child `Resource` element.

#### Example 3-42: Creating Extension Assets

```
<ResourceSet Name="foo:bar" xmlns:foo="www.foo.com">
  <Resource>
    <foo:bar attrib="myAttrib"/>
```

```
</Resource>
</ResourceSet>
```

### 3.18.4 Extending Process Types

JDF XJDF defines a basic set of Process types. However, because JDF XJDF allows flexible encoding, this list, by definition, will not be complete. Vendors that have specific Processes that do not fit in the general JDF XJDF Processes and that are not combinations of individual JDF XJDF Processes (see Section 3.5.4, “Combined Process Nodes” Section 3.5.3, “Process Nodes”) can create JDF XJDF Process Nodes of their own type. Then the content of the `@Type @Types` Attribute MAY be specified with a prefix that identifies the organization. The prefix and name SHALL be separated by a single colon (:) as shown in the following example.

#### Example 3-43: Extending Process Types

```
<JDF Type="myCompaniesNS:MyVeryImportantProcess"
      xmlns="http://www.CIP4.org/JDFSchema_1_1"
      xmlns:myCompaniesNS="my companies namespace URI"
      ID="ID1" JobPartID="ID345" Status="Ready" Version="1.4" >
  <!-- ... -->
</JDF>
```

#### 3.18.4.1 Rules about Process Extension

The use of namespace prefixes in the `@Type @Types` Attribute is for extensions only. Standard JDF XJDF Process types SHALL be specified without a prefix in the `@Type` Attribute or the `@Types` Attribute of a Combined Process Node XJDF/`@Types`. If a Process is simply an extension of an existing Process, it is possible to describe the private data by extending the existing Resource types. This is described in greater detail in the sections below.



#### Extensibility Caution

JDF “Extensibility” simply means that you can add your own XML elements, Attributes and enumerations to a JDF application. Although JDF is quite extensive, odds are you’ll find that your current databases and workflow systems use information elements that are unique to your client market or company ... *they might have even been defined by your internal MIS staff*. CIP4 acknowledges that it can’t define everything, nor ought it prevent innovation by codifying everything in a static manner, and JDF’s extensibility provides both printers and technology providers with the flexibility they need to make JDF a success.

However, if you or your technology vendors extend JDF, please do so with caution. JDF’s success depends on the ability of MIS systems and JDF-enabled Devices to write, read, parse and use JDF. Extensions are *custom* integration applications and great care needs to be made to ensure that extensions made for one systems or Device will not *jam* the JDF workflow or other JDF enabled systems and Devices. If they use extensions to JDF, your technology providers need to be able to provide you with a fully validated JDF schema and documentation that includes the use of their extensions. Extensions that are not documented, or that are not to be disclosed to third parties for integration purposes, ought to be viewed skeptically.

### 3.18.5 Extending the NodeInfo and CustomerInfo Nodes

Extending the `NodeInfo` and `CustomerInfo` Nodes is achieved in a manner analogous to the extension of Resources, which is described below. On the other hand, extending the direct contents of JDF Nodes by adding new Elements or Attributes is discouraged.

### 3.18.6 Extending Existing Resources

All Resources defined by JDF MAY be extended by adding Attributes and Elements using one’s own namespace for these Resource extensions. This is useful when the predefined Resource types need only a small amount of private data added, or if those Resources are the only appropriate place to put the data. The JDF namespace of the extended

Resource SHALL NOT be modified. However, the mechanism for creating new Resources in a separate namespace is provided in the next section.

However, duplicate functionality SHALL NOT be added to these Resource types. JDF-defined Attributes and Elements SHALL be used where possible and MAY be extended with additional information only when JDF-defined constructs don't exist. For example, it is not allowed to extend the RIP Resource that controls the bits per colorant with a `@foo:ColorantDepth` or `@foo:ColDepth` Attribute that overrides the JDF defined parameter for bits per colorant (see **RenderingParams/@ColorantDepth** in Section 8.130, "RenderingParams").

### 3.18.7 Extending NMTOKEN Lists

Many Resources contain Attributes of type NMTOKEN and some of these have a set of predefined, suggested enumerative values. These lists MAY be extended with private keywords. In order to identify private keywords, it is strongly RECOMMENDED to prefix these keywords with a namespace-like syntax (i.e., a namespace prefix separated by a single colon ":"). Such a namespace prefix SHOULD be defined in the **JDF XJDF** ticket with the standard `xmlns:Prefix="someURI"` notation, even if no extension Elements or Attributes from that namespace occur in the **XJDF JDF** ticket. Implementations that find an unknown NMTOKEN prefixed by a namespace prefix MAY then attempt to use the default value of that Attribute *if the value of @SettingsPolicy in effect is "BestEffort"*.

#### Example 3-44: Extending NMTOKEN Lists

For instance, if an implementation encounters **TrappingParams/@TrapEndStyle** (see below in Table 3-53) in the **JDF XJDF** snippet shown below, and if the implementation does not support the "*HDM*" extension, the best assumption is to use `@TrapEndStyle = "Miter"`, which is the default for `@TrapEndStyle`.

```
<TrappingParams TrapEndStyle="HDM:FooBar"/>
```

**Table 3-53: Excerpt from TrappingParams**

Name	Data Type	Description
<code>TrapEndStyle ?= "Miter"</code>	NMTOKEN	<p>Instructs the trap engine how to form the end of a trap that touches another object.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Miter</i></li> <li><i>Overlap</i></li> </ul> <p><b>Note:</b> other values might be added later as a result of customer requests.</p>

### 3.18.8 Creating New Resources

There are certain Process implementations that have functionality that cannot be specified by the predefined Resource types. In these cases, it might be necessary to create a new Resource-type Element. If so, the Resource SHALL be clearly specified and use its own namespace. These Resource types SHALL only be linked to custom-type JDF Process Nodes.

### 3.18.9 Future JDF XJDF Extensions

In future versions, certain private extensions will become more widely used, even by different vendors. As private extensions become more of a general rule, those extensions will be candidates for inclusion in the next version of the **JDF XJDF** specification. At that time the specific extensions will have to be described and will be included into the **JDF XJDF** namespace.

### 3.18.10 Maintaining Extensions

Given the mix of vendors that will use JDF XJDF, it is likely that there will be a number of private extensions. Therefore, JDF Controllers SHALL be prepared to receive JDF files that have extensions. These Controllers SHOULD ignore all extensions they don't understand, but under no circumstance are they allowed to remove these extensions when making modifications to the JDF. If they do, it will break the extensibility mechanism. For example, imagine that JDF Agent A creates a JDF and inserts private information for Process P. Furthermore, the information is only understood by Agent A and the appropriate Device D for executing P. If the JDF needs to be processed first by another Agent/Device C and that Process removes all private data for P, Process P will not be able to produce the correct results on Device D that were specified by Agent A.



### Submit Your Extensions to CIP4

Writing JDF extensions? CIP4 encourages you to become part of the standard and submit your private extensions for review and possible inclusion in future versions of the JDF standard. Not only might adoption of extensions into the JDF standard help make it easier for customers to decide to buy your products, but CIP4 is also considering adopting a formal review process for extensions with future editions of the JDF standard. By participating in JDF's development now, you could save time and customer confusion in the future.

### 3.18.11 Processing Unknown Extensions

If a Node is processed by a Controller or Device and it encounters an unknown extension in one of its Input Resources, the expected behavior depends on the current value of `@SettingsPolicy`.

If `@SettingsPolicy = "BestEffort"`, a Notification Audit Element with `@Class = "Warning"` SHOULD be logged.

If `@SettingsPolicy = "MustHonor"`, the Process SHALL NOT continue and a Notification Audit Element with `@Class = "Error"` SHOULD be logged.

If `@SettingsPolicy = "OperatorIntervention"`, the Process SHALL stop and wait for an operator intervention and a Notification Audit Element with `@Class = "Warning"` SHOULD be logged.

### 3.18.12 Derivation of Types in XML Schema

The XML Schema definition <http://www.w3.org/TR/xmlschema-1/> describes a mechanism to create new types by derivation from old types. This is an alternative to extend or create new Elements and is described in Section 4 of <http://www.w3.org/TR/xmlschema-0/>. This mechanism is not allowed to be applied to any Elements defined by JDF because such new Element types can only be understood by Agents/Devices that know the extension. The use of the derivation mechanism is allowed only for private extensions.

## 3.19 JDF Versioning

New in JDF 1.2

The JDF Specification is an evolving document that exists in multiple versions. Real workflows will be executed by Devices that individually support different versions of the specification. Complete JDF workflow descriptions MAY therefore contain sub-JDF Nodes that SHALL be specified with different versions in one document.

### 3.19.1 JDF Versioning Requirements

The following list of requirements take the specific needs of a mixed version JDF workflow into account:

- JDF Documents with mixed versions SHALL be supported.
  - Environments with Devices that support different JDF versions will exist.
  - It is not feasible to enforce simultaneous software upgrades for Devices from multiple vendors in one production facility.
- MIS systems might not support all versions of all Devices that are described in the JDF.
  - Customers might update a workflow system or Device without updating the MIS system.

- Archived JDF documents SHALL remain valid when a new version of the JDF specification and schema is published.

### 3.19.2 JDF Version Definition

The version of a JDF Node is defined as the highest version of all Attributes or Elements and linked Resources. The version of a Resource is defined as the highest version of all Elements, Attributes or Resources that are referenced via refelements.

### 3.19.3 JDF Version Policies

The following specifies the policies for evolving JDF 1.x versions. When the term “JDF” is used in the remainder of this section the reader also ought to interpret these policies to apply to JMF as well. Version policies include three areas of application: JDF specification rules, JDF schema definition rules and JDF application behavior. The policies are applicable to the transition from JDF 1.1/1.1A through to JDF 1.4, as well as future versions of JDF, but are not applicable to JDF 1.0.

#### 3.19.3.1 JDF Specification Version Policies

The following list defines the policies that will be followed when extending the JDF specification.

- Changes to the JDF specification are always backwards compatible.
  - Extension Elements or Attributes are never required.
    - New Attributes in existing Elements SHALL be optional.
    - New Elements in existing Elements SHALL be optional.
    - New Elements MAY contain required Elements or Attributes.
  - Elements and Attributes are never removed.
    - Deprecated Elements or Attributes continue to be valid in all versions of JDF 1.x
  - Data type changes SHALL be extensions of existing data types. In other words the data type of an extended Attribute SHALL be a complete superset of the existing data type. For instance, only the extensions defined by the arrow directions are valid.
    - enumeration —> NMOKEN
    - NMOKEN —> string
    - integer —> IntegerList
    - integer —> double
- The *JDF/@Version* and *JMF/@Version* Attributes are REQUIRED in the respective root of JDF or JMF Instance Documents.
- The semantics of Attributes and Elements SHALL NOT be altered.
  - New Attributes or Elements SHALL NOT be introduced that conditionally modify the semantics of existing Attributes and Elements.
  - Semantics MAY only be altered when the previous definition is clearly wrong and the result is unpredictable with the previous definition (e.g., bug fixes in the specification). These changes SHALL be clearly marked in the specification.
- The default values of Attributes and Elements SHALL NOT be altered.
  - The default behavior that is specified when an Attribute or Element is missing SHALL NOT be altered.

#### 3.19.3.2 JDF Schema Version Policies

The following list defines the policies that will be followed when generating new schemas for new versions of the JDF specification.

- Changes to the JDF schema SHALL always be backwards compatible.
  - JDF 1.x documents SHALL validate against JDF 1.(x+n) schemas.
- Only one JDF schema namespace SHALL be defined for all versions of JDF 1.x.

- The namespace is [http://www.CIP4.org/JDFSchema\\_1\\_1](http://www.CIP4.org/JDFSchema_1_1).
- The xs:version Attribute SHALL BE defined in the schema.
  - Applications that read a schema MAY verify that they are compatible with the version of the schema.
  - Applications MAY choose a schema based on the schema's version tag.
    - The schema version selection MAY be based on a best match to both application and JDF ticket or even JDF Node.
- The **JDF/@Version** Attribute is defined as an enumeration that contains all valid versions for the schema (e.g., "1.1", "1.2" and "1.3" for the JDF 1.3 version of the schema). The schema data type of a JDF of JMF version is "*JDFJMFVersion*".  
  - This allow schema validators to detect incompatible versions when parsing a local legacy schema.
- The version annotations in the schema SHOULD be maintained wherever possible.
- Explicit copies of published legacy schema versions SHALL be available on the CIP4 website.
- The schema default values of deprecated Attributes SHALL be removed from the schema. Deprecated Attributes SHALL still be valid but SHALL NOT be explicitly defaulted in the schema.

### 3.19.3.3 JDF Application Version Policies

This section specifies the policies that implementations SHOULD follow in order to support multiple versions of JDF. The policies are specified for Agents and Controllers/Devices separately.

#### 3.19.3.3.1 JDF Agent Version Policies

JDF Agents SHALL ensure that the JDF that they generate is consistently versioned.

- An Agent SHALL update the **JDF/@Version** Attribute when inserting new Attributes or Elements.
  - If an Agent is not aware of versions, it SHALL assume that anything that it writes belongs to the Agent's maximum version. In this case, the Version of any Node that is affected is the maximum of its prior version or the Agent's version.
- It is strongly RECOMMENDED that an Agent honor the **JDF/@MaxVersion** Attribute.
  - An Agent SHOULD NOT add Attributes, Elements or Attribute Values that were introduced in a version that is higher than **JDF/@MaxVersion**.
- An Agent SHOULD insert the lowest possible **JDF/@Version** Attribute that is applicable to the Nodes version as described in Section 3.19.2, "JDF Version Definition".
- The **JDF/@Version** of a spawned JDF Node is identical to the **JDF/@Version** of that Node in a complete JDF.

#### 3.19.3.3.2 JDF Device/Controller Version Policies

A JDF Device/Controller (i.e., any implementation that reads JDF) SHOULD be backwards compatible:

- Implementations SHOULD handle deprecated Elements and Attributes gracefully.

JDF Devices/Controllers (i.e., any implementation that reads JDF) SHOULD attempt to be forwards compatible.

- Schema validation errors that find an unknown Attribute, Element or Attribute Value in a JDF with a version that is higher than the schema SHOULD NOT lead to an abort.
  - A Device or Controller that reads a JDF with an Element or Attribute or Attribute Value with a version that is higher than the version that it was developed for SHOULD attempt to execute the JDF if **@SettingsPolicy = "BestEffort"**.
  - A Device or Controller that reads a JDF with an Element or Attribute or Attribute Value with a version that is higher than the version that it was developed for SHALL NOT execute the JDF if **@SettingsPolicy = "MustHonor"**.
  - Implementations SHOULD handle non-fatal version schema validation errors gracefully.
    - Unknown Attributes/Elements in the JDF namespace SHOULD be treated the same as foreign namespace Attributes/Elements when handling Nodes that are not executed by the Device or Controller.

- Unknown versions of the JDF namespace **SHOULD** be treated analog to foreign namespace Elements when handling Nodes that are not executed by the Device or Controller.

# Chapter 4 Life Cycle of JDF XJDF

## Introduction

This chapter describes the life cycle of a **JDF Job**, from creation through modification to processing. Information is provided about the spawning of individual steps of Jobs and in what way they are merged into the Job once the Process step is completed.

### 4.1 Creation and Modification

The life cycle of a **JDF Job** will likely follow one of two scenarios. In the first scenario, a Job is created all at once by a single Agent and then is consumed by a set of Devices. More often, however, a Job is created by one Agent and is then transformed, or modified, over time by a series of other Agents. This Process might require specification of Product Intent, which is defined in Section 4.1.1, “Product Intent Constructs”.

Jobs can be modified in a variety of ways. In essence, any Job is modified as it is executed, since information about the execution is logged. Another instance of modification of a **JDF Job**, however, occurs during processing when more detailed information is learned or understood and then added along the way. This information might be added because an Agent knows more about the processing needed to achieve some result specified in a JMF Node than the original, creating Agent knew. For example, one Agent might create a Product Intent Node that specifies the Product Intent of a series of pages. This Product Intent Node might include information about the number of pages and the paper properties. Another Node might then be inserted that includes a Resource describing how the pages are to be RIPed. Later, another Agent might provide more detail about the RIPing Process by appending optional information to the RIP Resource.

Regardless of where in the life cycle they are written, Nodes and their Resources SHALL be valid and include all REQUIRED information in order to have a *@Status* of "Ready" (in case of Nodes) or "Available" (in case of Resources). This restriction allows for the definition of incomplete Output Resources. For example, a URL Resource without a file name might be completed by a Process. On the other hand, it is impossible to define a valid and executable Node with insufficient input parameters.

Once all of the inputs and parameters for the Process requested by a Node are completely specified, a Controller can route the **JDF Job** containing this Node to a Device that can execute the Process. When the Process is completed, the Agent/Controller in charge of the Device will modify the Node to record the results of the Process.

#### 4.1.1 Product Intent Constructs

**JDF Jobs**, in essence, are requests made by customers for the production of quantities of some product or products. In other words, a Job begins with a particular goal in mind. In **JDF**, product goals are often specified by using a construct called “Product Intent” and represented by Product Intent Nodes. In contrast to Process Resources that define precise values, Product Intent Nodes allow ranges or sets of preferred values to be specified. Resources of this kind include **ColorIntent**, **FoldingIntent**, **MediaIntent** and **ShapeCuttingIntent**, all of which are described in Chapter 8, “Resources”.



#### Product Intent

“Product Intent” is another way of saying “Job Specifications”. Rather than describing how a Job will be made, Product Intent describes what a finished product (or some aspect of a product) will look like when it is completed. Product Intents can initiate with the customer and in rather vague terms, and they might be later fleshed out or completed by a printer’s customer service representative, estimating department or production planners.

The Product Intent of a Job is like a blue print of a product. The blue print might be extremely vague, detailing only the general goal, or it might be very specific, stipulating the specific requirements inherent in meeting that goal. Product Intent might be defined for an end product about which little is known or about which the processing details for the Job are entirely unknown. Product Intent constructs also allow Agents to describe Jobs that comprise multiple product components and that might share some parts.

The initiating Agent of a Job specifies either Product Intent or a full set of Processes. The various kinds of Process Nodes are described in Section 3.5.1, “Product Intent Nodes”, Section 3.5.2, “Process Group Nodes” and Section

3.5.4, “Combined Process Nodes”. Any Job that specifies Product Intent SHALL include Nodes whose `@Type = "Product"`. This representation is described in the following section.

#### 4.1.1.1 Representation of Product Intent

The product description of a Job is a hierarchy of Product Intent Nodes, and the bottom-most level of the product hierarchy represents portions of the product that are each homogeneous in terms of their materials and formats. All Nodes below these Product Intent Nodes begin specifying the Processes needed to produce the products.

Product Intent Nodes are REQUIRED to contain only one thing, and that is a Resource that represents the physical result specified by the Node. This Resource is generally a **Component**. In addition, somewhere in the hierarchy of Product Intent Nodes, it is a good idea to include an Intent Resource to describe the characteristics of the intended product. Although these are the only Resources that SHOULD occur, Product Intent Nodes can contain multiple Resources. For example, some Resource types, such as **LayoutIntent** and **MediaIntent**, are defined to provide more general mechanisms to specify Product Intent. The resulting product of a Product Intent Node is specified as an output **Component** Resource of the Product Intent Node.

In some cases, more than one high level Product Intent Node will use the output of a Product Intent Node. These high level Nodes represent the combination of homogeneous product parts. In this case, the `@Amount` Attribute of the **ResourceLink** Elements that connect the Nodes will identify how the lower level product is shared.

#### 4.1.1.2 Representation of Product Binding

Some Intent Resources, such as **BindingIntent** or **InsertingIntent**, define how to combine multiple products. To accomplish this, the respective Component Resources SHALL be labeled according to their usage. For example, the Cover and Insert of a product are identified by `ComponentLink/@ProcessUsage` Attribute of the respective input **ComponentLink** Elements. For more information about Product Intent, see Section 3.5.1, “Product Intent Nodes”.

#### 4.1.2 Specification of Delivery of End Products

A Job can define one or more products and specify a set of deliveries of end products. To accomplish this, a Node **JMF** [`@Type = "Product"`] is created to define each product to be produced. The root Product Intent Node SHOULD contain a **DeliveryIntent** Resource that specifies a set of **DropItemIntent** Elements. Each **DropItemIntent** Element has a common delivery address and time, and a set of **DropItemIntent** Elements that specifies the amount of individual **Component** Elements to deliver to this address. Quote generation as defined in the previous chapter includes the specification of delivery addresses. For more information, see Section 6.3.4, “Delivery”.

#### 4.1.3 Specification of Process Specifics for Product Intent Nodes

Product Intent Nodes are designed to represent a customer’s view of the product. In some instances, a knowledgeable customer might want to specify production details that are only available in **JDF** Process Resources for a given product. Examples include scanning or screening parameters. This customer will still have no knowledge or control of the Process workflow, and therefore is expected to specify only the **Resource** Elements.

Individual **JDF** Process Resources MAY be referenced from the **ProductionIntent** Resource. `Resource/@Status` will most likely be `"Incomplete"` because generally the customer does not know all parameters of the Resource.

##### Example 4-1: Product Intent Node

The **highlighted tags** and **highlighted attributes** section shows how specific information about screening is specified in an intent Node.

```
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="Job1" JobID="J1"
      JobPartID="P1"
      Status="Waiting" Type="Product" Version="1.4">
  <ResourcePool>
    <Component Amount="10000" Class="Quantity"
               DescriptiveName="Complete 16-page Brochure" ID="Link0003"
               Status="Unavailable" ComponentType="Sheet" />
```

```

<LayoutIntent Class="Intent" ID="Link0004" Status="Available">
    <Dimensions DataType="XYPairSpan" Preferred="612 792"
        Range="576 720 ~ 648 864"/>
    <Pages DataType="IntegerSpan" Preferred="16"/>
</LayoutIntent>
<MediaIntent Class="Intent" ID="Link0005" PartIDKeys="Option"
    Status="Available">
    <FrontCoatings DataType="NameSpan" Preferred="None"/>
    <MediaIntent Option="1">
        <FrontCoatings DataType="NameSpan" Preferred="Glossy"/>
    </MediaIntent>
    <BackCoatings DataType="NameSpan" Preferred="None"/>
</MediaIntent>
<ProductionIntent Class="Intent" ID="ID_PI" Status="Available">
    <ScreeningParamsRef rRef="ScreenID"/>
</ProductionIntent>
<ScreeningParams Class="Parameter" ID="ScreenID" Status="Incomplete">
    <ScreenSelector ScreeningFamily="My favorite screen"
        SpotFunction="Ellipse"/>
</ScreeningParams>
</ResourcePool>
<ResourceLinkPool>
    <ComponentLink Usage="Output" rRef="Link0003"/>
    <LayoutIntentLink Usage="Input" rRef="Link0004"/>
    <MediaIntentLink Usage="Input" rRef="Link0005"/>
    <ProductionIntentLink Usage="Input" rRef="ID_PI"/>
</ResourceLinkPool>
</JDF>

<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="Job1" JobID="J1"
    JobPartID="P1"
    Status="Waiting" Type="Product" Version="1.4">
<ResourcePool>
    <Component Amount="10000" Class="Quantity"
        DescriptiveName="Complete 16-page Brochure" ID="Link0003"
        Status="Unavailable" ComponentType="Sheet" />
    <LayoutIntent Class="Intent" ID="Link0004" Status="Available">
        <Dimensions DataType="XYPairSpan" Preferred="612 792"
            Range="576 648 720 864"/>
        <Pages DataType="IntegerSpan" Preferred="16"/>
    </LayoutIntent>
    <MediaIntent Class="Intent" ID="Link0005" PartIDKeys="Option"
        Status="Available">
        <FrontCoatings DataType="NameSpan" Preferred="None"/>
        <MediaIntent Option="1">
            <FrontCoatings DataType="NameSpan" Preferred="Glossy"/>
        </MediaIntent>
        <BackCoatings DataType="NameSpan" Preferred="None"/>
    </MediaIntent>
    <ProductionIntent Class="Intent" ID="ID_PI" Status="Available">
        <ScreeningParamsRef rRef="ScreenID"/>
    </ProductionIntent>
    <ScreeningParams Class="Parameter" ID="ScreenID" Status="Incomplete">
        <ScreenSelector ScreeningFamily="My favorite screen"
            SpotFunction="Ellipse"/>
    </ScreeningParams>
</ResourcePool>
<ResourceLinkPool>

```

```

<ComponentLink Usage="Output" rRef="Link0003"/>
<LayoutIntentLink Usage="Input" rRef="Link0004"/>
<MediaIntentLink Usage="Input" rRef="Link0005"/>
<ProductionIntentLink Usage="Input" rRef="ID_PI"/>
</ResourceLinkPool>
</JDF>

```

## 4.2 Process Routing

A Controller in a JDF workflow system has two tasks. The first is to determine which of the Nodes in a JDF document are executable, and the second is to route these Nodes to a Device that is capable of executing them. Both of these procedures are explained in the sections that follow.

In a distributed environment with multiple Controllers and Devices, finding the right Device or Controller to execute a specific Node might be a non-trivial task. Systems with a centralized, smart master Controller might want to route Jobs dynamically by sending them to the appropriate locations. Simple systems, on the other hand, might have a static, well defined routing path. Such a system might, for example, pass the Job from hot folder to hot folder. Both of these extremes are valid examples of JDF systems that have no need for additional routing metadata.

In order to accommodate systems between these extremes, the **NodeInfo** Resource of a Node contains OPTIONAL **@Route** and **@TargetRoute** Attributes that let an Agent define a static Process route on a Node-by-Node basis. JMF/QueueSubmissionParams/**@ReturnURL** takes precedence over **NodeInfo**/**@TargetRoute** of the JDF Node that is processed. If no **@Route** or **@TargetRoute** Attribute is specified and if a Controller has multiple options where to route a Job, it is up to the implementation to decide which route to use.

The Controller or Device reading the JDF Job is responsible for processing the Nodes. A Device examines the Job and attempts to execute those Nodes that it knows how to execute, whereas a Controller routes the Job to the next Controller or Device that has the appropriate capabilities.

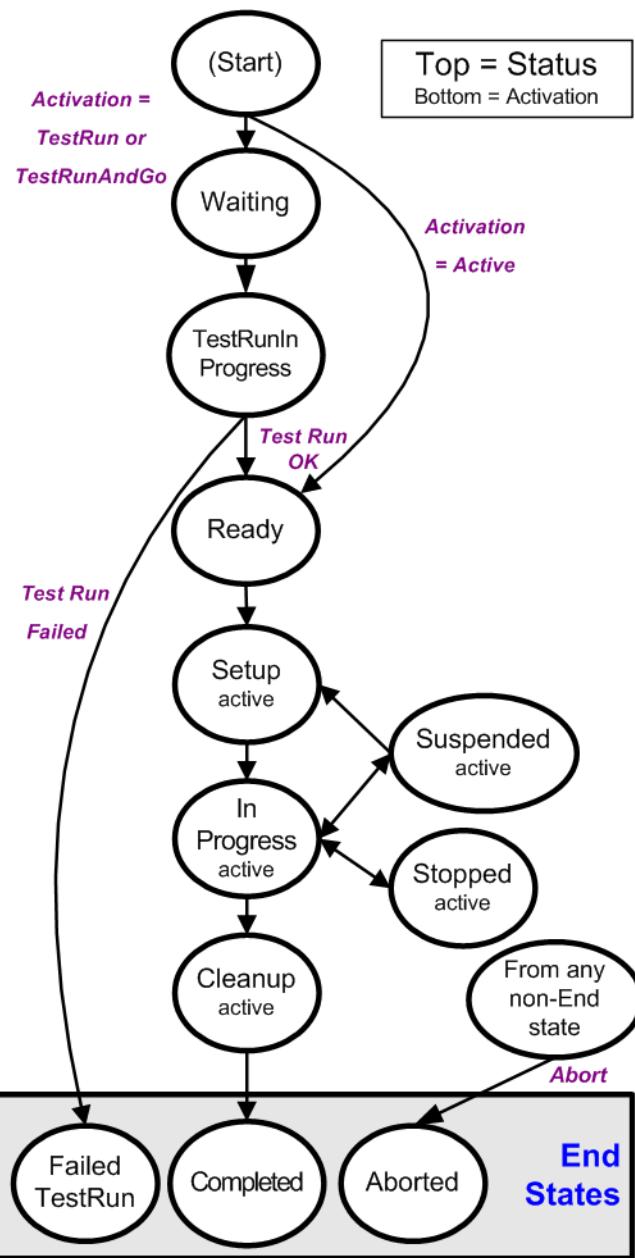
### 4.2.1 Determining Executable Nodes

In order to determine which Node to execute, the Controller/Device SHALL use the following procedures.

- 1 It searches the JDF document for Node types that it can execute or Gray Boxes that it can expand by comparing the **@Type** and **@Types** Attributes and possibly the **@Category** Attribute of the Node to its own capabilities and by determining the **@Activation** of the Nodes. It SHOULD also verify that the **@Status** of the Node or the respective **NodeInfo**/**@NodeStatus** is either "Waiting" or "Ready". If a **Device** Resource is specified as input to the Node, the Resource SHALL match the Controller/Device. Devices MAY opt to limit the scope of the Node search. The limitations SHOULD be specified in the Device capability description by appropriately setting **DeviceCap**/**@ExecutionPolicy**.
- 2 The Controller/Device can then determine if no Resources have a **@Status** of "Incomplete" or a **@SpawnStatus** of "SpawnedRW". It SHOULD also determine if all of the Input Resources of the respective Nodes have a **@Status** of "Available" and that all Processes that are attached through pipes are ready to execute. A Controller MAY skip these checks and expect the lower level Controller or Device that it controls to perform this step and return with an error if it fails.
- 3 If scheduling information is provided in the **NodeInfo** Resource, the specified start and/or end time SHALL be taken into account by the executing Device. If no process times are specified, it is up to the Device in charge of queue handling to execute the Process Node.
- 4 If no executable Nodes are found, the Device SHALL return the Node to the Controller. A Notification Audit Element with **Notification/@Class = "Error"** SHOULD be appended to the AuditPool of the root JDF Node. **Notification/Error/@ReturnCode = "102"** specifies that no executable Node was found.

The Node will go through various states during its life time as is described in Figure 4-1, "Life Cycle of a JDF Node"

Figure 4-1: Life Cycle of a JDF Node



#### 4.2.2 Distributing Processing to Work Centers or Devices

JDF syntax supports two means of distributing Processes to work centers or Devices. Its first option is to use a “smart” Controller that has the ability to parse a JDF Job and identify individual Processes or Process Groups that might be distributed to a particular Work Center or Device. This smart Controller MAY use spawning and merging facilities to subdivide the Job ticket and pass specific instructions to a Work Center or Device.

The second option, which is applicable when the Controller being used isn’t smart, is to employ a simple Controller implementation that routes the entire Job to each workcenter or Device, thus leaving it up to the recipient to determine which processing it can accomplish. For this option to work, each JDF-capable Device SHALL be able to identify Process Nodes it is capable of executing. Furthermore, each Device SHALL have sufficient JDF-handling capabilities to identify Processes that are ready to run.

### 4.2.3 Device / Controller Selection

The method used to determine which is the appropriate Device or lower level Controller to use to execute a given Node depends greatly on the implemented workflow being used. Although JDF provides a method for storing routing information in the `@Route` Attribute of the **NodeInfo** Resource of a Node, it does not prescribe any specific routing methods. However, some of the tools available to figure out alternative workflows are described below.

Knowledge of the capabilities of lower level Controllers/Devices either MAY be hard-wired into the system or gained using the **KnownDevices** Message. Since JDF does not yet provide mechanisms to determine if a given Device is capable of processing a Node without actually performing a test run, a Controller SHALL either have a prior knowledge of the detailed capabilities of its controlled Devices or perform a test run to determine if a Device is capable of executing a Node. Furthermore, in addition to the explicit routing information in the `@Route` Attribute of the **NodeInfo** Resource of a Node, JDF MAY contain implicit routing information in the form of **Device ImplementationResources**.

JMF defines the **KnownDevices** Query Message to find Controllers and Devices. The information provided by this query can be used by a Controller to infer the appropriate routing for a Node. In a system that does not support messaging, this information will be provided outside of JDF.

## 4.3 Execution Model

JDF provides a range of options that help Controllers tailor a processing system to the needs of the workflow and of the Job itself. The following sections explain the ways in which Controllers execute processes using these various options.

The processing model of JDF is based on a producer/consumer model, which means that the sequencing of events is controlled by the availability of Input Resources. As has been described, Nodes act both as producers and consumers of Resources. When all necessary inputs are available in a given Node, and not before, the Process can execute. The sequence of processing, therefore, is implied by the chain of Resources in which the Output Resources of one Node become the Input Resources of a subsequent Node.

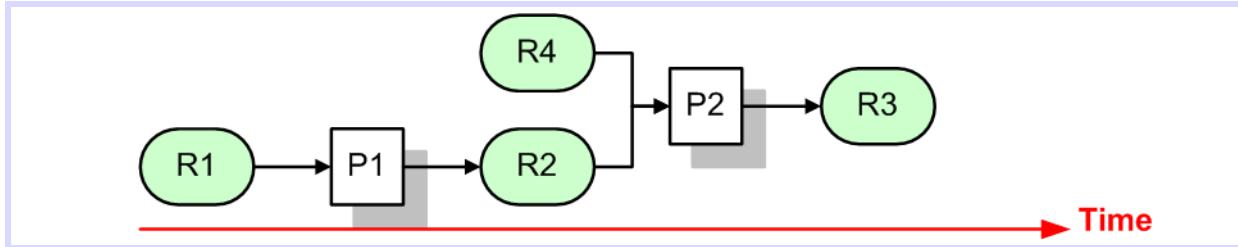
JDF supports four kinds of Process sequences: serial processing, overlapping processing, parallel processing and iterative processing. All four are described in the following sections.

### 4.3.1 Serial Processing

The simplest kind of Process routing, known as serial processing, executes Nodes sequentially and with no overlap. In other words, no Nodes are executed simultaneously. Once the Process has acted upon the Resource in some way, the Resource availability is described by the `@Status` Attribute of the Resource, as described above. When the Process state is "Ready" or "Waiting", the Process can begin executing.

In a workflow using serial processing, the Controller is responsible for comparing the actual amount available with the specified amount in the corresponding **ResourceLink** Element to determine whether or not the Input Resource can be considered available. If no amount is specified in the **ResourceLink**, the Process is assumed to consume the entire **PhysicalResource**.

**Figure 4-2: Example of a simple Process chain linked by Resources**



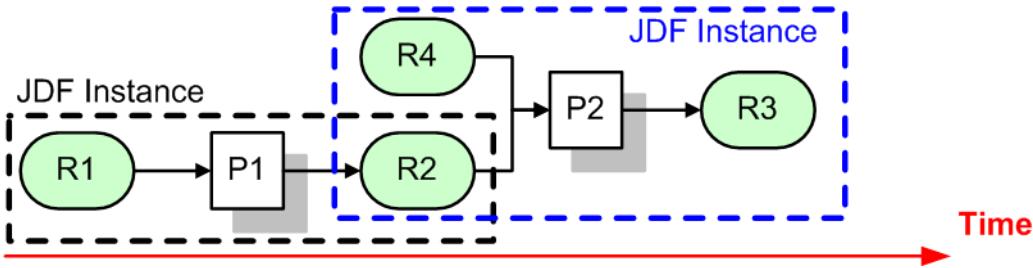
**Figure 4-3: Example of a simple Process chain linked by Resources**

Figure 4-2, “Example of a simple Process chain linked by Resources” depicts a simple Process chain that produces and consumes Quantity Resources and uses an ImplementationResource. The Resources R1, R2 and R3 represent Quantity Resources. Process P1 consumes Resource R1 and produces Resource R2. R2 is then completely consumed by P2, which also requires the ImplementationResource R4 for processing. Process P2 uses these two Resources and produces Resource R3. All of this is accomplished along a linear time axis.

Table 4-1 shows the value of the *@Status* Attribute of each of the Resources and Processes used in Figure 4-2. The time axis runs from left to right both in Figure 4-2 and in Table 4-1. Note that no Process can execute until all Resources leading up to that Process are “Available”. In other words, the Job executes serially and sequentially. For more information about the values of the *@Status* Attribute of Resources, see Table 3-10, “Abstract Resource Element” on page 75 . For more information about the values of the *@Status* Attribute of Processes, see Table 3-4, “JDF XJDF Node” on page 52 .

**Table 4-1: Examples of Resource and Process states in the case of simple Process routing**

Object Status	before running P1	during running P1	after running P1, before P2	during P2	after P2
Resource R1	Available	InUse	Unavailable	Unavailable	Unavailable
Resource R2	Unavailable	Unavailable	Available	InUse	Unavailable
Resource R3	Unavailable	Unavailable	Unavailable	Unavailable	Available
Resource R4	Available	Available	Available	InUse	Available
Process P1	Waiting or Ready	InProgress	Completed	Completed	Completed
Process P2	Waiting or Ready	Waiting or Ready	Waiting or Ready	InProgress	Completed

If a Process aborts before completion, its Output Resources are “Unavailable” unless the output has been partially produced in which case the Device MAY update the amount and set the output to “Available”.

When the *@Amount* Attribute is used in connection with the quantifiable Resources R1, R2 or R3 and their links, then the Controller SHALL decide whether or not a Resource is available by comparing the individual values. If the amounts are used to define the availability, then the Resource *@Status* MAY be set to “Available” for all Quantity Resources. Note that when the value of the *@Status* Attribute of the Resource is “Unavailable”, the Resource is not available even if a sufficient *@Amount* is specified.

If amounts are specified in the Resource Element, they represent the actual available amount. If they are not specified, the actual amount is unknown, and it is assumed that the Process will consume the entire Resource. Amounts of ResourceLink Elements SHALL be specified for Output Resources that represent the intended production amount. The specification of the *@Amount* Attribute for Input Resources is OPTIONAL. For details, see Section 3.15.4, “Resource Amount” on page 116 . If the Controller cannot determine the amounts, this constitutes a JDF content error, which is logged by error handling. This Process is described in Section 4.6, “Error Handling”.

If a Process in a serial processing run does not finish successfully, the final Process status is designated as "*Aborted*". In an aborted Job, only a part of the intended production might be available. If this occurs, the actual produced amount is logged into the AuditPool by a ResourceAudit Element.

### 4.3.2 Partial Processing of Nodes with Partitioned Resources

New in JDF 1.2

JDF Nodes themselves SHALL NOT be Partitioned, although the input and Output Resources MAY be Partitioned. If the input and output ResourceLink Elements reference one or more individual Partitions, the JDF Node executes using only the referenced Resources.

If multiple Input Resources are input to a process, the Resource with the highest granularity defines the Partitioning. For instance, a **ConventionalPrinting** Process might consume a non-Partitioned **ConventionalPrintingParams** and a set of **Ink** and **ExposedMedia (Plate)** Resources that are Partitioned by "*Separation*". The Partition granularity will be defined by the **Ink** and **ExposedMedia (Plate)** Resources to be "*Separation*". The "*Separation*" Partition set is defined by the superset of all defined Partition Key values. If the "*Separation*" key values of **Ink** were "Black" and "Varnish", and the @*Separation* key values of **ExposedMedia (Plate)** were "Black", the resulting set is "Black" and "Varnish".

The Partition Keys of both input and output restrict the Process. If the Partition Keys are not identical, both SHALL be applied to restrict the Node. If the Partition Keys are non-overlapping (e.g., in an **Imposition** Node where a **RunList** based input Partition is mapped to a Sheet based output Partition), the application SHALL explicitly calculate the result. The following examples in Table 4-2 illustrate the restriction algorithms:

**Table 4-2: Examples of Partitioning across multiple Resources (Sheet 1 of 2)**

Input Partition 1	Input Partition 2	Output Partition	Node Partition	Description
@SheetName= "S1"	—	—	@SheetName = "S1"	If only the input is Partitioned, the Node Partition is defined by the input.
@SheetName= "S1" @Separation = "Cyan"	—	—	@SheetName = "S1" @Separation = "Cyan"	If only the input is Partitioned, the Node Partition is defined by the input.
@SheetName= "S1" @Separation = "Cyan" (@PartUsage = "Implicit")	@Separation = "Cyan" + @Separation = "Black" (@PartUsage = "Implicit")	—	@SheetName = "S1" @Separation = "Cyan" + @SheetName = "S1" @Separation = "Black"	The first input is Partitioned by @SheetName and @Separation which defines the Partition Key granularity. The second input is Partitioned by @Separation only but has an implied @SheetName and has a larger but overlapping set of separation values. The separation value set is therefore defined by the second key.
@SheetName= "S1"	—	@SheetName= "S1" @Separation = "Cyan"	@SheetName = "S1" @Separation = "Cyan"	The input and output base Partitions are identical. The output further restricts the Partition.
@SheetName= "S1"	—	@SheetName= "S2" @Separation = "Cyan"	Error	Input and output are not overlapping. This specifies the null set.

**Table 4-2: Examples of Partitioning across multiple Resources (Sheet 2 of 2)**

<b>Input Partition 1</b>	<b>Input Partition 2</b>	<b>Output Partition</b>	<b>Node Partition</b>	<b>Description</b>
<code>@SheetName = "S1"</code> <code>@Separation = "Magenta"</code>	<code>@Separation = "Cyan" +</code> <code>@Separation = "Black"</code>	—	Error	This is an error and defines the null set. The first input is Partitioned by <code>@SheetName</code> and <code>@Separation</code> which defines the Partition Key granularity. The second input is Partitioned by <code>@Separation</code> only and has a larger but non-overlapping set of separation values. The separation value set is therefore the null set.
<code>@SheetName = "S1"</code> <code>@Separation = "Cyan"</code>	<code>@Separation = "Cyan" +</code> <code>@Separation = "Black"</code> <code>(@PartUsage = "Explicit")</code>	—	Error	The first input is Partitioned by <code>@SheetName</code> and <code>@Separation</code> which defines the Partition Key granularity. The second input is Partitioned by <code>@Separation</code> only but has no implied <code>@SheetName</code> and therefore has a non-overlapping set of Partition Keys. The separation value set is therefore defined by the second key.
<code>@RunIndex = "0 ~ 7"</code>	—	<code>@SheetName = "s2"</code>	Special	This specifies Sheet s2, with all <code>PlacedObject</code> Elements with an <code>@Ord</code> in the range of 0 to 7. This special case is important when <code>RunList</code> entries occur multiply on different imposition Sheets.

### 4.3.3 Overlapping Processing Using Pipes

Whereas pipes themselves are identified in the Resource that represents the pipe by specifying `Resource/@PipeID`, pipe dynamics are declared in the `ResourceLink` Elements that reference the pipe. This allows multiple Nodes and Devices to access one pipe, each of them with its own pipe buffering parameters.

In some situations, Resource linking is a continuous, dynamic Process rather than a predefined static Process. In other words, one Process might require the Output Resources of another Process before that Process has completely finished producing them. The ability to accomplish this kind of Resource transfer is known as overlapping processing, and it is accomplished with the use of a mechanism known as pipes. Pipes are considered to be **active** if any Process linking to the pipe simultaneously consumes or produces that pipe Resource.

Any Resource MAY be transformed into a pipe Resource by specifying the `@PipeID` Attribute in the Resource. Pipes resemble reservoir containers that hang between Processes. Processes connected to the pipe via output links fill the container with necessary Resources, while Processes connected via input links deplete it (see Figure 4-4 and Figure 4-5). The level is controlled by the `ResourceLink` Attributes `@PipeResume` and `@PipePause` (see Table 3-23, “ResourceLink Element” on page 100 and Table 3-26, “PartAmount Element” on page 107). The unit of the buffers is defined by the `@Unit` Attribute of the Resource.



#### Pipe Resources

A pipe Resource is simply an input to a Process that can be exhausted and can be replenished. Examples might include rolls of paper feeding into a press, ink well levels, fountain solution, or even proofing stock loaded into a proofer. Another type of pipe Resource in everyday use is a “hot-folder” or “watched file.” Hot folders are used to automate functions such as preflighting. When a file is saved to a hot-folder, the system knows to automatically apply a defined Process to the new file. When the folder is empty the processing stops.

The two following diagrams show the ways in which pipes mediate between the Process producing the Resource and the Process consuming the Resource. The following OPTIONAL Attribute Values are defined for pipes:

`ResourceLink/@PipePartIDKeys` – specifies the granularity of a pipe request for partitioned resources.

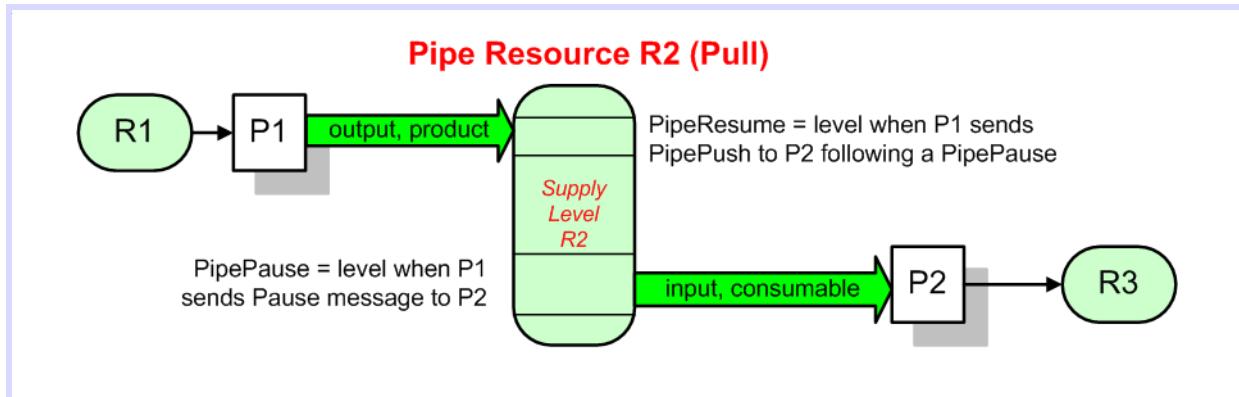
`ResourceLink/@PipePause` – specifies at which resource level to pause a pipe.

`Resource/@PipeProtocol` – specified the protocol to use to pause, resume and initiate a pipe.

`ResourceLink/@PipeResume` – specifies at which resource level to resume a pipe.

The specified value of each of these Attributes in any given `ResourceLink` dictates the levels at which a pipe SHOULD resume or pause execution. Figure 4-6, “Example of status transitions in case of overlapping Processing” gives an example of a view on the dynamics of a pipe Resource. The available level of the pipe Resource, represented as R2, and the availability status of two entity Resources, represented as R1 and R3, are changing along a time line. Below the progressions of these Resources is the status of two Processes — P1 and P2. P1 represents the Process producing the pipe Resource and P2 represents the Process consuming that Resource. The Resource status of an active pipe, represented here as R2, is defined to be `@Status= "InUse"` (see also Table 3-10, “Abstract Resource Element” on page 75 ).

**Figure 4-4: Example of a Pipe Resource Linking Two Processes via Pull**



**Figure 4-5: Example of a Pipe Resource Linking Two Processes via Push**

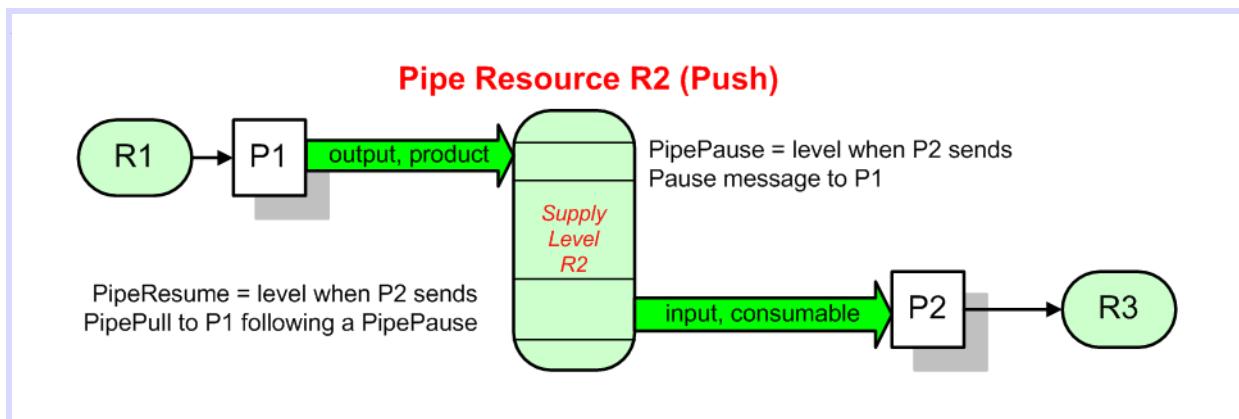
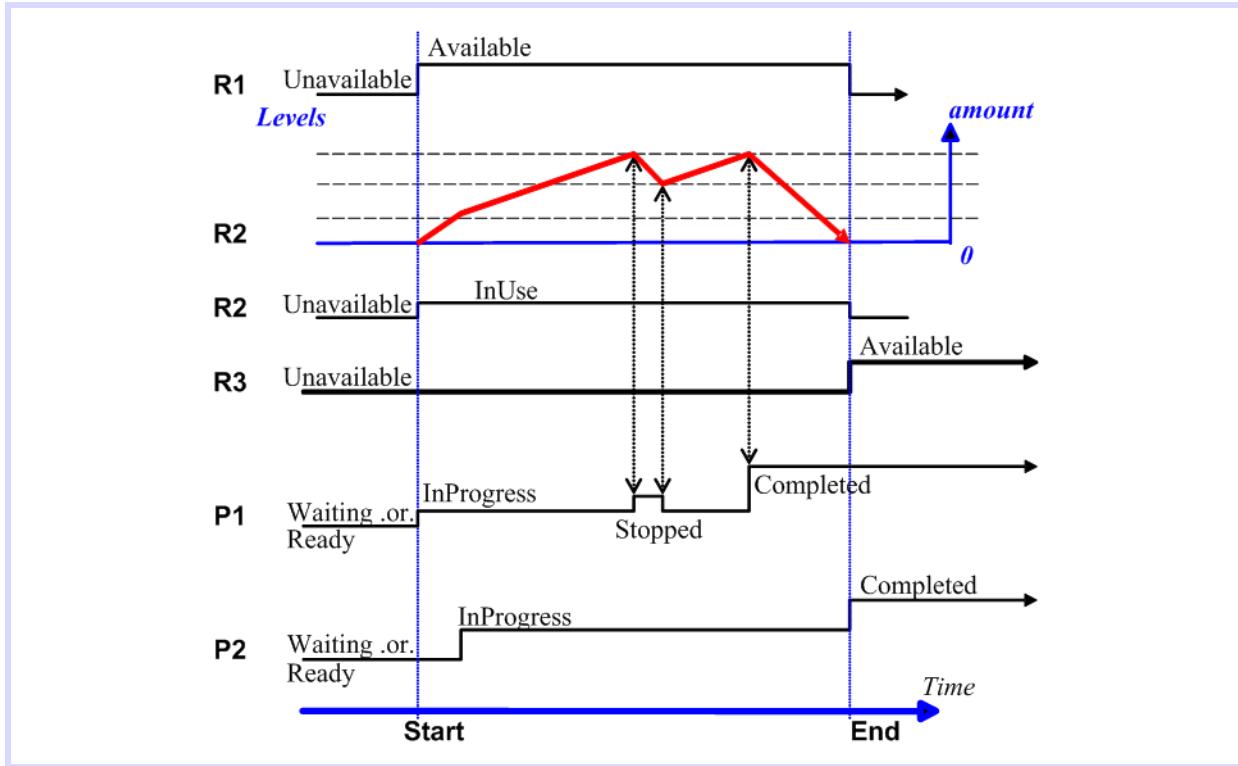


Figure 4-4 and Figure 4-5 are views on the structure and Figure 4-6, “Example of status transitions in case of overlapping Processing” a view on the dynamics of the pipe example considered here. R1 represents an Input Resource for P1, which feeds into the intermediate pipe Resource R2. Once the container R2 is filled to the predetermined level, it is used as the Input Resource for P2, which in turn produces Output Resource R3.

**Figure 4-6: Example of status transitions in case of overlapping Processing**



Resource linking through pipes is controlled through the specification of the `@PipePause` and `@PipeResume` Attributes. The intended amount of a Resource MAY be specified in advance in the output ResourceLink. Whenever the level representing the available quantity of the pipe Resource exceeds the `@PipePause` level of the ResourceLink, the Process P1 is halted (`@Status = "Stopped"`) so that the Process does not overproduce. Once the level falls below the `@PipeResume` value, the Process P1 resumes execution. P1 is completed when it has produced the intended amount. Once P1 has performed its task, the Resources still in the pipe are consumed by the subsequent Process without level control. In other words, after a Process filling a pipe buffer has completed, pipe buffering becomes disabled.

In the case of output ResourceLink Elements, the `@PipeResume` value SHALL be smaller than the `@PipePause` value, whereas in the case of input ResourceLink Elements, the `@PipeResume` value SHALL be greater than the `@PipePause` value. If `@PipePause` is specified for a ResourceLink and `@PipeResume` is not specified, the related Process might run into a deadlock state. In other words, the Process stops and cannot resume execution automatically. Once a Process is stopped under these circumstances it can only be resumed manually or by sending a pipe control Message for resumption that allows interconnected execution control (halting and resumption of Processes by pipe control Messages is described in Section 5.10, “Messages for Pipe Control”). If the Attributes `@PipeResume` or `@PipePause` of ResourceLink Elements to pipe Resources are not specified, the Controller is responsible when the linked Processes start and stop independent of the level.

#### 4.3.3.1 Dynamic Pipes

In addition to abstractly declaring pipe properties, JMF provides pipe Messages that allow dynamic control of pipes. Dynamic pipes can be used to model situations where the amount of Resources is not known beforehand but becomes known during processing. An example of this behavior is a long press run where new plates are needed during a press run because of quality deterioration. The exact point in time where quality becomes unacceptable is not predetermined and might even vary from separation to separation. Dynamic pipes provide the flexibility to adjust to changing situations of this nature.

Another usage of dynamic Pipes is linking the output of a variable data print job to various components. Examples include a Pipe describing the **RunList** that links the RIP to a print engine or a Pipe describing the **Component** that links the printer to finishing equipment or individual finishing devices. In this case, the **RunList** and **Component** are templates that are logically expanded in increments by the Pipe messages.

Dynamic pipes provide a **ResourceLink/@PipeURL** Attribute that allows dynamic requests for a status change of the pipe while a Process is executing. Dynamic requests use JMF pipe control Messages (see Section 5.10, “Messages for Pipe Control”) sent to another Controller whose URL address is specified by the **@PipeURL** Attribute of the respective **ResourceLink**. Depending on the values of the **Resource /@PipeProtocol** Attribute, the following actions are possible.

- **"JMFPull"**: The consumer initiates the pipe by sending a **PipePull** Message to its **ResourceLink /@PipeURL**. The consumer MAY request new resources by sending **PipePull** Messages. If the producer reaches the pipe-pause (low water) mark, or is incapable of fulfilling **PipePull** Messages for other reasons such as a malfunction, it SHOULD send a **PipePause** Message to the consumer. Once it has reached the pipe-resume (high water) mark, or the malfunction has been removed, it SHOULD send a **PipePush** Message to the consumer to inform the consumer that it can commence sending **PipePull** Messages. The consumer SHOULD send a **PipeClose** Message to the producer if the consumer does not require any further Resources.
- **"JMFPush"**: The producer initiates the pipe by sending a **PipePush** Message to its **ResourceLink /@PipeURL**. The producer MAY dispatch new resources by sending **PipePush** messages. If the consumer reaches the pipe-pause (high water) mark, or is incapable of fulfilling **PipePush** requests for other reasons such as a malfunction, it SHOULD send a **PipePause** message to the producer. Once it has reached the pipe-resume mark (low water), or the malfunction has been removed, it SHOULD send a **PipePull** to the producer to inform the producer that it can commence sending **PipePush** messages. The producer SHOULD send a **PipeClose** Message to the consumer if the producer cannot provide any further Resources.

When dynamic pipes are used, **@PipeResume** and **@PipePause** define the buffering parameters that lead to a Pipe control message to the remote device. The pipe control Messages described later in Section 5.10, “Messages for Pipe Control” are designed to establish communication between Processes at both ends of dynamic pipe, even if the corresponding Processes are spawned separately.

The following table summarizes the actions to be taken when the buffer in a dynamic pipe reaches a certain level “L”.

**Table 4-3: Actions generated when a dynamic-pipe buffer passes various levels (Sheet 1 of 2)**

PipeProtocol (sender)	Situation	Message	Description
JMFPull (consumer)	ready to process	PipePull	The consumer has processing or buffering available and therefore the producer SHOULD produce resources.
JMFPull (creator)	$L < @PipePause$	PipePause	The creator has no resources available and therefore the consumer SHALL refrain from sending PipePull messages.
JMFPull (creator)	$L > @PipeResume$	PipePush	Sufficient Resources have been produced by the creator and are ready for delivery to the consumer.
JMFPush (producer)	resources available	PipePush	Sufficient resources have been produced by the creator and are ready for delivery to the consumer. therefore the consumer SHOULD consume resources.

**Table 4-3: Actions generated when a dynamic-pipe buffer passes various levels (Sheet 2 of 2)**

PipeProtocol (sender)	Situation	Message	Description
JMFPush (consumer)	L > @PipePause	PipePause	The consumer has no processing or buffering space available and therefore the creator SHALL refrain from sending PipePush messages.
JMFPush (consumer)	L < @PipeResume	PipePull	The consumer has processing or buffering available and therefore the producer SHOULD commence sending PipePush Messages.

Dynamic pipes are initially dormant and SHALL be activated by an explicit request. If Resource/@PipeProtocol = "JMF", dynamic pipe requests MAY be initiated by both ends of the pipe. As soon as the Pipe has been initiated, actions that are required by the implied @PipeProtocol ("JMFPush" or "JMFPull") SHALL be applied. For example, a print Process might notify an off-line finishing Process when a certain amount is ready by sending a PipePush Message, or the printing Process might request a new plate by sending a PipePull Message.

#### 4.3.3.2 Pipes of Partitionable Resources

Pipes of Partitionable Resources MAY also define the granularity of the Resources that are considered to be one part by specifying the @PipePartIDKeys Attribute in the appropriate ResourceLink Element. For instance, a Partitioned **ImageSetting** Process could be defined for multiple Sheet separations, but a complete set containing all separations of both sides of a single Sheet would be sent to the pressroom as one pipe request. In this case, the value of **ExposedMedia/@PartIDKeys** would be "SheetName Side Separation" and the value of the ResourceLink/@PipePartIDKeys for the pipe would be "SheetName". The Resources specified in PipeParams SHOULD be reduced to only define the currently active parts. In the example above, only the selected @SheetName partition with all its @Side and @Separation partition leaves would be included in the message.

#### 4.3.3.3 Example JMFPush Sequence

This section illustrates the concept of dynamic pipes using the example of variable data near line finishing being controlled by a variable data digital press.

The exchange resource is a **Component** that is the output of the **DigitalPrinting** Combined Node and the input of a Combined **Folding** and **Stitching** booklet maker. The actual JMF messages are provided in Section O.5.3, "JMF XJMF Pipe Messages" on page 1276 with example digital finishing.

**Table 4-4: Event Sequence in Digital Finishing (Sheet 1 of 2)**

Direction	Type	PipeParams Description
P->C	PipePush Sheet 0/1; Cover; Set 0	Initialize Pipe
P->C	PipePush Sheet 0/5; Set 0	Next sheet
P->C	PipePush	Lots of next sheets
P->C	PipePush Sheet 4/7; Body; Set 35	Next sheet
P-<C	PipePause Sheet 4/7; Set 35	Paper Jam in finisher - destroys Set 34 and 35
P-<C	PipePull Sheet 0; Set 34	Restart at Page 0 of Doc 34
P->C	PipePush Sheet 0/3; Set 34	Restart Pipe
P->C	PipePush	Lots of next sheets
P->C	PipePause Sheet 4/7; Cover; Set 122	Paper Jam in printer - destroys Set 122
P-<C	PipePull Sheet 0; Set 122	Restart at Page 0 of Doc 34(optional)
P->C	PipePush Sheet 0; Set 122	Restart at Page 0 of Doc 122
P->C	PipePush	Lots of next sheets

**Table 4-4: Event Sequence in Digital Finishing (Sheet 2 of 2)**

Direction	Type	PipeParams Description
P->C	PipePush Sheet 2/3; Body; Set 221	Last sheet - note zero based counting for index
P->C	PipeClose	Done

#### 4.3.3.4 Comparison of Non-Dynamic and Dynamic Pipes

The ResourceLink between non-dynamic pipes provides the buffering parameters for the Process to which the ResourceLink belongs. Therefore, many Processes can link to the same pipe Resource. Furthermore, each Process has its own buffering parameters, whether it is a consumer or a producer. In order to control non-dynamic pipes, one master Controller SHALL control all Processes linked to the pipe Resource.

In contrast, dynamic pipes provide a URL address to control a Process at the other pipe end. Then the buffering parameters of the ResourceLink control the Process at the other end. In the case of dynamic pipes, no master Controller is needed to control the pipe. Control is accomplished by sending pipe Messages. If pipe Resources are linked to multiple consumers or producers, such as two finishing lines that consume the output of one press one palette at a time, it is up to implementation to ensure consistency of the Processes.

#### 4.3.4 Parallel Processing

While serial processing assumes that all Resources will be produced and consumed in a linear fashion, and while overlapping processing uses multiple Processes that work together to use and create Resources, there are times when it makes sense to run more than one Process simultaneously, creating a multi-pronged workflow. This kind of Process routing is known as parallel processing. Subsections of Jobs are spawned off so that Nodes can be executed individually and simultaneously by the appropriate Devices. Once the Processes are complete, the spawned Nodes are merged back into the original Job. The Output Resources of the merged Nodes become inputs for later Processes. For example, an insert could be produced independently of a cover, and both will be bound together later.

In parallel processing, Processes can be run in a coordinated parallel fashion by using independent Resources. An independent Resource is a Resource that is not shared between multiple Processes. ImplementationResources, for example, cannot be shared and are therefore always independent, and Consumable Resources and Quantity Resources can each be split to function as independent Resources. Individual Partitions of Partitionable Resources are independent and can be Processed in parallel. Read-only Resources, such as parameters, can be shared without any restrictions, and can, therefore, be used in read-only mode for parallel processing. Process chains created by the use of independent Resources are known as independent Process chains.

Parallel processing can proceed in one of two ways. Either a Controller can organize the JDF Nodes in a way that allows it to initiate parallel processing, or it can use the spawning-and-merging mechanism to field out chunks of the Job to execute simultaneously. If a Controller chooses the latter method, parent Nodes that contain independent Process chains can be spawned off and processed independently. For example, in order to improve production capacity, an Agent could split Consumable Resources and create independent Process chains in which each chain consumes its own Resource part. Afterwards, the Agent could submit one of the created Job Parts to a subcontractor and Process the other part with its own facilities.

Parallel processing is used only to process multiple aspects of a Job simultaneously; it is not used to process multiple copies of a JDF Job. In other words, a Job SHALL NOT be copied and sent to different Controllers for parallel processing. For more information about spawning of Jobs, see Section 4.4, “Spawning and Merging”.

#### 4.3.5 Iterative Processing

Some Processes, especially in the prepress area of production, cannot be described as a serial or parallel set of Process steps. Instead, a set of interdependent Processes is iterated in a non-deterministic order. These Processes are known as iterative Processes. For example, an advertisement is laid out that requires a photographic image. During the layout phase, changes are to be made to the color settings of the image, which is then reinserted to the layout. Changes such as these can be described in a high level fashion by defining a Resource *@Status* Attribute of "Draft". As long as an Input Resource to a Process has a *@Status* of "Draft", the *@Status* of the Output Resource SHALL NOT be "Available".

The **ResourceLink/@MinStatus** of a **ResourceLink** that links to a draft Input Resource SHALL be set to less than or equal "Draft" to state that a draft Input Resource is acceptable for a Process. Thus a prepress layout Process can be abstractly defined to work on draft Resources until an acceptable output has been achieved, but the output PDL file will not be used for printing until **@Status** is "Available" and no longer designated as a "Draft"

Iterative Processes can be set up in a formal fashion using dynamic pipes to convey parameter change requests or in an informal way that assumes that the operators of the various Processes have an informal communication channel. Both are described in greater detail below.

#### 4.3.5.1 Informal Iterative Processing

Informal iterative processing does not require a complete redefinition of the Resources needed at every iteration. This kind of processing is generally used in a creative workflow where a Job is defined and gets refined in a series of steps until it is completed. The information about the changes is transferred through channels that bypass **JDF**. Nonetheless, the description of these Processes in **JDF** is useful for accounting purposes, as the status of each Process might be monitored individually.

The **ResourceLink** Elements for informal processing contain an additional **@MinStatus** Attribute which SHALL be set to "Draft", but in all other ways they are identical to the **ResourceLink** Elements used in simple sequential processing. Furthermore, the Nodes run through the same set of phases as they would in sequential processing. Nodes are designated only as "Stopped" and not as "Completed" after being processed for an iterative cycle. They are marked as completed after their Output Resources lose their **@Status** of "Draft".

#### 4.3.5.2 Formal Iterative Processing

In formal iterative processing, all **ResourceLink** Elements between interacting Processes are dynamic pipes. Every request for a new Resource is initiated by a **PipePush** or **PipePull** Message that contains at least one **ResourceElement** with the updated parameters. This Resource is used by the Process, and the resulting new Output Resource can be consumed by the requesting Process. The **@Status** of "Draft" can be removed from a Resource by sending the creator a **PipeClose** Message that has the OPTIONAL **@UpdatedStatus** Attribute set to "Available". A Node can only reach a **@Status** of "Completed" if it has no remaining draft Resources. Another method to remove the draft status is to define a Node for an **Approval** Process that accepts draft Resources as inputs and has non-draft Resources representing the same entities as outputs.

### 4.3.6 Approval, Quality Control and Verification

In many cases, it is desirable to ensure that an executed Process or set of Processes have been executed completely and/or correctly. In the graphic arts industry this is verified by generating approvals and signing them. **JDF XJDF** allows modeling of the approval Process and modeling of the verification Processes by allowing an OPTIONAL **ApprovalSuccess** Input Resource in any Process.

The **Approval**, **QualityControl** and **Verification** Processes accept any Resource as input and output that Resource along with **ApprovalSuccess** Resource if approved. An **ApprovalSuccess** Resource SHALL NOT be set as "Available" unless it has been signed by an authorized person. For hard copy proofing, a Combined Process (e.g., ending with the **ImageSetting**, **ConventionalPrinting** or **DigitalPrinting** Process) generates the hard proof which is input to a separate **Approval** Process. For soft proofing, a Combined Process (ending with **Approval** Process) generates the soft proof which is approved by that **Approval** Process.

**JDF** provides a **QualityControl** Process to verify that the output of a Process fulfills certain quality criteria. This differs from the **Verification** Process, which verifies the completeness of a given set of Resources.

## 4.4 Spawning and Merging

**JDF** spawning is the process of extracting a **JDF Subnode** from a **Job** and creating a new, complete **JDF** document that contains all of the information needed to process the Subnode in the original **Job**. Merging is the process of recombining the information from a spawned **JDF** part with the original **JDF** **Job**, even after both documents have evolved independently. By using the mechanism for spawning and merging different parts of a **Job**, it is possible to submit **Job Parts** to distributed **Controllers**, **Devices**, other work areas or other work centers.

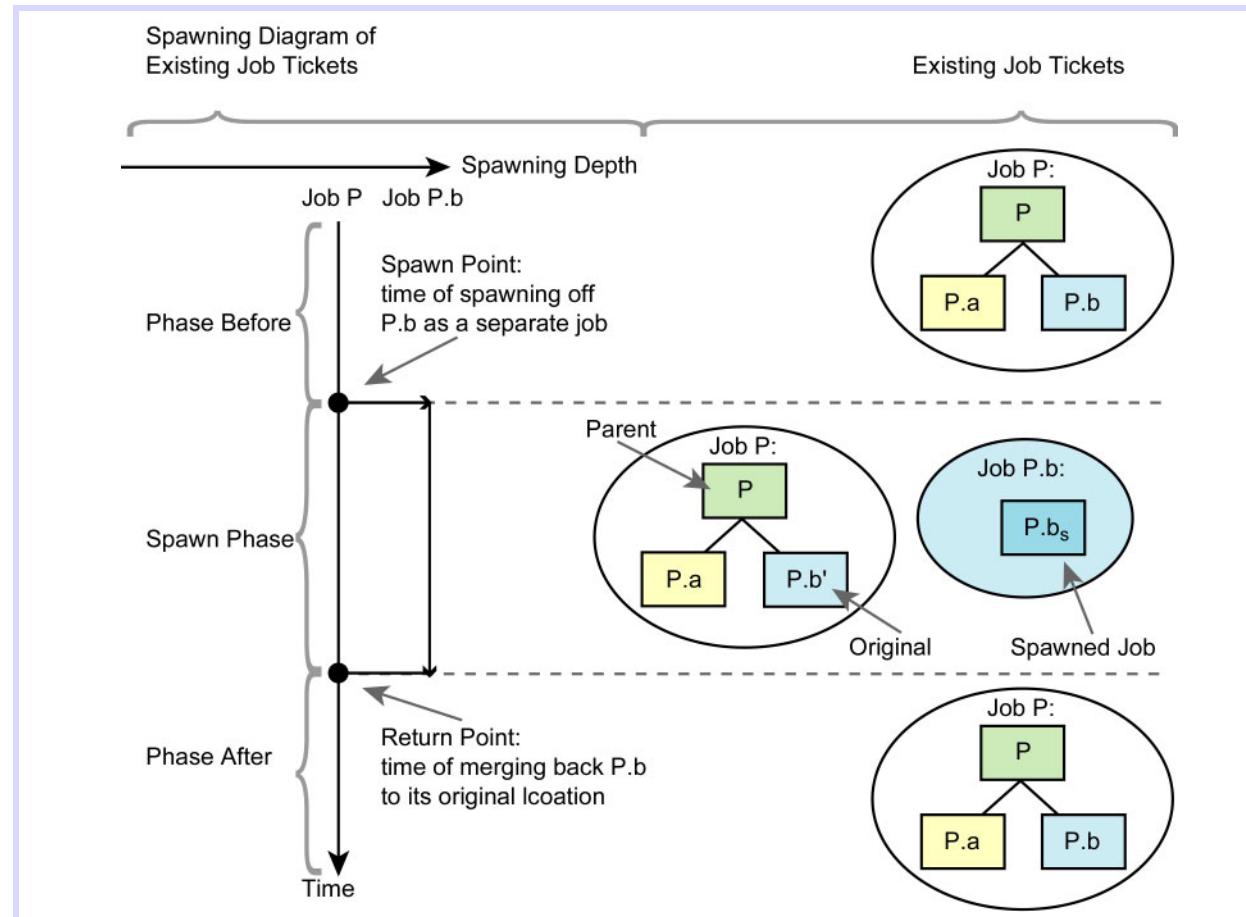
The JDF spawning-and-merging mechanism can be applied recursively, which means that subjects that have already been spawned can in turn spawn other sub-Subjobs and so on. However, a Node SHALL NOT be re-spawned. If a Node is to be spawned a second time, the previously submitted version SHALL first be deleted, and the spawning procedure SHALL be applied again to the original Node.

No matter how many Job Parts have been spawned, however, merging is realized by copying Nodes back to their original location and synchronizing the appropriate Resources. Therefore, each spawning SHALL be logged in the Job by the Agent performing the actions that result in a spawned JDF Node. Furthermore, in order to avoid inconsistent JDF states after merging, each merging SHALL be logged, or the appropriate **Spawned Audit Element** SHALL be removed from the **AuditPool Element**.

Figure 4-7 shows, schematically, the spawning and merging of a Subjob, designated as P.b. The following three phases are defined on a demonstrational time scale.

- 1 The first phase occurs before the Subjob is spawned off.
- 2 The second phase occurs during the spawn phase, when the spawned Subjob is executed separately.
- 3 The third phase occurs after the spawned JDF Node has been merged back into the original JDF Job.

**Figure 4-7: The spawning and merging mechanism and its phases**



The three phases of the Job Part are bordered by the spawning point and the merging point. On a Job scale, denoted as spawning depth in Figure 4-7, one Job ticket exists during the phases before and after spawning, and the following two Job tickets exist during the spawning phase: the Job with the **parent** (P) of the **original** JDF part (P.b', also denoted as a Subjob) that has been spawned; and the **spawned JDF Node** (P.b<sub>s</sub>) itself.

This section provides examples that outline the various ways in which spawning and merging can be applied. The following cases are considered in the next six sections.

- 1 Standard spawning and merging
- 2 Spawning and merging with Resource copying
- 3 Parallel spawning and merging of Partitioned Resources
- 4 Nested spawning and merging in reverse sequence
- 5 Spawning and merging of independent Job tickets
- 6 Simultaneous spawning and merging of multiple Nodes

JDF can support any combination of the cases described, but these six represent a cross-section of likely scenarios. Case one is the simplest of all of the cases and occurs in every instance of spawning and merging, regardless of the circumstances surrounding the Process. Each subsequent case requires additional processing that builds upon the processing described in the cases that precede it.

#### 4.4.1 Case 1: Standard Spawning and Merging

The actions described in this case SHALL be applied in every spawning and merging Process. All cases described in this chapter, as well as any other that might be invented, begin with these procedures.

##### Spawning

To indicate that a Process has been spawned, the *@Status* Attribute of the original JDF Node SHALL be set to the value "*Spawned*" (see Table 3-4, "JDF XJDF Node" on page 52). The *@Status* Attribute of the spawned Node remains unchanged.

A unique *@SpawnID* Attribute SHOULD be set in the spawned Node, and a copy of its value SHOULD be set in the *@NewSpawnID* of the newly created Spawns Audit Element. This simplifies bookkeeping of Audit Elements and merging in case a Node is multiply spawned, either due to error conditions or in parallel with individual Partitions. The value of *@SpawnID* SHOULD also be appended to the *@SpawnIDs* list of all spawned Resources.

In order to identify all of the ancestors of a Job that has been spawned, an AncestorPool Element is included in the Root Node of every spawned JDF Node. This Element contains an Ancestor Element that identifies every parent, grandparent, great-grandparent and so on of the spawned Subnode. In this way, the family tree of every spawned Node is tracked in an ordered sequence that allows an unbroken trace back through all predecessors. Consequently, the Elements that comprise the AncestorPool of a spawned JDF Node SHALL be copied into the AncestorPool Element of the newly spawned JDF Node before the ancestor information of the previously spawned JDF Node is appended to the AncestorPool Element of the newly spawned JDF Node. The last Ancestor Element in each AncestorPool is the parent, the second-to-last the grandparent and so on. **NodeInfo** and **CustomerInfo** Elements or reelements MAY be copied into the respective Ancestor Elements.

The complete ancestor information is REQUIRED in order to merge back semi-finished Jobs with nested spawns. If the last spawn is always merged first ("LIFO"—Last In, First Out), then knowing the direct parent is sufficient as each parent will in turn know its own parent back to the original and a complete ancestor line can be inferred.

When a Job is spawned, the action SHALL be logged in the parent Node of the spawned Node in the original Job. This is accomplished by creating a Spawns Element with the *@jRef* Attribute set to the ID of the spawned JDF Node. This Spawns Element SHALL be appended to the AuditPool container of the original parent Node. If no AuditPool container exists in the parent Node, one SHALL be created for the purpose.

##### Example 4-2: Family Tree of Spawns Nodes

The following code is an example of a family tree:

```
<AncestorPool>
  <Ancestor FileName="file:///grandparent.jdf" NodeID="p_01"/>
  <Ancestor FileName="file:///parent.jdf" NodeID="p_02"/>
</AncestorPool>
```

##### Merging

After processing, the spawned JDF Node SHALL be merged back to its original location. Before this can occur, however, duplicate information contained in any Elements (such as Comment) SHALL be deleted by the Agent execut-

ing the spawning and merging. Once this has been accomplished, the spawned Node is copied to the location of the original Node, completely overwriting the original Node. The *@Status* of the original Node is then overwritten with the result.

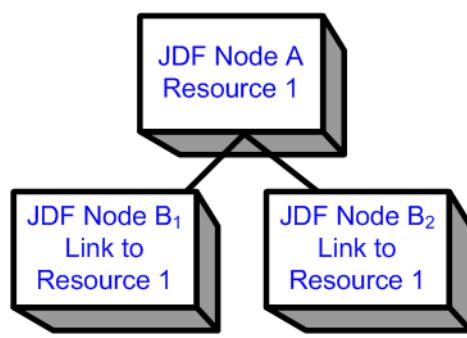
To complete the merging Process, the merging Agent SHALL add a Merged Audit Element to the AuditPool (see Section 3.16, “AuditPool and Audit”). The *@MergeID* of the Merged audit Element SHOULD be set to the value of the *@SpawnID* Attribute of the merged Node. Furthermore, the AncestorPool container with all child Elements SHALL be removed, and the value of *@SpawnID* SHOULD be removed from the *@SpawnIDs* Attribute of the appropriate Resources.

A JDF Agent that receives a JDF Node that has been spawned individually, and thus has no *Part* Element in the AncestorPool, MAY modify any Elements except for Resources that were spawned as read-only data.

#### 4.4.2 Case 2: Spawning and Merging with Resource Copying

The following figure represents an example of a Job that requires that Resources be copied during spawning. In this Job, the Nodes  $B_1$  and  $B_2$  are linked to the same Resource, which is localized in the ResourcePool of an ancestor Node, denoted as Node A. This Node is the parent Node.

**Figure 4-8: JDF Node structure that requires Resource copying during spawning and merging**



When Node  $B_1$  is spawned, its Resources SHALL also be duplicated. To accomplish this, the affected Resources SHALL be copied to the spawned JDF Node and purged during merging, a Process that is described below.

##### 4.4.2.1 Spawning of Resources with Inter-Resource Links

Resources are linked to a Node by three mechanisms.

- Explicit links defined by a *ResourceLink* in the *ResourceLinkPool* of the Node.
- Implicit links defined by the *ResourceRef* Elements of linked Resources (implicit links are recursive).
- Implicit links defined by the *ResourceRef* Elements of the *AuditPool* of the Node.

A spawning or merging Agent SHALL resolve all of these links by copying any non-local Resources into the local *ResourcePool*.

##### Spawning

Spawning begins as it did in Case 1. The affected Resources SHALL then be copied to the *ResourcePool* of the spawned JDF Node. The copied Resources retain the same *@ID* values as the original Resources. These Resources can be spawned for read-only access, which allows multiple simultaneous spawning of a Resource, or for read/write access, which allows only one spawning of a Resource. The read/write spawning of a Resource locks the Resource in the original file in order to avoid conflicts that result from simultaneous modification or reading and modification of a Resource. The *@SpawnStatus* Attribute of the original Resource SHALL be set to “*SpawnedRW*” (which stands for “spawned read/write”) or “*SpawnedRO*” (which stands for “spawned read-only”) to indicate that the Resource is spawned. In other words, a copy of the Resource is spawned together with the spawned JDF Node. Read/write access effectively locks the original Resources, just as if the Attribute *@Locked = “true”*<sup>1</sup> were present. If a Resource is spawned as read-only, it is not a good idea to modify the original Resource that remains in the parent Job ticket as this

might lead to inconsistencies, unless the JMF Resource Command Message is used to inform the Device or Controller that the Resource was spawned to. The *@Locked* Attribute of spawned Resources that are copied read-only SHALL also be set "*true*". Furthermore, the value of the *@ID* Attribute of each copied Resource SHALL be appended to the appropriate *@rRefsROCopied* or *@rRefsRWCopied* values of the Spawns Element that resides in the AuditPool of the parent Node.

## Merging

Merging begins as it did in Case 1. Each Read/Write Resource that has been copied for spawning SHALL be copied into its original location, completely overwriting the original Resource. If any Read-only Resource that has been copied for spawning, is not the identical to the original Resource, a JDF content error SHOULD be logged by a Notification Element of *@Class = "Error"* (see Section 4.6, "Error Handling"). The *@ID* Attributes of the overwritten Resources SHALL be specified in the *@rRefsOverwritten* Attribute of the Merged Element. The Merged Element is then inserted into the AuditPool container of the parent during the usual merging procedure, which is shown as the return point in the spawning diagram.

### 4.4.3 Case 3: Parallel Spawning and Merging of Partitioned Resources

In many cases, it is desirable to define a parallel workflow for Partitioned Resources. This is modeled by spawning a Node that defines the Process for each part that is to be processed individually.

## Spawning

Spawning begins as it did in Case 1 or Case 2. Then the spawning Agent SHALL loop over all ResourceLink Elements and ensure that the appropriate Part Element or Elements exist in any Resources in the spawned ticket, where only the individual parts are REQUIRED. This is accomplished either by adding Part Elements if none exist in ResourceLink Elements of the parent Node or by modifying the copies of existing Part Elements. Part Elements SHALL be included in all ResourceLink Elements that point to Resources that are spawned with write access. Part Elements MAY be included in ResourceLink Elements that point to Resources that are spawned with read only access (e.g., PhysicalResources where only a part is provided to a Process as input). In addition, copies of the Part Elements are appended to the Spawns Audit Element. The *@Status* of any Partitioned Resource is defined individually for each Partition. The *@Status* of the parent Node is set to "*Part*" and a **NodeInfo** Partition for the Partition of this spawn SHALL be created. **NodeInfo**/*@NodeStatus* of the Partition that describes the newly spawned Node is set to "*Spawned*".

Exactly one Part Element that contains the Partition Keys of this spawn and all Partition Keys of previous spawns SHALL be present in the AncestorPool of the spawned JDF Node.

The spawning procedure described in this section can be performed iteratively for multiple parts, effectively generating one Spawns Audit Element and one **NodeInfo** Partition per part. The Spawns and Merged audit Elements are not placed in the parent Node of the Node to be spawned, but rather in the Node itself.

An Agent that receives a JDF Node that has been spawned in parallel and thus has a Part Element in the AncestorPool SHALL NOT modify any Elements except for:

- Resources that were spawned with read-write permission, and
- Adding Audit Elements.

Synchronizing newly inserted JDF Subnode in spawned JDF Nodes is OPTIONAL.

## Merging

After an individual Partitioned spawned Node has been processed, it is merged back to the parent as described in Case 1. In addition, a copy of the Part Elements of the corresponding Spawns Audit Element is appended to the Merged Element and any read/write Resources are merged into their appropriate parts. The *@Status* of the spawned Node is copied into the appropriate PartStatus in the StatusPool.

An example of Partitioned Spawning and Merging can be found in Section O.3, "Spawning and Merging" on page 1265.

1. Usually Resources become locked (*@Locked = "true"*) if they are referenced by Audit Elements (see also Section 3.16, "AuditPool and Audit").

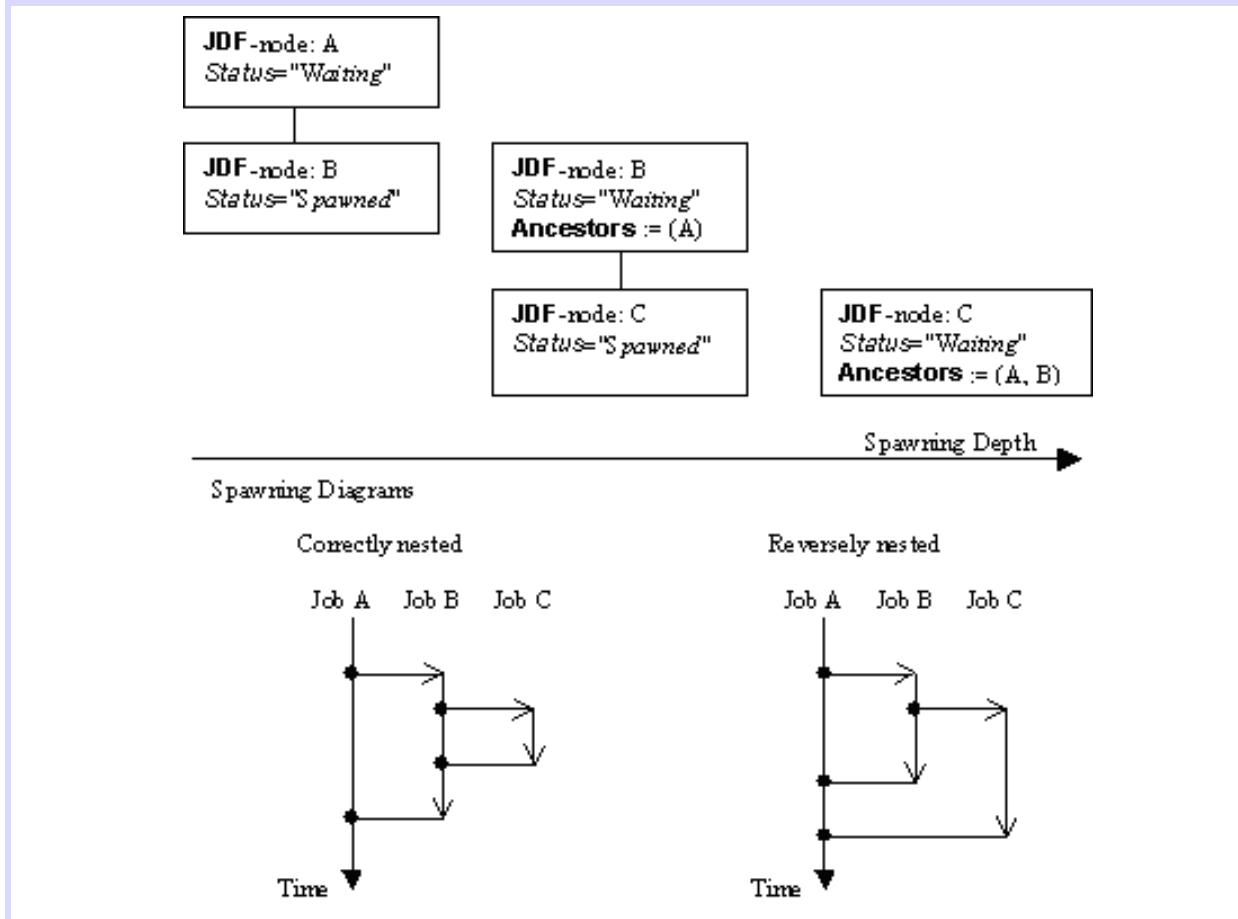
#### 4.4.4 Case 4: Nested Spawning and Merging in Reverse Sequence

Deprecated in JDF 1.2

Note that nested Spawning and Merging in Reverse Sequence has been deprecated because it is highly probable that applications implementing it will not interoperate.

Figure 4-9 shows an example of nested spawning and merging in reverse sequence. Process A spawns Node B, and Node B spawns Node C. Even if B is merged back to A for any reason before C is merged back to B, C still contains the information of its grandparent in the AncestorPool Element. In this way, C can trace back its ancestors and find the location of its parent, Node B, in Node A even though the spawned JDF Node, with B as Root Node, has already been deleted.

Figure 4-9: Example for a JDF Node structure with nested spawning



#### 4.4.5 Case 5: Spawning and Merging of Independent Jobs

Deprecated in JDF 1.5

**Deprecation note:** starting with JDF 1.5, the text from this section has been deprecated and moved to Section P.2.1, “Case 5: Spawning and Merging of Independent Jobs” on page 1309.

**Note:** starting with JDF 1.5, the objective of Spawning and Merging of Independent Jobs, ganging of Jobs, has been redefined as a separate Process. See Section 6.4.37, “SheetOptimizing” on page 386 for details on how to describe the collection of multiple Jobs onto a larger Job in order to increase production efficiency.

#### 4.4.6 Case 6: Simultaneous Spawning and Merging of Multiple Nodes

It is not possible to explicitly spawn multiple Nodes simultaneously into one JDF job ticket. The Nodes SHALL be grouped into a single Process Group Node. This Node can then be spawned and merged as described in the previous sections.

## 4.5 Node and Resource IDs

All Nodes and Resources SHALL contain a unique identifier, not only because it is important to be able to identify individual components of a Job, but also because JDF uses these IDs for internal linking purposes. Each Agent that creates Resources and Subnodes or that performs spawning and merging is responsible for providing IDs that are unique in the scope of the file, taking into account all of the phases of a Job's life cycle.

IDs come in two flavors: pure and composite. A **pure ID** is an ID that does not contain a period character ("."). A **composite ID** is made up of pure IDs separated by periods. IDs are used differently under different circumstances. Several different circumstances are described below.

**In case of no spawning.** If an Agent inserts new Elements requiring IDs into an original Job, then the Agent assigns pure IDs to the new Elements and SHALL guarantee their uniqueness.

**In case of single spawning.** If an Agent inserts new Elements into a spawned JDF Node, then the Agent creates composite IDs by using the ID of the Root Node and appending a unique pure ID delimited by a period. For example:

- ID of spawned Root Node: `@ID = "Job_01234.Proc1"`
- ID used for new Element: `@ID = "Job_01234.Proc1.newpureID"`

**In case of independent spawning.** The Agent that merges the independent Jobs beneath a Big Job inserts a unique, pure ID (delimited by a period) in front of all IDs of each Small Job it receives. That means that the Agent SHALL replace all IDs of each Job it receives whenever it encounters an ID collision. If an Agent inserts new Elements into a spawned JDF Node, then the Agent creates composite IDs by using the ID of the respective Root Node of the Small Job and appends a unique pure ID, delimited by a period. For example:

- ID of the Big Job with Node `@ID = "A"`
- Receives Small Job A<sub>1</sub> with some IDs: `@ID = "A" @ID = "A.A" @ID = "A.B"` where the first is the ID of the Root Node.
- Receives Small Job A<sub>2</sub> with some IDs: `@ID = "A" @ID = "A.A" @ID = "anything" ...`
- The Agent creates locally unique pure IDs: `@ID = "A1"` and `@ID = "A2"` each prefixed to all IDs of each received Small Job; the IDs of the Small Job A<sub>1</sub> become: `@ID = "A1.A" @ID = "A1.A.A" @ID = "A1.A.B"`, and the IDs of the Small Job A<sub>2</sub> become: `@ID = "A2.A" @ID = "A2.A.A" @ID = "A2.anything"`. All IDs in the Big Job are unique.
- The Agent creates a new Element added to the Small Job A<sub>1</sub> with ID: `@ID = "A1.A.C"`. Here the Agent SHALL resolve the possible conflict if it would append the pure ID = "A" to the root ID = "A1.A". That means the Agent has to check the uniqueness of each created ID.
- Before merging the Jobs back to their original location, the Agent SHALL remove the prefixed pure IDs of all IDs, here "A1", "A2" respectively. Then the newly created Element will be merged back with the `@ID = "A.C"`.

## 4.6 Error Handling

Error handling is an implementation-dependent feature of JDF-based systems. The AuditPool Element provides a container where errors that occur during the execution of a JDF Node are to be logged using Notification Elements. Notification Elements MAY also be sent in JMF messages. The content of the Notification Element is described in Table 3-44, "Notification Audit Element" on page 154. For a list of predefined error codes, see Appendix D, "Supported Error Codes in JMF XJMF and Notification Elements" on page 1151. Further details about error handling are provided in the next four sections.

### 4.6.1 Classification of Notifications

Notification Audit Elements are classified by the `@Class` Attribute. Every workflow implementation SHALL associate a Class with all events on an event-by-event basis. For values, see `Notification/@Class` in Table 3.16.3.7, "Notification" on page 153.

### 4.6.2 Event Description

A description of the event is given by a generic Comment Element, which is REQUIRED for the Notification Classes "*Information*", "*Warning*", "*Error*" or "*Fatal*". For example, after a Process is aborted, error

information describing a Device error MAY be logged in the **Comment** Element of the **Notification** Element. If phase times are logged, the **PhaseTime** Element that logged the transition to the "*Aborted*" state MAY also contain a local **Comment** Element that describes the cause of the Process abortion. **PhaseTime** and **Notification** Elements are OPTIONAL Subelements of the **AuditPool**, which is described in Section 3.16, "AuditPool and Audit".

### 4.6.3 Error Logging in the JDF File

A JDF-compliant Controller/Agent SHOULD log an error by inserting a **Notification** Element in the **AuditPool** of the Node that generated the error. The **NodeInfo** Resource MAY contain **NotificationFilter** Elements to define the notification events (or, more specifically, errors) that SHOULD be logged.

### 4.6.4 Error Handling via Messaging (JMF)

A JMF with a **Notification** Element in the Message body SHOULD be sent through all persistent channels that subscribed events of Class "*Error*". How to subscribe error events via JMF, see Section 5.4.4, "Persistent Channels" and Section 5.8.1, "Events". Note that this is different from the **NotificationFilter** Elements of the **NodeInfo** Resource, which is defined for logging events by **Notification** Elements to the **AuditPool**.

## 4.7 Test Running

In JDF, the notion of a test run is similar to the press notion of preflight. The goal is to detect JDF content errors and inconsistencies in a Job before the Job is executed.

The ability to perform a test run MAY be built into individual Devices or Controllers. Alternatively, a Controller implementation MAY perform test runs on behalf of its Devices. A test run MAY be routed through all of the different Devices and Controllers in a workflow, just as if the test run were a standard execution run. For the routing of Jobs and Nodes through different Devices and Controllers for a test, the spawning and merging mechanism MAY also be applied. The Devices/Controllers receiving a Job read and analyze it WITHOUT initiating execution. Rather, they investigate the content of the Node they would execute. A Device/Controller with Agent capabilities MAY record results into the **AuditPool** associated with a given Process.

During test running, the requirements of the Processes specified are compared to the capabilities of the Devices targeted. A Device or Controller explicitly tests if the REQUIRED inputs are actually present, valid and without errors. For example, an input requirement might be a URL that, when a test run is performed, is found to point to an item that no longer exists in that location. Test running is meant to prevent errors as a result of that kind of misinformation. It is particularly useful when running expensive or time-consuming Jobs.

It is also possible to test run specific parts of a workflow, or even individual Nodes. An Agent might request a test of certain Nodes by setting the JDF **@Activation** Attribute to "*TestRun*" (see Table 3-4, "JDF XJDF Node" on page 52), which is inherited by all descendent Nodes that are not inactive (**@Activation** = "*Inactive*"). If a Device or Controller<sup>1</sup> detects an error in a Node a **Notification** Element containing a textual description SHOULD be appended to the **AuditPool** Element of the Node in which the error occurred, and if messaging is supported, the error SHOULD be also communicated to the connected listeners via messaging. For more information, see Section 5.6, "Error and Event Messages". If an error has been detected, the Agent can modify the Job in order to correct the error. Once a test run has been completed successfully, the Device/Controller with Agent capabilities changes the **@Status** Attribute of the tested Node to "*Ready*". If a test run fails, the Device/Controller SHALL record the Process status as "*FailedTestRun*". After the test run has finished, the Agent SHOULD log the result by appending a **ProcessRun** Element to the **AuditPool** Element. For more information about **Audit** Elements, see Section 3.16, "AuditPool and Audit".

In principle, execution and test runs might be run simultaneously. For example, one Job Part could be executed while another part requests only a test. JDF also defines an **@Activation** value of "*TestRunAndGo*" that requests a test run and, upon successful completion, automatically initiates processing.

### 4.7.1 Resource Status During a Test Run

In order to test run a complete set of Nodes, it is sometimes necessary to imply the **@Status** of Resources that are produced by prior Nodes. Successful test running does *not* set the **@Status** Attribute of a Resource to "*Available*" unless the Resource actually is available. Nodes that require an Output Resource from a Node that

1. Note that only Devices and Controllers with Agent capabilities can write in a **JDF** document.

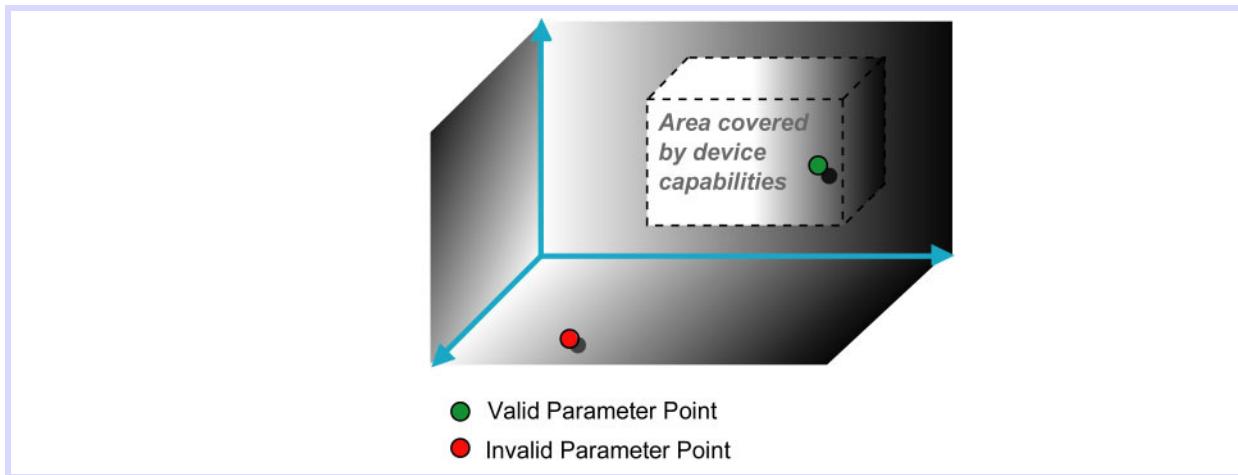
has completed test running for purposes of test running itself can assume that these Resources have a *@Status* of "Available" for the purpose of test running as long as the producing Node has a *@Status* of "Ready".

## 4.8 Capability and Constraint Definitions

New in JDF 1.1

While the **JDF** schema describes the structure of all **JDF** Nodes, it does not provide for a way to allow a specific **JDF** Device to provide details on how it subsets (or extends) the **JD** language. This ability is provided by the **JDF** Device Capabilities features. With it, a **JDF** Device can describe details on supported Processes, Resources, Attributes and Attribute Values (and details about constraints and their interaction).

**Figure 4-10: Parameter space in Device capabilities<sup>a</sup>**



a. Note that the restriction to three dimensions is for graphical demonstration purposes only.

A **JDF** Device's capabilities are described as a space of allowed Resource parameter values within **JDF** Nodes. A Device in this context is assumed to execute one or more **JDF** Nodes. Its capabilities are defined by the space of acceptable **JDF** Resources for the Product Intent or Process described by the Node. An individual **JDF** Node definition can be compared to the capabilities of a **JDF** Device by looping over all Resource parameters of a **JDF** Node that is to be executed by a Device. The Job can be executed as specified (Attributes can be ignored if the *@SettingsPolicy* is "BestEffort") if all Job parameter values are within the ranges specified by the capabilities. If the capabilities describe Product Intent, the Job is executable as specified when all Product Intent ranges overlap with the capabilities description.

Details of the Elements needed for capability description are specified in Chapter 9, "Device Capabilities" on page 949.

It is assumed that **Device** Resources that describe capabilities will be transported in **JMF XJMF KnownDevices** Messages. However, a **Device** Resource SHOULD NOT specify the capabilities of its associated **Device** if a **JDF** Node links to the **Device** in order to specify that the **Device** is intended to execute the Node.

A capabilities description can also provide information necessary for the construction of a user interface to allow entry of the values to use for a **JDF** Node. This includes specifying the **NMTOKEN**, enumeration or string values that are supported, hints for how to group features on the user interface, and macro definitions for features of the Device (allowing multiple **JDF** controls to be presented as a single user control).



# Chapter 5 JMF XJMF Messaging with the Job Messaging Format

## Introduction

A workflow system is a dynamic set of interacting Processes, Devices and MIS systems Controllers and Devices. For the workflow to run efficiently, these Processes Controllers and Devices need to communicate and interact in a well defined manner. Whereas XJDF will typically be submitted to a Device and only be returned after the process has been executed, XJMF messages MAY be exchanged at any time. Typical use cases for XJMF include but are not limited to: Messaging is a simple but powerful way to establish this kind of dynamic interaction. The JDF-based Job Messaging Format (JMF) provides a wide range of capabilities to facilitate interaction between the various aspects of a workflow, from simple unidirectional notification through the issuing of direct commands. This chapter outlines the way in which JMF accomplishes these interactions. The following list of use cases is considered:

- System setup
- Dynamic status and error tracking for Jobs and Devices
- Pipe control
- Device setup and Job changes
- Queue handling and Job submission
- Device Capability description

Both Controllers and Devices MAY support JMF. This support requires hosting by a HTTP(S) server. JMF Messages are most often encoded in pure XML, without an additional MIME Multipart wrapper. Only Controllers that support JDF Job submission via the Message channel SHALL support MIME for Messages.

JMF messaging uses a Bidirectional protocol — currently HTTP and HTTPS.

JDF messaging supports combining the JMF Message, the JDF Job ticket(s) to which it refers, and, possibly, the digital assets to which the JDF Job tickets refer into a single package. This chapter specifies the XML structure of XJMF. For details of the exchange protocol and data packaging, see section Section 11.4, “JDF XJDF and JMF XJMF Interchange Protocol” on page 1095. See Section 11.6, “JDF XJDF Packaging” on page 1102

## XJMF Modification Notes

The root element of the message package has been renamed from JMF to XJMF. This allows immediate identification of XJMF and aligns closely with XJDF.

Two JMF Families have been removed:

- 1 Registrations, i.e the request to the recipient of the Registration to send Command Messages to a Command recipient that is specified in Subscription. Registrations have been replaced by Command elements with embedded subscriptions. This follows the same model as Query elements with embedded subscriptions.
- 2 Acknowledges, i.e. asynchronous responses. The only valid asynchronous response is a Signal that may be subscribed to. Note that this does require all Queue submissions to be handled synchronously, but this has also been the case in JMF, where the Command/@AcknowledgeURL could be omitted, thus forcing the recipient to handle the message synchronously.

Message/@Type has been replaced by an explicit message element that is structured as the combination of message Family and Type. For instance



## JMF = ROI

In order to automate aspects of your production without JDF, your technical staff needs to become proficient in each of the command languages that each of your Devices employ. By only buying JDF-enabled Devices that use JMF as their control language, you only have to learn one new Device command language ... eventually, the only one your MIS staff will need.

**Example 5-1: Message Type vs Explicit Message Element**

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="JDFEditor" TimeStamp="2014-09-18T17:13:18+02:00"
      Version="1.5" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:type="JMFRootMessage">
  <Query ID="m_000000" Type="KnownMessages" xsi:type="QueryKnownMessages"/>
</JMF>
```

Is now encoded as:

```
<XJMF MaxVersion="2.0" SenderID="JDFEditor"
       TimeStamp="2014-09-18T17:10:29+02:00" Version="2.0" xmlns="http://www.CIP4.org/
       JDFSchema_2_0">
  <QueryKnownMessages ID="m_000000"/>
</XJMF>
```

This naming element structure allows a much cleaner XML schema definition and specification of the respective message elements.

Individual QueueEntry modification messages have been combined into a single ModifyQueueEntry Message.

All Pipe control messages have been combined into a single PipeControl Message.

## 5.1 JMF XJMF Root

JMF XJMF and JDF XJDF have inherently different structures. In order to allow immediate identification of Messages, JMF XJMF uses the unique name JMF XJMF as its own root-element name. XJMF elements SHALL contain one or more messages that provide more detailed information.

The root element of the XML fragment that encodes a Message, like the root element of a JDF an XJDF fragment, contains a series of predictable Attributes and instances of Message Elements. These contents are defined in the tables that follow and are illustrated in Figure 5-1. Message Elements are Abstract, as is indicated by the dashed line surrounding the Message Element in Figure 5-1

**Table 5-1: JMF XJMF Element (Sheet 1 of 3)**

Name	Data Type	Description
AgentName ? <small>New in JDF 1.4</small>	string	The name of the Agent application that generated the JMF XJMF. Both the company name and the product name MAY appear, and SHOULD be consistent between versions of the application.
AgentVersion ? <small>New in JDF 1.4</small>	string	The version of the Agent application that generated the JMF XJMF. The format of the version string MAY vary from one application to another, but SHOULD be consistent for an individual application.
DeviceID ?	string	Identifies the recipient Device or Controller. If @DeviceID is not specified, then the recipient of the Message is assumed to be the final recipient. If a Controller receives a Message which references a @DeviceID that does not match the Controller's @ControllerID, the Controller SHOULD attempt to pass the Message on to the correct Device. If the Controller is unable to pass the Message on, it SHOULD respond to the Message with Message Message/@ReturnCode = 121, "Unknown DeviceID". If a Device receives a Message with a @DeviceID that does not match its own, it SHOULD also respond to the Message with Response/@ReturnCode = 121.

**Table 5-1: JMF XJMF Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>DeviceID</i>  <a href="#">New in JDF 1.3</a>	NMTOKEN	String that identifies the sender Device, Controller or Agent. For a sender Device, the sender's <i>@DeviceID</i> . For a sender Controller, the sender's <i>@ControllerID</i> . <i>@DeviceID</i> SHALL match <b>Device</b> / <i>@DeviceID</i> of the <b>Device</b> Element that describes the Sender, e.g., when responding to a <b>KnownDevices</b> query. <i>@SenderID</i> / <i>@DeviceID</i> SHOULD be modified to the proxy Controller's <i>@ControllerID</i> / <i>@DeviceID</i> when a <b>JMF</b> an <b>XJMF</b> is passed through a proxy. See also <b>Message</b> / <i>@SenderID</i> in Table 5-2.
<i>ICSVersions</i> ?  <a href="#">New in JDF 1.3</a>	NMTOKENS	CIP4 Interoperability Conformance Specification (ICS) Versions that this JMF Message complies with. The semantics are identical to JDF/ <i>@ICSVersions</i> .  Values include those from: JDF/ <i>@ICSVersions</i> (Table 3-4, “JDF XJDF Node” on page 52).
<i>MaxVersion</i> ?  <a href="#">New in JDF 1.3</a>	JDFJMFileVersion	Maximum JDF version to be written by an Agent that modifies this Message. If not specified, an Agent that responds to the Message MAY write any version it is capable of writing. See Section 3.19, “JDF Versioning” for a discussion of versioning in JDF.
<i>ResponseURL</i> ?  <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>  <i>Unidirectional</i>	URL	URL of the direct response to this JMF. <i>@ResponseURL</i> is REQUIRED when using an unidirectional protocol that does not automatically provide a response channel (e.g., the file protocol). If <i>@ResponseURL</i> is specified, a Response SHALL be generated and written to <i>@ResponseURL</i> , even if no <i>ResponseTypeObj</i> is REQUIRED for the Message. The Response MAY be empty. It SHALL NOT be present when a bidirectional protocol is used (e.g., in HTTP). The URL SHALL be an explicit locator. It is up to the sending Agent to generate a unique locator for the response. Example: <i>"file:///master/JMFResponseFolder/Rip1/r12345.jmf"</i>  <b>Deprecation note:</b> unidirectional (file based) JMF has been deprecated.
<i>SenderId</i>	string	String that identifies the sender Device, Controller or Agent. For a sender Device, the sender's <i>@DeviceID</i> . For a sender Controller, the sender's <i>@ControllerID</i> . <i>@SenderId</i> SHALL match <b>Device</b> / <i>@DeviceID</i> of the <b>Device</b> Element that describes the Sender, e.g., when responding to a <b>KnownDevices</b> query. <i>@SenderId</i> SHOULD be modified to the proxy Controller's <i>@ControllerID</i> / <i>@DeviceID</i> when a <b>JMF</b> an <b>XJMF</b> is passed through a proxy. See also <b>Message</b> / <i>@SenderId</i> in Table 5-2.
<i>TimeStamp</i>	dateTime	Time stamp that identifies when the Message was created.
<i>Version</i>  <a href="#">Modified in JDF 1.2</a>	JDFJMFileVersion	Text that identifies the version of the JMF Message. The current version of this specification are "1.1", "1.2", "1.3", "1.4" and "1.5". The version of a JMF Message is defined by the highest version of the JMF Message itself or any child Element. For details on JDF versioning see Section 3.19, “JDF Versioning” on page 171.  Note that <i>@Version</i> was OPTIONAL before JDF 1.2, but is REQUIRED in instances that conform to JDF 1.2 and beyond. If not specified, the XML schema value for <i>@Version</i> SHALL default to "1.1".

**Table 5-1: JMF XJMF Element (Sheet 3 of 3)**

Name	Data Type	Description
<a href="#">xmlNs ?</a> <a href="#">New in JDF 1.1</a>	URI	JDF XJDF supports use of XML namespaces. The JDF XJDF namespace SHALL be declared. The value that applies to XJMF that adhere to this specification is "http://www.CIP4.org/XJDFSchema_2_0". For details on using namespaces in XML, see [XMLNS].
<a href="#">Employee ?</a> <a href="#">New in JDF 1.4</a>	element	Employee who created this Message.
<a href="#">Message +</a> <a href="#">Message +Modified</a> <a href="#">in JDF 1.4</a>	element	Abstract Message Message Element(s). If a JMF instance includes multiple Message Elements, the Messages SHALL be executed in XML order. <b>Modification note:</b> starting with JDF 1.4, Message order is relevant. One or more messages SHALL be provided. For a list of Messages, see Section 5.2, "List of All JMF XJMF Messages". The recipient SHALL process the Messages in XML order.

### 5.1.1 **Message**

The following table describes the contents of a Message. A Message is an abstract data type. Section 5.2, "List of All JMF XJMF Messages" provides a list of all message element instances.

### 5.1.2 Element: **Message**

The following table describes the contents of the Abstract Message Element. All Messages contain an @ID and a @Type Attribute.

**Table 5-2: Message Element (Sheet 1 of 2)**

Name	Data Type	Description
<a href="#">AgentName ?</a> <a href="#">New in JDF 1.4</a>	string	The name of the Agent application that generated the JMF. Both the company name and the product name MAY appear, and SHOULD be consistent between versions of the application. If not specified, defaults to the value of JMF/@AgentName.
<a href="#">AgentVersion ?</a> <a href="#">New in JDF 1.4</a>	string	The version of the Agent application that generated the JMF. The format of the version string MAY vary from one application to another, but SHOULD be consistent for an individual application. If not specified, defaults to the value of JMF/@AgentVersion.
<a href="#">Author ?</a>	string	Human readable description of the employee that entered the message.
<a href="#">DeviceID ?</a> <a href="#">New in JDF 1.4</a>	NMTOKEN	@DeviceID of the original sender of this Message Element. @DeviceID SHALL NOT be modified when a JMF is passed through a proxy. See also JMF/@DeviceID in Table 5-1.
<a href="#">ICSVersions ?</a> <a href="#">New in JDF 1.4</a>	NMTOKENS	CIP4 Interoperability Conformance Specification (ICS) Versions that this JMF Message complies with. The semantics are identical to JDF/@ICSVersions. If not specified, defaults to the value of JMF/@ICSVersions. <b>Values include those from:</b> JDF/@ICSVersions (Table 3-4, "JDF XJDF Node" on page 52).
<a href="#">ID</a>	ID	Identifies the Message.
<a href="#">PersonalID ?</a>	NMTOKEN	Identifier of the employee that entered the message.

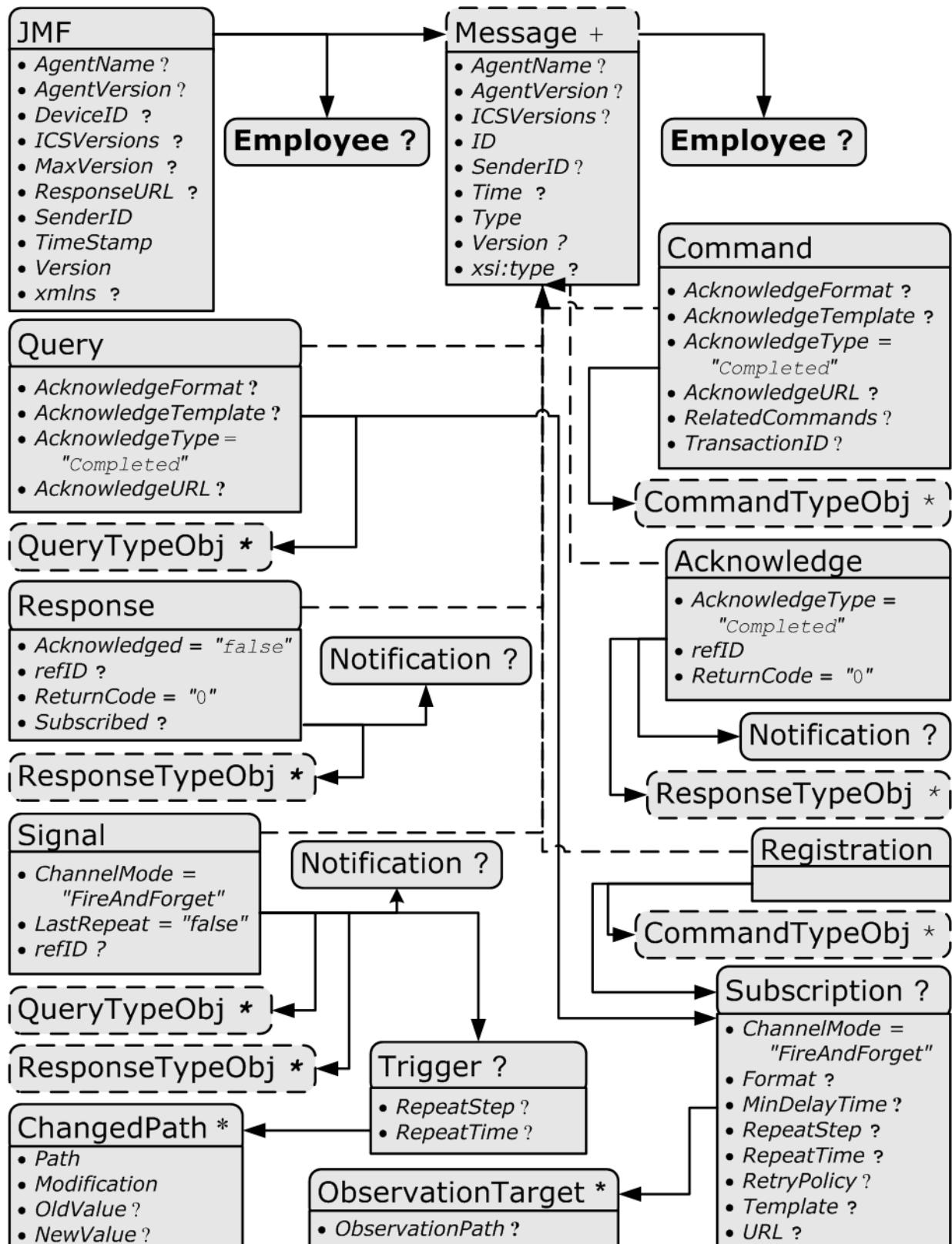
**Table 5-2: Message Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>SenderId</i> ? <a href="#">New in JDF 1.4</a>	string	@ <i>SenderId</i> of the original sender of this Message Element. If not specified, defaults to the @ <i>SenderId</i> of the parent JMF. @ <i>SenderId</i> SHALL NOT be modified when a JMF is passed through a proxy. See also JMF/@ <i>SenderId</i> in Table 5-1.
<i>Time</i> ?	dateTime	Time at which the Message was generated. This Attribute NEED NOT be specified unless this time is different from the time specified in the @ <i>TimeStamp</i> Attribute of the JMF Element. <b>Note:</b> when a proxy forwards Messages and creates a new JMF parent for a Message, it SHALL update @ <i>Time</i> to the value of the original JMF/@ <i>TimeStamp</i> if @ <i>Time</i> is not provided in the original Message.
<i>Type</i>	NMTOKEN	Name that identifies the Message type. Message types are described in the remainder of this chapter. <b>Values include those from:</b> Table 5-3, “List of JMF Messages” on page 205.
<i>Version</i> ? <a href="#">New in JDF 1.4</a>	JDFJMFVersion	Text that identifies the version of the JMF Message. The current version of this specification are "1.1", "1.2", "1.3" and "1.4". The version of a JMF Message is defined by the highest version of the JMF Message itself or any child Element. For details on JDF versioning see Section 3.19, “JDF Versioning” on page 171. If not specified, defaults to the value of JMF/@ <i>Version</i> .
<i>xsi:type</i> ? <a href="#">New in JDF 1.2</a>	NMTOKEN	Informs schema aware validators of the JMF Message type definition that the Message is to be validated against. The schema for this version includes definitions for all the standard JMF Messages defined in Section 5.7, “Message Template”. If omitted then a general definition for the JMF Message will be used. See Section 3.3, “JDF XJDF Node” on page 50.
<i>Employee</i> ? <a href="#">New in JDF 1.4</a>	element	Employee who created this Message. If not specified, defaults to the value of JMF/ <b>Employee</b> .

### 5.1.3 Structure Diagram

The following figure depicts the basic JMF XJMF messaging structure and the Message Families. Dashed boxes show abstract objects.

Figure 5-1: JMF Root Element – a diagram of its structure



## 5.2 List of All JMF XJMF Messages

Table 5-3: List of JMF Messages (Sheet 1 of 3)

Message Type	Family	Description
AbortQueueEntry	CR	The QueueEntry is aborted and remains in the Queue with QueueEntry/@Status = "Aborted".
CloseQueue	CR	The queue is closed. No Jobs are to be accepted by the queue.
Events <a href="#">Deprecated in JDF 1.5</a>	QRS	Used to subscribe pure events occurring randomly like scanning of a bar code, activation of function keys at a console, error Messages, etc.
FlushQueue	CQRS	All entries in the queue are removed.
FlushResources <a href="#">New in JDF 1.2</a>	CQRS	Remove temporary Resource from a Device.
ForceGang <a href="#">New in JDF 1.3</a>	CR	A gang is forced to execute.
GangStatus <a href="#">New in JDF 1.3</a>	CR	The status of a gang is queried.
HoldQueue	CR	The queue is held. No Jobs within the queue are to be executed.
HoldQueueEntry	CR	The entry remains in queue but is not executed until a ResumeQueueEntry Command Message is received.
KnownControllers <a href="#">Deprecated in JDF 1.5</a>	QRS	Returns a list of JMF-capable Controllers.
KnownDevices	QRS	Returns information about the Devices that are controlled by a Controller.
KnownJDFServices <a href="#">Deprecated in JDF 1.2</a>	QRS	Returns a list of services (JDF Node Types) that are defined in the JDF specification.
KnownMessages	QRS	Returns a list of all Messages that are supported by the Controller.
KnownSubscriptions <a href="#">New in JDF 1.4</a>	QRS	Returns a list of active persistent channels.
ModifyNode <a href="#">New in JDF 1.3</a>	CRS	<a href="#">modifies details of JDF Nodes.</a>
ModifyQueueEntry	CR	Modifies the properties of one or more QueueEntry elements.
NewJDF <a href="#">New in JDF 1.2</a>	CQRS	<a href="#">Initiates or reports modifications of new JDF Nodes.</a>
NodeInfo <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.3</a>	CQRS	Initiates or reports modifications of JDF Node information (e.g., scheduling).
Notification	S	Used to signal usual events due to any activities of a Device, operator, etc. (e.g., scanning a bar code).
Occupation <a href="#">Deprecated in JDF 1.5</a>	QRS	Queries the occupation of an employee.
OpenQueue	CR	The queue is opened. Jobs are to be accepted.
PipeControl	CR	All pipe related commands are implemented using the PipeControl message.

**Table 5-3: List of JMF Messages (Sheet 2 of 3)**

Message Type	Family	Description
PipeClose	CR	Closes a pipe because no further Resources are needed. This is typically used to terminate the producing Process.
PipePause	CR	Pauses a Process if no further Resources can be consumed or produced.
PipePull	CR	Requests a new Resource from a pipe.
PipePush	CR	Notifies that a new Resource is available in a pipe.
QueueEntryStatus <i>Deprecated in JDF 1.2</i>	QRS	Returns a QueueEntry Element.
QueueStatus	QRS	Returns the Queue Elements that describe a queue or set of queues.
RemoveQueueEntry	CR	A Job is removed from the queue.
RepeatMessages <i>Deprecated in JDF 1.5</i>	QR	Returns a set of previously sent Messages that have been stored by the Controller.
RequestForAuthentication <i>New in JDF 1.4</i>	CQRS	Used as a Command to exchange certificates or as a Query to obtain the authentication status of previously exchanged certificates.
RequestQueueEntry <i>New in JDF 1.2</i>	CR	A new Job is requested by the Device. This Message is used to signal that a Device has processing Resources available.
Resource	CGQRS	Queries and/or modifies <b>JDF XJDF</b> Resources that are used by a Device, such as Device settings, or by a Job. This Message can also be used to query the level of <b>Consumable Resource</b> Elements in a Device.
ResourcePull <i>New in JDF 1.2</i>	CGR	Creates a new QueueEntry from an already existing QueueEntry and submits it to the queue in order to be executed.
ResubmitQueueEntry	CR	Replaces a queue entry without affecting the entry's parameters. The command is used, for example, for late changes to a submitted <b>JDF XJDF</b> .
ResumeQueue	CR	The queue is activated and queue entries are to be executed.
ResumeQueueEntry	CR	A held Job is resumed. The Job is re-queued at the position defined by its current priority. Submission time is set to the current time stamp.
ReturnQueueEntry <i>New in JDF 1.2</i>	CR	Returns a Job that had been submitted with a SubmitQueueEntry to the queue that represents the Controller that originally submitted the Job.
SetQueueEntryPosition	CR	Queues a Job behind a given position n, where n represents a numerical value. "0" = pole position. Priority is set to the priority of the Job at position n.
SetQueueEntryPriority	CR	Sets the priority of a queued Job to a new value. This does not apply to Jobs that are already running.
ShutDown <i>New in JDF 1.2</i>	CR	Shuts down a Device.
Status	QRS	Queries the general status of a Device, Controller or Job.
StopPersistentChannel	CR	Closes a persistent channel.
SubmissionMethods	QR	Queries a list of supported submission methods to the queue.
SubmitQueueEntry	CR	A Job is submitted to a queue in order to be executed.

**Table 5-3: List of JMF Messages (Sheet 3 of 3)**

Message Type	Family	Description
SuspendQueueEntry <a href="#">New in JDF 1.2</a>	CR	The entry is suspended if it is already running. It remains suspended until a ResumeQueueEntry Command Message is received.
Track <a href="#">Deprecated in JDF 1.5</a>	QRS	Queries the location of a given Job or Job Part.
UpdateJDF <a href="#">New in JDF 1.3</a>	CRS	Synchronizes and relinks modified JDF Nodes.
WakeUp <a href="#">New in JDF 1.2</a>	CR	Wakes up a Device that is in standby mode.

**Table 5-4: List of XJMF Messages (Sheet 1 of 2)**

Messages	Description
CommandFlushResources QueryFlushResources ResponseFlushResources SignalFlushResources	Remove temporary Resource from a Device.
CommandForceGang ResponseForceGang	A gang is forced to execute.
CommandGangStatus ResponseGangStatus	The status of a gang is queried.
QueryKnownDevices ResponseKnownDevices SignalKnownDevices	Returns information about the Devices that are controlled by a Controller.
QueryKnownMessages ResponseKnownMessages SignalKnownMessages	Returns a list of all Messages that are supported by the Controller.
QueryKnownSubscriptions ResponseKnownSubscriptions SignalKnownSubscriptions	Returns a list of active persistent channels.
CommandModifyQueueEntry ResponseModifyQueueEntry	Modifies the properties of one or more QueueEntry elements.
QueryNotification ResponseNotification SignalNotification	Used to signal usual events due to any activities of a Device, operator, etc. (e.g., scanning a bar code).
CommandPipeControl ResponsePipeControl	All pipe related commands are implemented using the PipeControl message.
QueryQueueStatus ResponseQueueStatus SignalQueueStatus	Returns the Queue Elements that describe a queue or set of queues.
CommandRequestQueueEntry ResponseRequestQueueEntry	A new Job is requested by the Device. This Message is used to signal that a Device has processing Resources available.

**Table 5-4: List of XJMF Messages (Sheet 2 of 2)**

Messages	Description
CommandResource QueryResource ResponseResource SignalResource	Queries and/or modifies <b>JDF XJDF</b> Resources that are used by a Device, such as Device settings, or by a Job. This Message can also be used to query the level of <b>Consumable Resource</b> <b>Resource</b> Elements in a Device.
CommandResubmitQueueEntry ResponseResubmitQueueEntryl	Replaces a queue entry without affecting the entry's parameters. The command is used, for example, for late changes to a submitted <b>JDF XJDF</b> .
CommandReturnQueueEntry ResponseReturnQueueEntry	Returns a Job that had been submitted with a <b>SubmitQueueEntry</b> to the queue that represents the Controller that originally submitted the Job.
CommandShutDown ResponseShutDown	Shuts down a Device.
QueryStatus ResponseStatus SignalStatus	Queries the general status of a Device, Controller or Job.
CommandStopPersistentChannel ResponseStopPersistentChannel	Closes a persistent channel.
CommandSubmitQueueEntry ResponseSubmitQueueEntry	A Job is submitted to a queue in order to be executed.
CommandWakeUp ResponseWakeUp	Wakes up a Device that is in standby mode.

### 5.3 JMF XJMF Message Families

A Message **belongs to one of four message families**, contains one or more of the following six high level Elements, referred to as **Message Families**, in the Root Node. These families are **Query**, **Command**, **Signal**, **and Response**, **Acknowledge** and **Registration**. An explanation of each family is provided in the following sections, along with an encoding example.

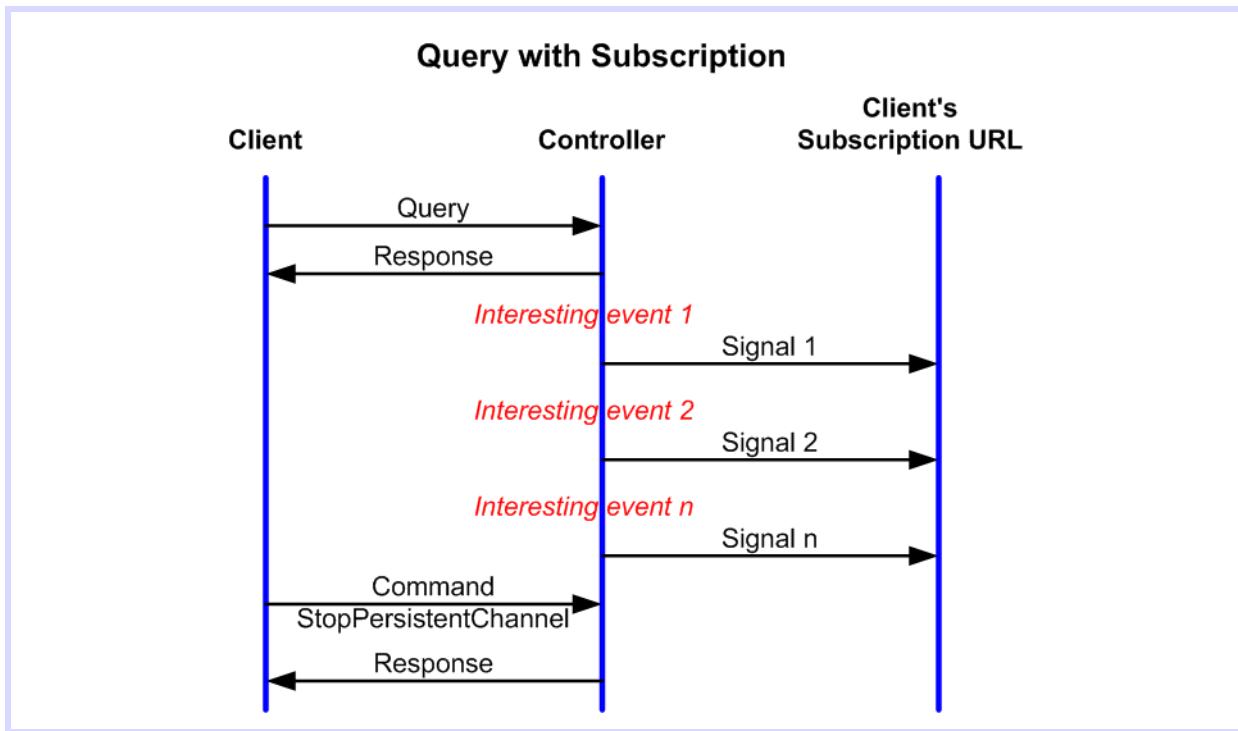
#### 5.3.1 Query

A **Query Element** is used as a Message that retrieves information from a **Controller Receiver** without changing the state of that **Controller Receiver**. For details of XJMF handshaking, see Section 11.5, “XJMF Handshaking”. A query is sent to a Controller. After a **Query Message** is sent, a **Response Message** is returned. If the **Query Message** included a **Subscription**, **Signal Messages** are sent to the designated URL until a **StopPersistentChannel Command Message** is sent.



#### Response & Acknowledgement

The terminology used for Message Families contradicts common usage but will be retained for backwards compatibility. The **Response** actually functions as an **Acknowledgement** that a **Command** will be acted upon, while the **Acknowledge** could more properly be named **Completion or Result**. The naming was defined to be consistent with HTTP naming conventions so that a **Response** is always transported on an HTTP response in case HTTP is used as the JMF transport protocol layer.

**Figure 5-2: Interaction of Messages with a Subscription**

The **Query** contains an **@ID** Attribute and a **@Type** Attribute, which it inherits from the Abstract Message type described in Table 5-2, “Message Element” on page 202. JMF supports a number of well defined query types, and each query type can contain additional descriptive Elements, which are described in Section 5.11 and Section 5.16. The Receiver SHALL synchronously respond to a **Query** with an XJMF that contains an Abstract Response of the same type as the **Query**. The following table shows the content of a **Query** Message Element:

**Table 5-5: Query Message Element (Sheet 1 of 2)**

Name	Data Type	Description
<b>AcknowledgeFormat</b> ? <small>New in JDF 1.3 Deprecated in JDF 1.5 Unidirectional</small>	string	A formatting string used with the <b>@AcknowledgeTemplate</b> Attribute to define a sequence of generated URLs. If <b>@AcknowledgeFormat</b> is specified, then <b>@AcknowledgeTemplate</b> SHALL also be specified and <b>@AcknowledgeURL</b> SHALL NOT be specified. <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.
<b>AcknowledgeTemplate</b> ? <small>New in JDF 1.3 Deprecated in JDF 1.5 Unidirectional</small>	string	A template, used with <b>@AcknowledgeFormat</b> , to define a sequence of generated URLs. The resulting set of URLs SHALL be qualified URLs and not a folder. If <b>@AcknowledgeTemplate</b> is specified, then <b>@AcknowledgeFormat</b> SHALL also be specified and <b>@AcknowledgeURL</b> SHALL NOT be specified. <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.

**Table 5-5: Query Message Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>AcknowledgeType</i> ?= "Completed" New in JDF 1.3	enumerations	Defines the actions to be acknowledged. This is necessary mainly for Device-Machine pairs where the Machine is not accessible online. <b>Allowed values are:</b> <i>Received</i> – The Query has been received and understood (e.g., by an operator). <i>Applied</i> – The Query has been applied to the Machine (e.g., by an operator). <i>Completed</i> – The Query has been completely responded to.
<i>AcknowledgeURL</i> ? New in JDF 1.3	URL	URL of the recipient of any Acknowledge. If specified, the command requests for an Acknowledge Message depending on the value of @AcknowledgeType. The protocol of the acknowledgement is specified by the scheme of @AcknowledgeURL.
<i>AgentName</i> ?	string	See Message/@AgentName.
<i>AgentVersion</i> ?	string	See Message/@AgentVersion.
<i>Author</i> ?	string	See Message/@Author.
<i>DeviceID</i> ?	NMTOKEN	See Message/@DeviceID.
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ICSVersions.
<i>ID</i>	ID	Identifies the Message.
<i>PersonalID</i> ?	NMTOKEN	See Message/@PersonalID.
<i>Time</i> ?	dateTime	See Message/@Time.
<i>QueryTypeObj</i> *	element	<b>Abstract</b> Element that is a placeholder for any descriptive Elements that provide details for the query. The Element type of QueryTypeObj is defined by the @Type Attribute of the <b>Abstract Message Message</b> Element.
<i>Subscription</i> ?Subscription ?	element	If specified creates a persistent channel. For the structure of a <b>Subscription</b> Element, see <a href="#">Section 5.4.4, “Persistent Channels”</a> <a href="#">Section 11.5.3, “Managing Persistent Channels.”</a>

### 5.3.1.1 Element: Subscription

A **Subscription** creates a persistent channel. See [Section 11.5.2, “Subscribing for Signals”](#) for details.

**Table 5-6: Subscription Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>ChannelMode</i> ? New in JDF 1.4	enumerations	Specifies reliability of persistent channel, and whether it is required or just preferred. Ordered list, with most preferred channel mode first. If none of the provided values of @ChannelMode are supported by the consumer of the subscription, the Response should indicate @ReturnCode 111, which is “Subscription request denied”. <b>Allowed values are from:</b> Signal/@ChannelMode. See Table 5.3.3, “Signal”.

**Table 5-6: Subscription Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Format</i> ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a> <i>Unidirectional</i>	string	A formatting string used with the <i>@Template</i> Attribute to define a sequence of generated URLs. <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171. <b>Constraint:</b> if <i>@Format</i> is specified, then <i>@Template</i> SHALL also be specified and <i>@URL</i> SHALL NOT be specified
<i>MinDelayTime</i> ? <a href="#">New in JDF 1.3</a>	duration	Minimum delay between two subsequent Signal Messages that are triggered by this Subscription. If not specified a Signal SHOULD be fired when any of the conditions described in Subscription is met. Note that Signal Messages that would be fired before <i>@MinDelayTime</i> are lost. <i>@MinDelayTime</i> SHOULD NOT be applied to Signal Messages that affect costing. Reliable Signal Messages SHALL NOT be retried more frequently than the interval specified by <i>@MinDelayTime</i> .
<i>RepeatStep</i> ?	integer	Requests an update signal whenever the <i>@ActualAmount</i> associated with the query is an integer multiple of <i>@RepeatStep</i> . If not specified, it is up to the sending Controller to generate signals.
<i>RepeatTime</i> ?	double	Requests an update Signal every <i>@RepeatTime</i> seconds. If defined, the Signal is generated periodically independent of any other trigger conditions. <i>@RepeatTime</i> SHALL NOT override any Signals triggered by a change of status. Signals triggered by a status change SHALL be sent regardless of the value of <i>@RepeatTime</i> . A Sender MAY restart counting for <i>@RepeatTime</i> based Signals whenever it sends a Signal to the same subscription.
<i>RetryPolicy</i> ? <a href="#">New in JDF 1.4</a>	enumeration	For reliable subscriptions. Indicates whether or not signals should be retried indefinitely, or only until the next Signal from the same Subscription (i.e., has the same <i>@refID</i> ) would be sent. <i>@RetryPolicy</i> is ignored for non-reliable subscriptions. <b>Allowed values are:</b> <i>DiscardAtNextSignal</i> – if a Signal has not been received, and it is time to send the next Signal related to this Subscription (the next Signal specifies the same <i>@refID</i> value), then discard the current Signal. <i>RetryForever</i> – Continue retrying every Signal indefinitely.
<i>Template</i> ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a> <i>Unidirectional</i>	string	A template, used with <i>@Format</i> , to define a sequence of generated URLs. <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171. <b>Constraint:</b> if <i>@Template</i> is specified, then <i>@Format</i> SHALL also be specified and <i>@URL</i> SHALL NOT be specified.
<i>URL</i> ? <a href="#">Modified in JDF 1.2</a>	URL	URL of the persistent channel receiving end. The protocol of the Subscription is specified by the scheme of <i>@URL</i> . <b>Note:</b> starting with JDF 1.5, this attribute is no longer specified as “ <i>Bidirectional</i> ” because unidirectional attributes are deprecated.
<i>ObservationTarget</i> *	element	Requests an updating Signal Message whenever the value of one of the Attributes specified in <i>ObservationTarget</i> changes.

### Example 5-2: Query Message

The following is an example of a Query Message:

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="Controller-1"
     TimeStamp="2005-07-25T11:38:23+02:00"
      MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <Query ID="M007" Type="KnownDevices" xsi:type="QueryKnownDevices"/>
</JMF>
```

### 5.3.2 Command

A Command Element is syntactically equivalent to a Query, but rather than simply retrieving information, it also causes a state change in the target Device receiver. A Command is used to change the state of the receiver. The receiver SHALL synchronously respond to a Command with an XJMF that contains a Response of the same type as the Command. For details of XJMF handshaking, see Section 11.5, “XJMF Handshaking”. The following table contains the contents of a Command Message. A Response Message is returned immediately after a Command. If the Command included an @AcknowledgeURL, and the Command was going to take a while, the Device Controller MAY select to return the Response Message with @Acknowledge = "true", and send an Acknowledge Message to the @AcknowledgeURL when the Command completes.

Table 5-7: Command Message Element Family (Sheet 1 of 2)

Name	Data Type	Description
<a href="#">AcknowledgeFormat</a> ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a> <i>Unidirectional</i>	string	A formatting string used with the @AcknowledgeTemplate Attribute to define a sequence of generated URLs. If @AcknowledgeFormat is specified, then @AcknowledgeTemplate SHALL also be specified and @AcknowledgeURL SHALL NOT be specified. <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.
<a href="#">AcknowledgeTemplate</a> ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a> <i>Unidirectional</i>	string	A template, used with @AcknowledgeFormat, to define a sequence of generated URLs. The resulting set of URLs SHALL be qualified URLs and not a folder. If @AcknowledgeTemplate is specified, then @AcknowledgeFormat SHALL also be specified and @AcknowledgeURL SHALL NOT be specified. <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.
<a href="#">AcknowledgeType</a> ?= <a href="#">"Completed"</a> <a href="#">New in JDF 1.1</a>	enumerations	Defines the actions to be acknowledged. This is necessary mainly for Device-Machine pairs where the Machine is not accessible online. <b>Allowed values are:</b> <i>Received</i> – The Command has been received and understood (e.g., by an operator). <i>Applied</i> – The Command has been applied to the Machine (e.g., by an operator). <i>Completed</i> – The Command has been executed.
<a href="#">AcknowledgeURL</a> ? <a href="#">Modified in JDF 1.2</a>	URL	URL of the recipient of any Acknowledge. If specified, the command requests for a Acknowledge Message depending on the value of @AcknowledgeType. The protocol of the acknowledgement is specified by the scheme of @AcknowledgeURL.
<a href="#">AgentName</a> ?	string	See Message/@AgentName.

**Table 5-7: Command Message Element Family (Sheet 2 of 2)**

Name	Data Type	Description
<i>AgentVersion</i> ?	string	See Message/@ <i>AgentVersion</i> .
<i>Author</i> ?	string	See Message/@ <i>Author</i> .
<i>DeviceID</i> ?	NMTOKEN	See Message/@ <i>DeviceID</i> .
<i>ICSVersions</i> ?	NMTOCKENS	See Message/@ <i>ICSVersions</i> .
<i>ID</i>	ID	Identifies the Message.
<i>PersonalID</i> ?	NMTOKEN	See Message/@ <i>PersonalID</i> .
<i>RelatedCommands</i> ? <u>New in JDF 1.4</u>	NMTOCKENS	A list of Command/@ <i>ID</i> values that need to be processed as a single transaction (in other words all Commands needs to succeed or all need to be rejected). The Commands SHALL be processed in the order specified by this attribute. This attribute SHALL only appear in the last Command of a transaction. An application SHOULD wait for a reasonable amount of time to collect all related Commands prior to failing a transaction.
<i>Time</i> ?	dateTime	See Message/@ <i>Time</i> .
<i>TransactionID</i> ? <u>New in JDF 1.4</u>	string NMTOKEN	The ID on the transaction the Command belongs to. All Commands with the same @ <i>TransactionID</i> SHALL either all succeed or all fail
CommandTypeObj *	element	Abstract Element that is a placeholder for any descriptive Elements that provide details of the command.

**Example 5-3: ResumeQueueEntry Command Message**

The following example demonstrates how a ResumeQueueEntry Command Message can cause a Job in a queue to begin executing:

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" DeviceID="A3 Printer"
      SenderID="MIS master A" TimeStamp="2000-07-25T12:32:48+02:00"
      MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <Command ID="M009" Type="ResumeQueueEntry" xsi:type="CommandResumeQueueEntry">
    <QueueEntryDef QueueEntryID="job-0032"/>
  </Command>
</JMF>
```

**Example 5-4: ResumeQueueEntry Response Message**

The following example shows a possible Response Message to the Command Message example above:

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="A3 Printer"
      TimeStamp="2000-07-25T12:32:48+02:00"
      MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <Response ID="M109" Type="ResumeQueueEntry" xsi:type="ResponseResumeQueueEntry"
            refID="M009">
    <Queue DeviceID="A3 Printer" Status="Full">
      <QueueEntry JobID="job-0032" QueueEntryID="job-0032" Status="Running"/>
    </Queue>
  </Response>
</JMF>
```

### 5.3.3 Signal

A **Signal** is a Message that a receiver of a **Query** with a subscription SHALL asynchronously send whenever the conditions specified in the **Subscription** are true.

Note: Signals are typically sent from a Device to a Controller. For details of XJMF handshaking, see Section 11.5, “XJMF Handshaking”. For details of setting up subscriptions for Signals, see Section 11.5.2, “Subscribing for Signals”. The following table shows the contents of a **Signal**.

A **Signal Element** is used as a Message, which is equivalent to a combination of a **Query Message** and a **Response Message**. It is a unidirectional Message sent on any event to other Controllers. This kind of Message can be used to automatically broadcast status changes.

Controllers can get **Signal Messages** in one of three ways. The first way is to subscribe for them with an initiating **Query Message** transmitted via a Message channel that includes a **Subscription Element**. The second way is to subscribe for them with an initiating **Query Message** defined in the **NodeInfo** Element of a **JDF Node** that also includes a **Subscription Element** (see **JMF Elements** in Section 8.98, “**NodeInfo**” on page 805). The first **Query Message** is transmitted separately via a mechanism such as HTTP, whereas the second is read together with the corresponding **JDF Node**. Once the subscription has been established, signals are sent to the subscribing Controllers via persistent channels. In both cases, however, the **Signal Message** contains a **@refID** Attribute that refers to the persistent channel. The value of the **@refID** Attribute identifies the persistent channel that initiated the **Signal**.

The third way in which a Controller can receive a signal is to have the signal channels hard-wired, for example, by a tool such as a list of Controller-URLs read from an initialization file. For example, signals MAY be generated independently when a service is started, or when sub-Controllers that are newly connected to a network want to inform other Controllers about their capabilities. Hard-wired signals, however, SHALL NOT have a **@refID** Attribute. If no **@refID** is specified, the corresponding query parameters SHALL be specified instead.

**Table 5-8: Signal Message Element Family (Sheet 1 of 2)**

Name	Data Type	Description
<i>AgentName</i> ?	string	See <b>Message/@AgentName</b> .
<i>AgentVersion</i> ?	string	See <b>Message/@AgentVersion</b> .
<i>Author</i> ?	string	See <b>Message/@Author</b> .
<i>ChannelMode</i> ?= "FireAndForget" <a href="#">New in JDF 1.4</a>	enumeration	Specifies reliability of the signal. <b>Allowed values are:</b> <i>FireAndForget</i> – the receiver of the Signal MAY respond using a JMF Response Message. <i>Reliable</i> – Indicates that the Signal is the result of a subscription where reliable signaling was specified in the <b>Subscription</b> Element. The receiver of the Signal SHALL respond using a JMF Response Message.
<i>DeviceID</i> ?	NMTOKEN	See <b>Message/@DeviceID</b> .
<i>ICSVersions</i> ?	NMTOKENS	See <b>Message/@ICSVersions</b> .
<i>ID</i>	ID	Identifies the Message.
<i>LastRepeat</i> ?= "false"	boolean	If "true", the persistent channel is being closed by the Device and no further Messages will be generated that fulfill the persistent channel criteria. If "false", further signals will be sent. For further details, see Section 5.4.4, “Persistent Channels”.
<i>PersonalID</i> ?	NMTOKEN	See <b>Message/@PersonalID</b> .
<i>refID</i> ?	NMTOKEN	Identifies the initiating <b>Query Message</b> that subscribed this <b>Signal Message</b> . Hard-wired signals SHALL NOT contain a <b>@refID</b> Attribute.
<i>Time</i> ?	dateTime	See <b>Message/@Time</b> .

**Table 5-8: Signal Message Element Family (Sheet 2 of 2)**

Name	Data Type	Description
Notification * <a href="#">Modified in JDF 1.5</a>	element	Textual description of the signal. The Notification Element SHOULD be provided if the severity of the event that caused this signal is greater than "Warning", or if pure events Notification JMF messages have been subscribed. See Section 3.16.3.7, "Notification". For details about subscribing pure events see Section 5.8.1, "Events". <b>Modification note:</b> starting with JDF 1.5, this element changes from optional to zero or more occurrences.
QueryTypeObj * <a href="#">Modified in JDF 1.4</a>	element	This Element is an Abstract Element and a placeholder for any descriptive Elements that provide details for the virtual Query, which, if sent, would convey the same ResponseTypeObj Elements. These Element types are the same as in the Query Message Element. If the QueryTypeObj is required in the corresponding Query, it SHALL also be specified in the Signal, even if the QueryTypeObj in the Subscription Message referred to by @refID completely defines the context. The Element type of QueryTypeObj is defined by the @Type Attribute of the Abstract Message Message Element.
ResponseTypeObj *	element	Abstract Element that is a placeholder for any descriptive Elements that provide details subscribed. These Element types are the same as in the Response Message Element.
Trigger ?	element	Describes the trigger event which caused this signal. The Trigger Element recalls some information provided during the Subscription of the Signal Messages. For details on subscribing signals see Section 5.4.4, "Persistent Channels".

### 5.3.3.1 Element: Trigger

The following table describes the structure of the Trigger Element.

**Table 5-9: Trigger Element**

Name	Data Type	Description
RepeatStep ?	integer	Recalls the @RepeatStep Attribute specified during Subscription of the signal. For details see Table 5-14.
RepeatTime ?	double	Recalls the @RepeatTime Attribute specified during Subscription of the signal. For details see Table 5-14.
Added ? <a href="#">Deprecated in JDF 1.2</a>	element	A pool that contains the description of trigger events caused by the adding of Elements like services, Controllers, Devices or Messages. Replaced by ChangedPath in JDF 1.2 and above. See Section P.3.1, "Signal" on page 1311 for details.
ChangedAttribute * <a href="#">Deprecated in JDF 1.2</a>	element	If a change of an Attribute triggered this signal, this Element describes the Attribute that changed. Replaced by ChangedPath in JDF 1.2 and above. See Section P.3.1, "Signal" on page 1311 for details.
ChangedPath * <a href="#">New in JDF 1.2</a>	element	If a change of an Attribute or Element triggered this signal, this Element describes the details of the Element or Attribute that changed.
Removed ? <a href="#">Deprecated in JDF 1.2</a>	element	A pool that contains the description of trigger events caused by the removal of Elements like services, Controllers, Devices or Messages. Replaced by ChangedPath in JDF 1.2 and above. See Section P.3.1, "Signal" on page 1311 for details.

### 5.3.3.2 Element: **ChangedPath**

[New in JDF 1.2](#)

The following describes the structure of the **ChangedPath** Element. **ChangedPath** replaces the **Added**, **ChangedAttribute** and **Removed** Elements.

**Table 5-10: ChangedPath Element**

Name	Data Type	Description
<i>Path</i>	XPath	XPath of the Element or Attribute that was modified.
<i>Modification</i>	enumeration	Specifies the modification that occurred with the object specified in <i>@Path</i> . <b>Allowed values are:</b> <i>Create</i> – The object was created. <i>Delete</i> – The object was deleted. <i>Modify</i> – The object was modified.
<i>OldValue ?</i>	string	Old value of the Attribute if <i>@Path</i> specifies an Attribute and <i>@Modification != "Create"</i> . The string SHALL be cast to the appropriate data type that depends on the Attribute's data type.
<i>NewValue ?</i>	string	New value of the Attribute if <i>@Path</i> specifies an Attribute and <i>@Modification != "Delete"</i> . The string SHALL be cast to the appropriate data type that depends on the Attribute's data type.

### Example 5-5: Signal Message

The following is an example of a Signal Message:

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="Press 45"
     TimeStamp="2005-07-25T12:28:01+02:00"
      MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<Signal ID="s123" Type="Status" xsi:type="SignalStatus">
    <StatusQuoParams JobID="42" JobPartID="66"/>
    <DeviceInfo DeviceStatus="Setup"/>
</Signal>
</JMF>
```

### 5.3.4 Response

A Response is a Message that a Receiver SHALL synchronously send to a Sender as a response to a Message. [For details of XJMF handshaking, see Section 11.5, “XJMF Handshaking”](#). A Response Element is used to reply to a Query or a Command and is always a direct answer of a Query or a Command. A Response Message is returned from a Controller to the Controller that submitted the Query or Command; however, Response Message(s) are not acknowledged themselves.

A Response Message indicates that a Query or Command has been received and interpreted. The Response of a Query or Commands with short latency also includes the information about the execution. An Query or Command with long latency MAY additionally generate a separate Acknowledge Message (see Section 5.3.5, “Acknowledge”) to broadcast the execution of the Query or Command. A Response SHOULD contain a Notification Element that describes the return status in text if *@ReturnCode* is greater than 0. A Response contains an Attribute called *@refID*, which identifies the initiating Query or Command. The following table shows the content of a Response Message.

A Signal with *@ChannelMode = "Reliable"* SHALL also be replied to with a Response.

**Table 5-11: Response Message Element Family**

Name	Data Type	Description
<i>Acknowledged</i> ?= "false"	boolean	Indicates whether the Command/Query will be acknowledged separately. If "true", an Acknowledge Message will be supplied after Command/Query execution. If "false", no Acknowledge Message will be supplied. If @Acknowledged="true", then no additional information other than protocol information, such as @AgentName, @ID and @refID SHALL be specified. "Real" information SHALL only be specified in the corresponding Acknowledge.
<i>AgentName</i> ?	string	See Message/@AgentName.
<i>AgentVersion</i> ?	string	See Message/@AgentVersion.
<i>Author</i> ?	string	See Message/@Author.
<i>DeviceID</i> ?	NMTOKEN	See Message/@DeviceID.
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ICSVersions.
<i>ID</i> ?	ID	Identifies the Message.
<i>PersonalID</i> ?	NMTOKEN	See Message/@PersonalID.
<i>refID</i> ? <i>Modified in JDF 1.2</i>	NMTOKEN	Copy of the @ID Attribute of the initiating Query Message or Command Message to which the Response Message refers. If not specified, the Response Message refers to the entire JMF Message XJMF (e.g., if the JMF XJMF was not parseable). Response/@Type is set to "Notification" if the @Type of the incoming Message is corrupted or unknown.
<i>ReturnCode</i> ?= "0"	integer	<i>@ReturnCode</i> summarizes the result of the Response. The value "0" indicates success. <i>@ReturnCode</i> SHALL be provided if an error occurred. For all other possible codes predefined values see Appendix D, "Supported Error Codes in JMF XJMF and Notification Elements" on page 1151. <b>Note:</b> additional values MAY be specified in ICS documents.
<i>Subscribed</i> ? <i>Modified in JDF 1.2</i>	boolean	If a Subscription element has been supplied by the corresponding query, this attribute indicates whether the Subscription has been refused or accepted. If "true", the requested Subscription is accepted. If "false", the Subscription is refused because the Controller does not support persistent channels. For details, see Section 5.4.4, "Persistent Channels".
<i>Time</i> ?	dateTime	See Message/@Time.
<i>Notification</i> * <i>Notification</i> <i>?Modified in JDF 1.5</i>	element	Additional information including textual description of the return code. The <b>Notification</b> Element SHOULD be provided if the @ReturnCode is greater than 0, which indicates that an error has occurred. See Section 3.16.3.7, "Notification" Section 5.8.7.4.1, "Notification". <b>Modification note:</b> starting with JDF 1.5, this element changes from optional to zero or more occurrences.
<i>ResponseTypeObj</i> *	element	<b>Abstract</b> Element that is a placeholder for any descriptive Elements that provide details queried for or details about command execution. If Response/@Acknowledged = "true", ResponseTypeObj Element(s) MAY be missing or incomplete in a Response.

### Example 5-6: Response Message for Query

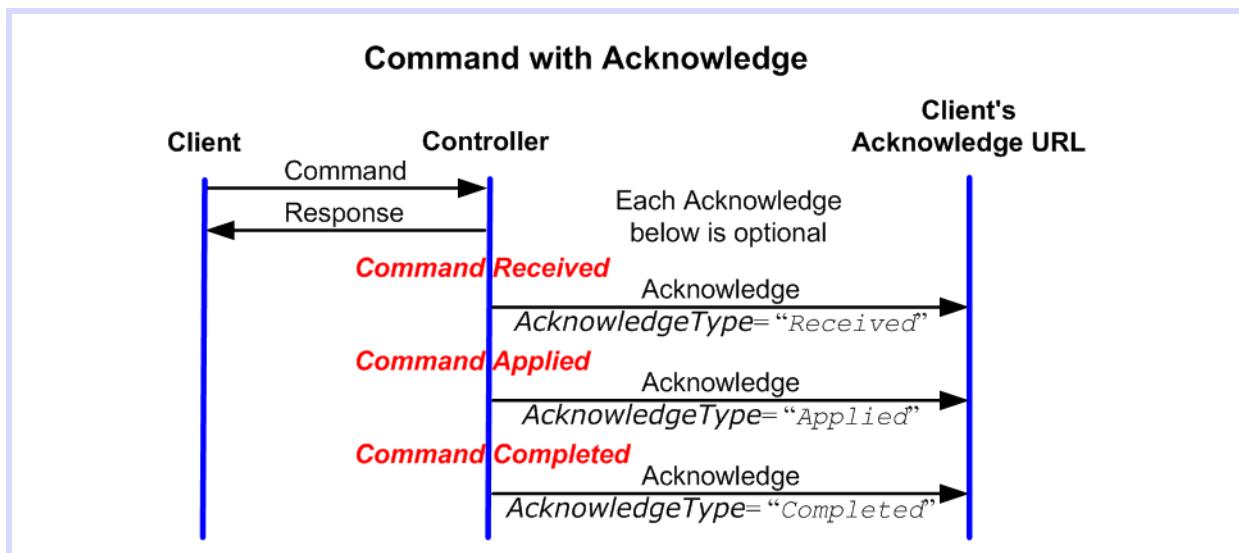
An example of a Response Message to a Command Message is provided in the Section 5.3.2, “Command”. The encoding example for the Query Message, shown above, might generate the following Response Message:

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="RIP-1"
      TimeStamp="2000-07-25T11:38:25+02:00"
      MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<Response ID="M107" Type="KnownDevices" xsi:type="ResponseKnownDevices"
           refID="M007">
  <DeviceList>
    <DeviceInfo DeviceStatus="Unknown">
      <Device DeviceID="Rip1"/>
    </DeviceInfo>
    <DeviceInfo DeviceStatus="Unknown">
      <Device DeviceID="Rip2"/>
    </DeviceInfo>
  </DeviceList>
</Response>
</JMF>
```

### 5.3.5 Acknowledge

An Acknowledge Element is a Message that is an asynchronous answer to a Command Message or Query Message issued by a Controller. Each Acknowledge Message is unidirectional and similar to a Response Message, and the `@refID` Attribute of each refers to the initiating command. Acknowledge Messages are generated if commands with long latency have been executed in order to inform the Command Message sender about the results. Acknowledge Messages are only generated if the initiating Command Message has specified the `@AcknowledgeURL` Attribute or a pair of `@AcknowledgeFormat` and `@AcknowledgeTemplate` Attributes.

Figure 5-3: Interaction of Command and Acknowledge Messages



They are announced in the Response Message to the Command Message by the setting the Attribute `@Acknowledged = "true"`.

**Table 5-12: Acknowledge Message Element**

Name	Data Type	Description
<i>AcknowledgeType</i> ?= "Completed" <u>New in JDF 1.1</u>	enumerations	Defines the context of this Message. This is necessary mainly for Device-Machine pairs where the Machine is not accessible online. <b>Allowed values are:</b> <i>Received</i> – The initiating Command has been received and understood (e.g., by an operator). <i>Applied</i> – The initiating Command has been applied to the Machine (e.g., by an operator). <i>Completed</i> – The initiating Command has been executed. No further acknowledgement will be sent after an acknowledgement with @AcknowledgeType = "Completed" has been sent.
<i>AgentName</i> ?	string	The name of the Agent application that generated the JMF. Both the company name and the product name MAY appear, and SHOULD be consistent between versions of the application. If not specified, defaults to the value of JMF/@AgentName.
<i>AgentVersion</i> ?	string	The version of the Agent application that generated the JMF. The format of the version string MAY vary from one application to another, but SHOULD be consistent for an individual application. If not specified, defaults to the value of JMF/@AgentVersion.
<i>ICSVersions</i> ?	NMTOKENS	CIP4 Interoperability Conformance Specification (ICS) Versions that this JMF Message complies with. The semantics are identical to JDF/@ICSVersions. If not specified, defaults to the value of JMF/@ICSVersions. <b>Values include those from:</b> JDF/@ICSVersions (Table 3-4, “JDF XJDF Node” on page 52).
<i>ID</i>	ID	Identifies the Message.
<i>refID</i>	NMTOKEN	Identifies the initiating Command Message that the Acknowledge refers to.
<i>ReturnCode</i> ?= "0"	integer	Describes the result. "0" indicates success. For all other possible codes see Appendix D, “Supported Error Codes in JMF XJMF and Notification Elements” on page 1151.
<i>SenderId</i> ?	string NMTOKEN	@SenderId of the original sender of this Message Element. If not specified, defaults to the @SenderId of the parent JMF. @SenderId SHALL NOT be modified when a JMF is passed through a proxy.
<i>Time</i> ?	dateTime	Time at which the Message was generated. This Attribute NEED NOT be specified unless this time is different from the time specified in the @TimeStamp Attribute of the JMF Element.
<i>Contact</i> ?	element	Employee who created this Message. If not specified, defaults to the value of JMF/Employee.
<i>Notification</i> ? <u>Modified in JDF 1.1A</u>	element	Textual description of the command execution. See Section 3.16.3.7, “Notification”.
<i>ResponseTypeObj</i> *	element	<b>Abstract</b> Element that is a placeholder for any descriptive Elements that provide details about command execution. Delayed Acknowledge Messages contain the same ResponseTypeObj Elements as direct Response Messages.

### Example 5-7: Acknowledge Message

The following is an example of an Acknowledge Message:

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="A3 Printer"
     TimeStamp="2000-07-25T12:32:48+02:00" MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <Acknowledge ID="M109" Type="PipePush" xsi:type="AcknowledgePipePush" refID="M010">
    <JobPhase JobID="J1" JobPartID="1" Status="InProgress"/>
  </Acknowledge>
</JMF>
```

### 5.3.6 Registration

New in JDF 1.3

A Registration Message is a request to the recipient of the JMF to send Command Messages to a Command recipient who is specified in Subscription. See Section 5.4.4.2, “Persistent Channels for Commands” for details on persistent channels for Commands.

**Table 5-13: Registration Message Element**

Name	Data Type	Description
<i>AgentName</i> ?	string	The name of the Agent application that generated the JMF. Both the company name and the product name MAY appear, and SHOULD be consistent between versions of the application. If not specified, defaults to the value of JMF/@ <i>AgentName</i> .
<i>AgentVersion</i> ?	string	The version of the Agent application that generated the JMF. The format of the version string MAY vary from one application to another, but SHOULD be consistent for an individual application. If not specified, defaults to the value of JMF/@ <i>AgentVersion</i> .
<i>ICSVersions</i> ?	NMTOKENS	CIP4 Interoperability Conformance Specification (ICS) Versions that this JMF Message complies with. The semantics are identical to JDF/@ <i>ICSVersions</i> . If not specified, defaults to the value of JMF/@ <i>ICSVersions</i> . <b>Values include those from:</b> JDF/@ <i>ICSVersions</i> (Table 3-4, “JDF XJDF Node” on page 52).
<i>ID</i>	ID	Identifies the Message.
<i>SenderId</i> ?	stringNMTOKEN	@ <i>SenderId</i> of the original sender of this Message Element. If not specified, defaults to the @ <i>SenderId</i> of the parent JMF. @ <i>SenderId</i> SHALL NOT be modified when a JMF is passed through a proxy.
<i>Time</i> ?	dateTime	Time at which the Message was generated. This Attribute NEED NOT be specified unless this time is different from the time specified in the @ <i>TimeStamp</i> Attribute of the JMF Element.
<i>CommandTypeObj</i> *	element	Abstract Elements that provide details of the Command that is setup by this Registration Message.
<i>Contact</i> ?	element	Employee who created this Message. If not specified, defaults to the value of JMF/ <i>Employee</i> .
<i>Subscription</i>	element	Creates a persistent channel for a Command. For the structure of a Subscription Element, see Section 5.4.4, “Persistent Channels”.

## 5.4 JMF Handshaking

JMF can seek to establish communication between system components in several ways. This section describes the actions and appropriate reactions in a communication using JMF.

### 5.4.1 Single Query/Command Response Communication

The handshaking mechanisms for queries and commands are equivalent. The initiating Controller sends a Query Message or Command Message to the target Controller. The target parses the Query or Command and immediately issues an appropriate Response Message. If a Command with long latency is issued, an additional Acknowledge Message MAY be sent to acknowledge when the command has been executed.

### 5.4.2 Signal and Acknowledge Handshaking

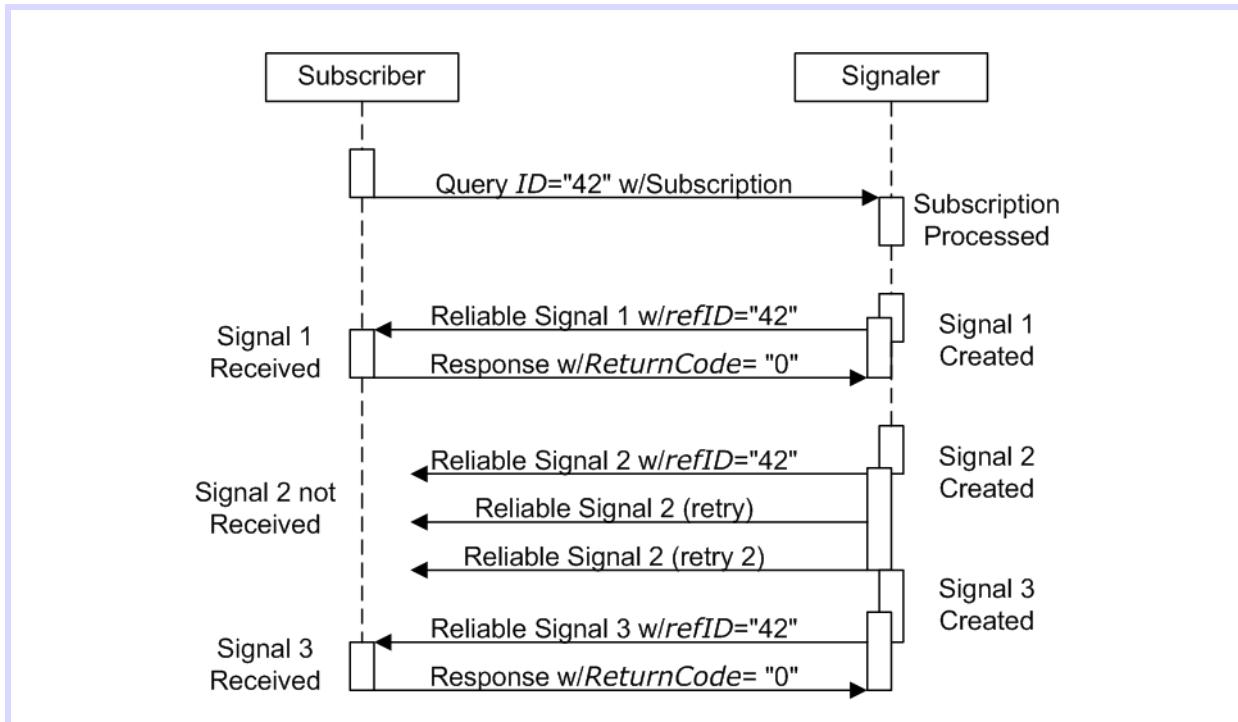
By default, JMF Signal Messages and Acknowledge Messages are “fire and forget.” In case of success, no Response Message is sent by the receiver besides the standard protocol HTTP response with an empty body. If an error occurred at the receiver’s end, the Signal or Acknowledge receiver SHOULD return an error Response Message as defined in Section 5.6, “Error and Event Messages” on page 225.

Any Response related to a Signal or Acknowledge Message SHALL NOT specify that an Acknowledge will be sent (the Acknowledged attribute SHALL be set to false). This is due to the fact that Signal and Acknowledge messages inherently forbid the use of an Acknowledge in Response, since they do not have an *@AcknowledgeURL* to indicate where these Acknowledge messages should be sent.

### 5.4.3 Reliable Signalling

If reliable signaling has been specified when the persistent channel is set up (see Table 5-14, “Subscription Element” on page 222), then the receiver of the JMF Signal SHALL respond to the Message using a JMF Response that indicates the appropriate value for the *@ReturnCode* Attribute. If the receiver does not respond to the reliable signal, the sender SHALL retry the reliable signal, based on the *@RetryPolicy* specified in the original Subscription Element. If a Response is received with a *@ReturnCode* value other than zero, then the Signal Message MAY have to be retried, depending on the Error/*@Resend* attribute in the Response.

Figure 5-4: Example of Reliable Signaling



## 5.4.4 Persistent Channels

Query and Command Messages are subscribed for using Subscription Elements.

### 5.4.4.1 Persistent Channels for Signals

Queries are made persistent by including a Subscription Element that defines the persistent channel-receiving end (see also Figure 5-1). The responding Controller SHOULD initially send a Response Message to the subscribing Controller. Then the responding Controller SHOULD send Signal Messages whenever the condition specified by one of the Attributes in the following table is true. This is referred to as a **persistent channel**. The `@refID` Attribute of the Signal is defined by the `@ID` Attribute of the Query. In other words, the `@refID` of the signal identifies the persistent channel. Any Query can be set up as a persistent channel, although in some cases this might not make sense.

### 5.4.4.2 Persistent Channels for Commands

New in JDF 1.3

Commands can also be subscribed for by using a Subscription Element in an initial Registration. A Subscription in a Registration defines a request for the initial Registration Message receiver to subsequently send Command Messages to the recipient defined in `Subscription/@URL` or `Subscription/@Format + Subscription/@Template`. For instance, an MIS might send a Registration to a prepress workflow system that directs the prepress workflow system to send Command Messages to a press Controller whenever a plate or preview has been produced.

## 5.4.5 Subscription

Whether or not a responding Controllers implements a JDF an XJDF Persistent Channel as an HTTP/1.1 [RFC2616] persistent connection depends on implementation.

**Table 5-14: Subscription Element (Sheet 1 of 2)**

Name	Data Type	Description
<code>ChannelMode</code> ? <a href="#">New in JDF 1.4</a>	enumerations	<p>Specifies reliability of persistent channel, and whether it is required or just preferred. Ordered list, with most preferred channel mode first.</p> <p>If none of the provided values of <code>@ChannelMode</code> are supported by the consumer of the subscription, the Response should indicate <code>@ReturnCode</code> 111, which is “Subscription request denied”.</p> <p><b>Allowed values are from:</b> <code>Signal/@ChannelMode</code>. See Table 5.3.3, “Signal”.</p>
<code>Format</code> ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a> <i>Unidirectional</i>	string	<p>A formatting string used with the <code>@Template</code> Attribute to define a sequence of generated URLs.</p> <p><b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.</p> <p><b>Constraint:</b> if <code>@Format</code> is specified, then <code>@Template</code> SHALL also be specified and <code>@URL</code> SHALL NOT be specified</p>
<code>MinDelayTime</code> ? <a href="#">New in JDF 1.3</a>	duration	<p>Minimum delay between two subsequent Signal Messages that are triggered by this Subscription. If not specified a Signal SHOULD be fired when any of the conditions described in Subscription is met. Note that Signal Messages that would be fired before <code>@MinDelayTime</code> are lost. <code>@MinDelayTime</code> SHOULD NOT be applied to Signal Messages that affect costing.</p> <p>Reliable Signal Messages SHALL NOT be retried more frequently than the interval specified by <code>@MinDelayTime</code>.</p>

**Table 5-14: Subscription Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>RepeatStep</i> ?	integer	Requests an update signal whenever the <i>@ActualAmount</i> associated with the query is an integer multiple of <i>@RepeatStep</i> . If not specified, it is up to the sending Controller to generate signals.
<i>RepeatTime</i> ?	double	Requests an update signal every <i>@RepeatTime</i> seconds. If defined, the signal is generated periodically independent of any other trigger conditions. <i>@RepeatTime</i> SHALL NOT override any Signals triggered by a change of status. Signals triggered by a status change SHALL be sent regardless of the value of <i>@RepeatTime</i> . A Sender MAY restart counting for <i>@RepeatTime</i> based Signals whenever it sends a Signal to the same subscription.
<i>RetryPolicy</i> ? <i>New in JDF 1.4</i>	enumeration	For reliable subscriptions. Indicates whether or not signals should be retried indefinitely, or only until the next Signal from the same Subscription (i.e., has the same <i>@refID</i> ) would be sent. <i>@RetryPolicy</i> is ignored for non-reliable subscriptions. <b>Allowed values are:</b> <i>DiscardAtNextSignal</i> – if a Signal has not been received, and it is time to send the next Signal related to this Subscription (the next Signal specifies the same <i>@refID</i> value), then discard the current Signal. <i>RetryForever</i> – Continue retrying every Signal indefinitely.
<i>Template</i> ? <i>New in JDF 1.2</i> <i>Deprecated in JDF 1.5</i> <i>Unidirectional</i>	string	A template, used with <i>@Format</i> , to define a sequence of generated URLs. <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171. <b>Constraint:</b> if <i>@Template</i> is specified, then <i>@Format</i> SHALL also be specified and <i>@URL</i> SHALL NOT be specified.
<i>URL</i> ? <i>Modified in JDF 1.2</i>	URL	URL of the persistent channel receiving end. The protocol of the Subscription is specified by the scheme of <i>@URL</i> . <b>Note:</b> starting with JDF 1.5, this attribute is no longer specified as “ <i>Bidirectional</i> ” because unidirectional attributes are deprecated.
<i>ObservationTarget</i> *	element	Requests an updating Signal Message whenever the value of one of the Attributes specified in <i>ObservationTarget</i> changes.

#### 5.4.5.1 Element: **ObservationTarget**

**Table 5-15: ObservationTarget Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Attributes</i> ? <i>Deprecated in JDF 1.2</i>	NMTOKENS	Requests an update signal whenever the value of one of the Attributes specified by <i>@Attributes</i> is modified. A value of “*” denotes a Message request for any Attribute change which is the default. <b>Deprecation note:</b> replaced with <i>@ObservationPath</i> in JDF 1.2 and above.

**Table 5-15: ObservationTarget Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>ElementIDs</i> ? <a href="#">Deprecated in JDF 1.2</a>	NMTOKENS	IDs of the Elements that contain Attributes that can change. Used only in conjunction with a query of the state change of a certain Resource or Node which cannot uniquely be addressed by the other Attributes of this Element. <b>Deprecation note:</b> replaced with <i>@ObservationPath</i> in JDF 1.2 and above.
<i>ElementType</i> ? <a href="#">Deprecated in JDF 1.2</a>	NMTOKEN	Name of the Element that contains Attributes that can change. Defaults to the abstract <i>ResponseTypeObj</i> of the Message. <b>Deprecation note:</b> replaced with <i>@ObservationPath</i> in JDF 1.2 and above.
<i>ObservationPath</i> ? <a href="#">New in JDF 1.2</a>	XPath	XPath of the Elements or Attributes that are observed. The XPath is in the context of the resulting <b>JMF XJMF</b> . If not specified, a <i>Signal</i> is emitted on any change in the abstract <i>ResponseTypeObj</i> of the Message.

If a Controller that does not support persistent channels is queried to set up a persistent channel, it SHALL answer the Query Message with a Response Message, set *@Subscribed* to "false", and set the *@ReturnCode* to "111". Multiple Attributes of a Subscription Element are combined as a Boolean OR operation of these Attributes. For instance, if *@RepeatStep* and *@ObservationTarget* are both specified, Messages fulfilling either of the requirements are requested. If the Subscription Element contains only a URL, it is up to the emitting Controller to define when to emit Messages.

## 5.4.6 Scope of Subscriptions

[New in JDF 1.5](#).

**Note:** in general, Subscriptions SHOULD be as global in scope as possible. For instance, it is preferable to create one global Status Subscription for all job related and job unrelated messages rather than creating a new Status Subscription for each individual queue entry.

**Deprecation note:** starting with JDF 1.5, support for job and queue entry specific subscriptions is deprecated.

## 5.4.7 Deleting Persistent Channels

A persistent channel is to be deleted by sending a *StopPersistentChannel* Command Message, as described in Section 5.8.10, "StopPersistentChannel".

## 5.5 JMF Messaging Levels

A JDF-conforming Controller MAY opt to support one of the following messaging compliance levels offered by JMF:

- **No messaging** — Controllers have the option of supporting no messaging at all. For this level, JDF includes Audit records for each Process that allow the results of the Process to be recorded.
- **Notification** — Most Controllers will choose to support some level of messaging capability. Notification is the most basic level of support. Devices that support notification provide unidirectional messaging by sending Signal Messages.

Notification Messages inform the Controller when they begin and complete execution of some Process within a Job. They MAY also provide notice of some error conditions. Setup of the notification channel is hard-wired.



- **Query support** — The next level of communication supports queries. Controllers that support queries respond to requests from other Controllers by communicating their status using such tools as current *@JobID* Attributes, queued *@JobID* Attributes or current Job progress.
- **Command support** — This level of support provides Controllers with the ability to Process commands. The Controller can receive commands, for instance, to interrupt the current Job, to restart a Job, or to change the status of Jobs in a queue.
- **Submission support** — Finally, Controllers MAY accept JDF Jobs via an HTTP post request to the messaging channel. In this case, the messaging channel SHALL support MIME Multipart/Related documents. For more details on submission, see Section 5.13.8, “SubmissionMethods”.

Each messaging level encompasses all of the lower messaging levels. Note that the Message levels are provided for information and are not normative.

## 5.6 Error and Event Messages

If an Acknowledge Message, Command Message, Query Message, or a Signal Message or a Registration Message is not successfully handled, a processor SHALL reply with a standardized error response that may SHOULD contain a Notification Element. Notification Elements, described in detail in Section 3.16.3.7, “Notification”, convey a textual description. The information contained in the Notification Element can SHOULD be used by a user interface to visualize errors.

The Response Messages and Acknowledge Messages contain a *@ReturnCode* Attribute. *@ReturnCode* defaults to 0, which indicates that the response is successful. In case of success and in responses to commands an informational Notification Element (*@Class* = “Information”) MAY be provided. In case of a warning, error or fatal error, the *@ReturnCode* is greater than 0 and indicates the kind of error committed. In this case, a Notification Element SHOULD be provided. Error codes are defined in Appendix D, “Supported Error Codes in JMF XJMF and Notification Elements” on page 1151. The responding application SHOULD fill additional Notification/Error Elements that describe the details of the error.

### Example 5-8: Response with Notification Element

The following example uses a Notification Element to describe an error:

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="A3 Printer"
     TimeStamp="2013-03-25T12:32:48+02:00"
      MaxVersion="1.5" Version="1.5"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<Response ID="M109" ReturnCode="5" Type="ResumeQueueEntry"
           xsi:type="ResponseResumeQueueEntry" refID="M009">
    <Notification Class="Error" TimeStamp="2005-03-25T12:32:48+02:00" Type="Error">
        <Comment>StartJob unsuccessful - Device does not handle commands</Comment>
        <Error ErrorID="1234" Resend="Prohibited">
            <ErrorData Path="/JMF/Command" ErrorType="Unsupported"/>
        </Error>
    </Notification>
</Response>
</JMF>
```

## 5.7 Message Template

The previous sections in this chapter provide a description of the overall structure of JMF Messages. This section contains a list of the standard Messages that are defined within the **JDF XJDF** framework. It is OPTIONAL for a **JDFAn XJDF**-compliant application to MAY support each **Signal Message** or **Query** message described in this list. It is, however, possible to discover which Messages are supported in a workflow. A Controller responds to the **KnownMessages** Query Message by publishing a list of all the Messages it supports (see Section 5.8.5, “KnownMessages”, below).

At the beginning of each section there is a table that lists all of the Message types in that category. These tables contain three columns. The first is entitled “Message Type,” and it lists the names of each Message type. The second

column is entitled “Family.” The values in this (family) column describe the kind of Message Element that is applicable in the circumstance being illustrated. The following abbreviations are used to describe the values used in the tables below to describe these major Message Element types. **Note:** That these are XML Elements that are direct children of the JMF Element.

C:	Command
G:	Registration (“G” is the third letter)
Q:	Query
R:	Response and Acknowledge
S:	Signal

Each explicit message element will be described in the respective message section. In case of traits that are inherited from abstract Command, Query, Signal or Response elements, the descriptions will be referenced.

More than one of these values can be valid simultaneously. If that is the case, then all applicable letters are included in the column. Additionally, there are a few special circumstances indicated by particular combinations of these letters. The letters “QR” or “CR” indicate that all Query Messages and Command Messages cause a Response Message to be returned. If the Message can occur as a Signal Message, either from a Subscription or independently, the “Family” field in the table also contains the letter “S”. Finally, the third column provides a description of each Element.

At the beginning of each section describing the contents and function of the Message types listed in the tables described above is a table containing the instantiation (i.e., the type) of all of the abstract Subelements applicable to the Message being described. Each table contains an entry that describes the details of the Query Message or Command Message as well as an additional entry that describes the details of the corresponding response. The tables resemble the following template:

**Table 5-16: Template for Message tables**

Object Type	Element Name	Description
Abstract Subelement type of the Query or Command.	Name and type of the Subelement that defines specifics of the Query Message or Command Message, followed by a cardinality symbol.	Short description of the Sub-element(s) if applicable.
Abstract Subelement type of the Response or Acknowledge.	Name and type of Subelement that contains specific information about the Response Message or Acknowledge Message to a Query Message or Command Message followed by cardinality symbol.	Short description of the Sub-element(s) if applicable.

### 5.7.1 Object Type Column

Each Message in the remainder of this chapter has two cells in the Object Type column. The first is either `QueryTypeObj` or `CommandTypeObj`. The second is always a `ResponseTypeObj`.

#### 5.7.1.1 `QueryTypeObj`

A `QueryTypeObj` is an abstract Element that is a placeholder for Subelements of a Query or Signal Message. See `Query/QueryTypeObj` (Table 5-5) and `Signal/QueryTypeObj` (Table 5-8). `QueryTypeObj` also appears in the first row of the Object Type column for each Query Message below. For each such Query Message, the corresponding Elements in the Element Name column are intended to replace the `QueryTypeObj` in `Query/QueryTypeObj` or `Signal/QueryTypeObj`.

#### 5.7.1.2 `CommandTypeObj`

A `CommandTypeObj` is an abstract Element that is a placeholder for Subelements of a Command or Registration Message. See `Command/CommandTypeObj` (Table 5-7) and `Registration/CommandTypeObj` (Table 5-13). `CommandTypeObj` also appears in the first row of the Object Type column for each Command Message below. For each such Command Message, the corresponding Elements in the Element

Name column are intended to replace the **CommandTypeObj** in **Command/CommandTypeObj** or **Registration/CommandTypeObj**.

### 5.7.1.3 **ResponseTypeObj**

A **ResponseTypeObj** is an abstract Element that is a placeholder for Subelements of a **Response**, **Signal** or **Acknowledge** Message. See **Response/ResponseTypeObj** (Table 5-11), **Signal/ResponseTypeObj** (Table 5-11) and **Acknowledge/ResponseTypeObj** (Table 5-12). **CommandTypeObj** also appears in the second row of the Object Type column for each Message below. For each such Message, the corresponding Elements in the Element Name column are intended to replace the **ResponseTypeObj** in the **Response/ResponseTypeObj**, **Signal/ResponseTypeObj** or **Acknowledge/ResponseTypeObj**.

## 5.8 Messages for Events and Capabilities

The Message types of the following table are defined in order to exchange metadata about Controller or Device abilities and for general communication.

**Table 5-17: Messages for events and capabilities**

Message type	Family	Description
Events <a href="#">Deprecated in JDF 1.5</a>	QRS	Used to subscribe pure events occurring randomly like scanning of a bar code, activation of function keys at a console, error Messages, etc.
KnownControllers <a href="#">Deprecated in JDF 1.5</a>	QRS	Returns a list of JMF-capable Controllers.
KnownDevices	QRS	Returns information about the Devices that are controlled by a Controller.
KnownJDFServices <a href="#">Deprecated in JDF 1.2</a>	QRS	Returns a list of services (JDF Node Types) that are defined in the JDF specification.
KnownMessages	QRS	Returns a list of all Messages that are supported by the Controller.
KnownSubscriptions <a href="#">New in JDF 1.4</a>	QRS	Returns a list of active persistent channels.
Notification	QRS	Generally sent as Signals. A Query allows Subscriptions for Notification Messages.
RepeatMessages <a href="#">Deprecated in JDF 1.5</a>	QR	Returns a set of previously sent Messages that have been stored by the Controller.
RequestForAuthentication <a href="#">New in JDF 1.4</a>	CQR	Used as a Command to exchange certificates or as a Query to obtain the authentication status of previously exchanged certificates.
StopPersistentChannel	CR	Closes a persistent channel.

**Table 5-18: Messages for events and capabilities (Sheet 1 of 2)**

Messages	Description
QueryKnownDevices ResponseKnownDevices SignalKnownDevices	Returns information about the Devices that are controlled by a Controller.
QueryKnownMessages ResponseKnownMessages SignalKnownMessages	Returns a list of all Messages that are supported by the Controller.

**Table 5-18: Messages for events and capabilities (Sheet 2 of 2)**

Messages	Description
QueryKnownSubscriptions ResponseKnownSubscriptions SignalKnownSubscriptions	Returns a list of active persistent channels.
QueryNotification ResponseNotification SignalNotification	Generally sent as Signals. A Query allows Subscriptions for Notification Messages.
CommandStopPersistentChannel ResponseStopPersistentChannel	Closes a persistent channel.

### 5.8.1 Events

Deprecated in JDF 1.5

Starting with JDF 1.5, the functionality of **Events** can be achieved using a subscription to **Notification Messages**. For details of the deprecated **Events** Message, see Section P.3.2, “Events” on page 1312.

### 5.8.2 KnownControllers

Deprecated in JDF 1.5

Starting with JDF 1.5, use **KnownDevices**. For details of the deprecated **KnownControllers** Message, see Section P.3.3, “KnownControllers” on page 1313.

### 5.8.3 KnownDevices

The **KnownDevices** Query Message requests information about the Devices that are controlled by a Controller. If a high level Controller controls lower level Controllers, it SHOULD also list the Devices that are controlled by these. The response is a **DeviceList** which is list of **DeviceInfo** Elements controlled by the Controller that receives the query, as demonstrated in Example 5-9.

**Table 5-19: KnownDevices Message**

Object Type	Element Name	Description
QueryTypeObj	DeviceFilter ?	Refines the list of Devices queried. Only Devices that match the <b>DeviceFilter</b> are listed. The default is to return a list of all known Devices.
ResponseTypeObj <u>Modified in JDF 1.1A</u>	DeviceList ?	The list of known Devices. <b>Modification note:</b> before JDF 1.1A this was “ <b>Device*</b> ”. It was changed due to inconsistencies of the inheritance model in the JDF schema.

#### Example 5-9: KnownDevices Response

TBD 2.x Example.

```
<Response ID="M1" refID="Q1" Type="KnownDevices" xsi:type="ResponseKnownDevices">
  <DeviceList>
    <DeviceInfo DeviceStatus="Unknown">
      <Device DeviceID="Joe SpeedMaster"
        DeviceType="Heidelberg SM102/6 rev. 47"/>
    </DeviceInfo>
  </DeviceList>
</Response>
```

### 5.8.3.1 **QueryKnownDevices**

**Table 5-20: QueryKnownDevices Message**

Name	Data Type	Description
<i>AgentName</i> ?	string	See Message/@ <i>AgentName</i> .
<i>AgentVersion</i> ?	string	See Message/@ <i>AgentVersion</i> .
<i>Author</i> ?	string	See Message/@ <i>Author</i> .
<i>DeviceID</i> ?	NMTOKEN	See Message/@ <i>DeviceID</i> .
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ <i>ICSVersions</i> .
<i>ID</i>	ID	See Query/@ <i>ID</i> .
<i>PersonalID</i> ?	NMTOKEN	See Message/@ <i>PersonalID</i> .
<i>Time</i> ?	dateTime	See Message/@ <i>Time</i> .
<i>DeviceFilter</i> ?	element	Refines the list of Devices queried. Only Devices that match the <i>DeviceFilter</i> are listed. The default is to return a list of all known Devices.
<i>Subscription</i> ?	element	See Query/Subscription.

#### 5.8.3.1.1 Element: **DeviceFilter**

#### 5.8.3.2 Element: **DeviceFilter**

The **DeviceFilter** Element refines the list of Devices that are requested to be returned. Only Devices that match all parameters of one of the **Device** Resources specified in the **DeviceFilter** Element are included.

**Table 5-21: DeviceFilter Element**

Name	Data Type	Description
<i>DeviceDetails</i> ?= <a href="#">"None"</a> <a href="#">New in JDF 1.1</a>	enumeration	<p>Refines the level of provided information about the Device.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>None</i> – Provide only <a href="#">DeviceInfo</a>/<a href="#">DeviceInfo/@DeviceID</a> and <a href="#">DeviceInfo</a>/<a href="#">DeviceInfo/@DeviceStatus</a>.</li> <li><i>Brief</i> – Provide all available Device information except for <b>Device</b> Elements.</li> <li><i>Modules</i> – ModuleStatus Elements are to be provided without module specific status details and without module specific employee information.</li> <li><i>Details</i> – Provide maximum available Device information excluding Device capability descriptions. Includes <b>Device</b> Elements which represent details of the Device.</li> <li><i>NamedFeature</i> – Provide maximum available Device information including limited Device capability descriptions. Includes <b>Device</b> Elements which represent details of the Device and <b>Device/DeviceCap/FeaturePool</b> Subelements which represent named features of the Device.</li> <li><i>Capability</i> – Provide <b>Device/DeviceCap</b> Subelements which represent details of the capabilities of the Device.</li> <li><i>Full</i> – Provide maximum available Device information including Device capability descriptions. Includes <b>Device</b> Elements which represent details of the Device.</li> </ul>
<i>Localization</i> ? <a href="#">New in JDF 1.2</a>	languages or "all"	If present, <i>@Localization</i> defines the language code(s) specifying the localization(s) to be returned for each Device (see the <b>DeviceCap</b> Subelement description for details of what entries are localized). If "all" is specified, then all localizations for the Device are returned. If not specified, no localizations are returned.
<b>Device</b> *	element	Only Devices that match the Attribute Values specified in one of these <b>Device</b> Resources are included. Devices match the criteria if the Attribute Values specified here in the <b>Device</b> Resource match the equivalent Attribute Values of the known Devices. Unspecified Attributes always match. If <b>Device</b> is not specified, all known <b>Device</b> Resources are returned. As this is a filter, only information that can be used to identify a Device SHALL be specified. This precludes use of <b>DeviceCap</b> and <b>IconList</b> in this <b>Device</b> . The data type of <b>Device</b> is <b>ResourceElement</b> . See Section 3.15.1, “ResourceElement – Subelement of a Resource” on page 113.

### 5.8.3.3 **ResponseKnownDevices**

**Table 5-22: ResponseKnownDevices Message (Sheet 1 of 2)**

Name	Data Type	Description
<i>AgentName</i> ?	string	See Message/ <i>@AgentName</i> .
<i>AgentVersion</i> ?	string	See Message/ <i>@AgentVersion</i> .
<i>Author</i> ?	string	See Message/ <i>@Author</i> .
<i>DeviceID</i> ?	NMTOKEN	See Message/ <i>@DeviceID</i> .

**Table 5-22: ResponseKnownDevices Message (Sheet 2 of 2)**

Name	Data Type	Description
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ <i>ICSVersions</i> .
<i>ID</i> ?	ID	See Response/@ <i>ID</i> .
<i>PersonalID</i> ?	NMTOKEN	See Message/@ <i>PersonalID</i> .
<i>refID</i> ?	NMTOKEN	See Response/@ <i>refID</i> .
<i>ReturnCode</i> ?	integer	See Response/@ <i>ReturnCode</i> .
<i>Time</i> ?	dateTime	See Message/@ <i>Time</i> .
<i>DeviceList</i> ?	element	The list of known Devices.
<i>Notification</i> ?	element	See Response/ <i>Notification</i> .

#### 5.8.3.3.1 Element: DeviceList

#### 5.8.3.4 Element: DeviceList

New in JDF 1.1A

The **DeviceList** Element contains a list of information about Devices that are returned.

**Table 5-23: DeviceList Element**

Name	Data Type	Description
<i>DeviceInfo</i> * <i>DeviceInfo</i> *	element	List of information about known Devices as requested by the <b>DeviceFilter</b> Element. For details of the <b>DeviceInfo</b> Element, see Table 5-94, “DeviceInfo Element” on page 283 in the Message description Section 5.9.9, “Status”.

#### 5.8.3.5 SignalKnownDevices

**Table 5-24: SignalKnownDevices Message**

Name	Data Type	Description
<i>AgentName</i> ?	string	See Message/@ <i>AgentName</i> .
<i>AgentVersion</i> ?	string	See Message/@ <i>AgentVersion</i> .
<i>Author</i> ?	string	See Message/@ <i>Author</i> .
<i>ChannelMode</i> ?	enumeration	See Signal/@ <i>ChannelMode</i> .
<i>DeviceID</i> ?	NMTOKEN	See Message/@ <i>DeviceID</i> .
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ <i>ICSVersions</i> .
<i>ID</i>	ID	See Signal/@ <i>ID</i> .
<i>PersonalID</i> ?	NMTOKEN	See Message/@ <i>PersonalID</i> .
<i>refID</i> ?	NMTOKEN	See Signal/@ <i>refID</i> .
<i>Subscribed</i> ?	boolean	See Query/@ <i>Subscribed</i> .
<i>Time</i> ?	dateTime	See Message/@ <i>Time</i> .
<i>DeviceList</i> ?	element	The list of known Devices.

## 5.8.4 KnownJDFServices

Deprecated in JDF 1.2

In JDF 1.2 and beyond, **KnownJDFServices** has been replaced with **KnownDevices** and **@DeviceDetails = "Capabilities"**. See Section P.3.6, “KnownJDFServices” on page 1319 for the details of this deprecated Message.

## 5.8.5 KnownMessages

The KnownMessages Query Message returns a list of all Message types that are supported by the Controller.

**Table 5-25: KnownMessages Message**

Object Type	Element Name	Description
QueryTypeObj	KnownMsgQuParams ?	Refines the query for known Messages. If not specified, list all supported Message types.
ResponseTypeObj	MessageService *	Specifies the supported Messages. Multiple MessageService Elements MAY be specified for a Message with a given JMF/@Type.

### 5.8.5.1 QueryKnownMessages

**Table 5-26: QueryKnownMessages Message**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID	ID	See Query/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
Time ?	dateTime	See Message/@Time.
KnownMsgQuParams ?	element	Refines the query for known Messages. If not specified, list all supported Message types.
Subscription ?	element	See Query/Subscription.

#### 5.8.5.1.1 Element: KnownMsgQuParams

#### 5.8.5.2 Element: KnownMsgQuParams

The flags of the KnownMsgQuParams Element specify the Message Families to include in the response list. Multiple flags are allowed. KnownMsgQuParams is a filter that specifies the details of the returned MessageService elements.

**Table 5-27: KnownMsgQuParams Element (Sheet 1 of 2)**

Name	Data Type	Description
ChannelMode ? <u>New in JDF 1.4</u>	enumerations	Limits the list based on supported channel modes for the Message. <b>Allowed values are from:</b> Signal/@ChannelMode. See Table 5-8, “Signal Message Element Family”.

**Table 5-27: KnownMsgQuParams Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Exact ?= "false"</i> <small>New in JDF 1.1</small>	boolean	Requests an exact description of the known Messages. If "true", the response also contains the requested DevCaps of the Messages and FileSpec(Schema) that references a schema.
<i>ListCommands ?= "true"</i>	boolean	Lists all supported Command types.
<i>ListQueries ?= "true"</i>	boolean	Lists all supported Query types.
<i>ListRegistrations ?= "true"</i> <small>New in JDF 1.3</small>	boolean	Lists all supported Registration Message types.
<i>ListSignals ?= "true"</i>	boolean	Lists all supported Signal types.
<i>Persistent ?= "false"</i>	boolean	If "true", only lists Messages that can use persistent channels. If "false", ignores the ability to use persistent channels.

### 5.8.5.3 **ResponseKnownMessages**

**Table 5-28: ResponseKnownMessages Message**

Name	Data Type	Description
<i>AgentName ?</i>	string	See Message/@AgentName.
<i>AgentVersion ?</i>	string	See Message/@AgentVersion.
<i>Author ?</i>	string	See Message/@Author.
<i>DeviceID ?</i>	NMTOKEN	See Message/@DeviceID.
<i>ICSVersions ?</i>	NMTOKENS	See Message/@ICSVersions.
<i>ID ?</i>	ID	See Response/@ID.
<i>PersonalID ?</i>	NMTOKEN	See Message/@PersonalID.
<i>refID ?</i>	NMTOKEN	See Response/@refID.
<i>ReturnCode ?</i>	integer	See Response/@ReturnCode.
<i>Time ?</i>	dateTime	See Message/@Time.
<i>MessageService *</i>	element	Specifies the supported Messages. Multiple MessageService Elements MAY be specified for a Message with a given JMF/@Type.
<i>Notification ?</i>	element	See Response/Notification.

#### 5.8.5.3.1 Element: **MessageService**

#### 5.8.5.4 Element: **MessageService**

The response is a list of MessageService Elements, one for each supported Message type. The flags of the MessageService Response Message Element are set in each MessageService entry. They define the supported usage of the Message by the Controller. Note that no @Response Attribute is included in the list, since the capability to process one of the other Message Families implies the capability to generate an appropriate Response Message. Multiple flags are allowed.

**Table 5-29: MessageService Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Acknowledge ?= "false"</i> <small>New in JDF 1.1</small>	boolean	If "true", the Device supports asynchronous Acknowledge answers to this Message.
<i>ChannelMode ?</i> <small>New in JDF 1.4</small>	enumerations	Specifies the supported channel modes for the Message. <b>Allowed values are from:</b> Signal/@ChannelMode. See Table 5-8, "Signal Message Element Family".
<i>Command ?= "false"</i>	boolean	If "true", the Message is supported as a Command.
<i>GenericAttributes ?</i> <small>New in JDF 1.3</small>	NMTOKENS	List of generic Attributes that are supported and unrestricted by the Device implementation. Descriptions of Attributes that appear in State Elements (see the following Section 9.1.7, "State") overwrite the description in @GenericAttributes, which SHALL NOT be specified if KnownMsgQuParams/@Exact = "false".
<i>JMFRole ?</i> <small>New in JDF 1.3</small>	enumeration	The role of the Device that responds with the <b>MessageServiceMessageService</b> . <b>Allowed values are:</b> <i>Receiver</i> – The Device that responds to KnownMessages receives and responds to the Message specified in @Type. This <b>MessageServiceMessageService</b> specifies Query Messages, Signal Messages, Command Messages and Registration Messages that the Device understands. <i>Sender</i> – The Device that responds to KnownMessages is the originator of the Message specified in @Type. This <b>MessageServiceMessageService</b> specifies Response Elements and Acknowledge Elements that the Device understands as a Response to the Messages that it has sent.
<i>Persistent ?= "false"</i>	boolean	If "true" the Message is supported as a persistent channel.
<i>Query ?= "false"</i>	boolean	If "true" the Message is supported as a Query.
<i>Registration ?= "false"</i> <small>New in JDF 1.3</small>	boolean	If "true" the Message is supported as a Registration Message.
<i>Signal ?= "false"</i>	boolean	If "true" the Message is supported as a Signal.
<i>Type</i>	NMTOKEN	Type of the supported Message. Extension types are specified by stating the namespace prefix in @Type <b>Values include those from:</b> Message/@Type.Name of the supported Message element, e.g. QueryKnownMessages. Additional information MAY be specified in FileSpec(Schema).
<i>URLSchemes ?</i> <small>New in JDF 1.3</small>	NMTOKENS	List of schemes supported for the Message defined by this <b>MessageServiceMessageService</b> . <b>Values include:</b> <i>file</i> – The file scheme according to [RFC1738] and [RFC3986]. <i>http</i> – HTTP (Hypertext Transport Protocol) <i>https</i> – HTTPS (Hypertext Transport Protocol – Secure)

**Table 5-29: MessageService Element (Sheet 2 of 2)**

Name	Data Type	Description
ActionPool ? <a href="#">New in JDF 1.3</a>	element	Container for zero or more Action Elements for use as constraints. For details on Action Elements, see Section 9.1.2, “ActionPool” on page 953. ActionPool SHALL NOT be specified if KnownMsgQuParams/@Exact = “false”.
DevCapPool ? <a href="#">New in JDF 1.3</a>	element	Pool of DevCap Elements that can be referenced from multiple Elements within the DeviceCap structure. DevCapPool SHALL NOT be specified if KnownMsgQuParams/@Exact = “false”.
DevCaps * <a href="#">New in JDF 1.1</a>	element	Specifies the restrictions of the parameter space of the supported Messages. For details on using DevCaps, see Section 9.1.5, “DevCaps”. DevCaps SHALL NOT be specified if KnownMsgQuParams/@Exact = “false”.
<b>FileSpec(Schema) ?</b>	element	Reference to an XML schema description of the XJMF capabilities of the Device.
ModulePool ? <a href="#">New in JDF 1.3</a>	element	Pool of ModuleCap Elements that specify the availability of a given Module. See Section 9.1.4.1, “ModuleCap” on page 955 for details of ModuleCap. ModulePool SHALL NOT be specified if KnownMsgQuParams/@Exact = “false”.
State * <a href="#">New in JDF 1.4</a>	element	State Elements that define the parameter space that is covered by the Device. One State Element SHALL be defined for each supported Attribute of the JDF Node that is not specified @GenericAttributes or implied by @TypeExpression or @Types.
TestPool ? <a href="#">New in JDF 1.3</a>	element	Container for zero or more Test Elements that are referenced from ActionPool/Action Elements. TestPool SHALL NOT be specified if KnownMsgQuParams/@Exact = “false”.

**Example 5-10: KnownMessages Response**

The following is an example of a Response Message to a KnownMessages Query Message:

```
<Response ID="M1" Type="KnownMessages" xsi:type="ResponseKnownMessages" refID="Q1">
  <MessageService JMFRole="Receiver" Query="true" Type="KnownMessages"/>
  <MessageService JMFRole="Receiver" Persistent="true" Query="true" Signal="true"
    Type="Status"/>
</Response>
```

**5.8.5.5 SignalKnownMessages****Table 5-30: SignalKnownMessages Message (Sheet 1 of 2)**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
ChannelMode ?= "FireAndForget" <a href="#">New in JDF 1.4</a>	enumeration	See Signal/@ChannelMode.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.

**Table 5-30: SignalKnownMessages Message (Sheet 2 of 2)**

Name	Data Type	Description
<i>ID</i>	ID	See Signal/@ID.
<i>PersonalID</i> ?	NMTOKEN	See Message/@PersonalID.
<i>refID</i> ?	NMTOKEN	See Signal/@refID.
<i>Subscribed</i> ?	boolean	See Query/@Subscribed.
<i>Time</i> ?	dateTime	See Message/@Time.
MessageService *	element	Specifies the supported Messages. Multiple MessageService Elements MAY be specified for a Message with a given JMF/@Type.

## 5.8.6 KnownSubscriptions

[New in JDF 1.4](#)

The KnownSubscriptions JMF XJMF enables Controllers to query Devices for a list of active persistent channels. Job-specific subscriptions are not supported.

**Table 5-31: KnownSubscriptions Message**

Object Type	Element Name	Description
QueryTypeObj	SubscriptionFilter ?	Refines the query for known Messages. If not specified, list all supported Message types.
ResponseTypeObj	SubscriptionInfo *	List of active persistent channels.

### 5.8.6.1 QueryKnownSubscriptions

**Table 5-32: QueryKnownSubscriptions Message**

Name	Data Type	Description
<i>AgentName</i> ?	string	See Message/@AgentName.
<i>AgentVersion</i> ?	string	See Message/@AgentVersion.
<i>Author</i> ?	string	See Message/@Author.
<i>DeviceID</i> ?	NMTOKEN	See Message/@DeviceID.
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ICSVersions.
<i>ID</i>	ID	See Query/@ID.
<i>PersonalID</i> ?	NMTOKEN	See Message/@PersonalID.
<i>Time</i> ?	dateTime	See Message/@Time.
<i>Subscription</i> ?	element	See Query/Subscription.
<i>SubscriptionFilter</i> ?	element	Refines the query for known Messages. If not specified, list all supported Message types.

#### 5.8.6.1.1 Element: SubscriptionFilter

#### 5.8.6.2 Element: SubscriptionFilter

[New in JDF 1.4](#)

The SubscriptionFilter Element is a filter to limit the list of SubscriptionInfo Elements that are returned in the KnownSubscriptions Response.

**Table 5-33: SubscriptionFilter Element**

Name	Data Type	Description
<i>ChannelID</i> ?	NMTOKEN	@ <i>ChannelID</i> of the persistent channel to be queried. If the channel has been created with a Query Message, the @ <i>ChannelID</i> specifies the ID of the Query Message (identical to the @refID of the Response Message)
<i>DeviceID</i> ?	NMTOKEN	Only subscription from Devices or Controllers with a matching @ <i>DeviceID</i> Attribute are queried
<i>Families</i> ?	enumerations	Only Subscriptions with the Family (Signal or Command) listed are queried
<i>JobID</i> ? <i>Deprecated in JDF 1.5</i>	string	@ <i>JobID</i> of the JDF Node that Messages are subscribed for. If not specified, Subscriptions are returned for all @ <i>JobID</i> values. <b>Deprecation note:</b> Job specific subscriptions are discouraged.
<i>JobPartID</i> ? <i>Deprecated in JDF 1.5</i>	string	@ <i>JobPartID</i> of the JDF node that Messages are subscribed for. If not specified, Subscriptions are returned for all @ <i>JobPartID</i> values. <b>Deprecation note:</b> Job specific subscriptions are discouraged.
<i>MessageTypes</i> ?	NMTOKENS	List of Message/@Type values of the subscribed messages. If not specified, Subscriptions are returned for all message types. List of supported Message element names of the subscribed messages. If not specified, SubscriptionInfo elements are returned for all message types.
<i>QueueEntryID</i> ? <i>Deprecated in JDF 1.5</i>	string	@ <i>QueueEntryID</i> of the Job whose Subscriptions are queried. If @ <i>QueueEntryID</i> is specified, @ <i>JobID</i> , @ <i>JobPartID</i> and Part are ignored. If none of @ <i>JobID</i> , @ <i>JobPartID</i> , Part or @ <i>QueueEntryID</i> are specified, KnownSubscriptions applies to all persistent channels that were established. <b>Deprecation note:</b> Job specific subscriptions are discouraged.
<i>URL</i> ?	URL	URL of the receiving Controller. This SHALL be identical to the URL that was used to create the persistent channel. If no @ <i>ChannelID</i> is specified, all persistent channels to this @ <i>URL</i> are queried.
<i>Part</i> * <i>Deprecated in JDF 1.5</i>	element	Part Elements that describe the Partition of the Job whose Subscriptions are queried. For details on Node Partitions, see Section 4.3.2, “Partial Processing of Nodes with Partitioned Resources” on page 182. <b>Deprecation note:</b> Job specific subscriptions are discouraged.

### 5.8.6.3 ResponseKnownSubscriptions

**Table 5-34: ResponseKnownSubscriptions Message (Sheet 1 of 2)**

Name	Data Type	Description
<i>AgentName</i> ?	string	See Message/@AgentName.
<i>AgentVersion</i> ?	string	See Message/@AgentVersion.
<i>Author</i> ?	string	See Message/@Author.
<i>DeviceID</i> ?	NMTOKEN	See Message/@DeviceID.
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ICSVersions.
<i>ID</i> ?	ID	See Response/@ID.
<i>PersonalID</i> ?	NMTOKEN	See Message/@PersonalID.

**Table 5-34: ResponseKnownSubscriptions Message (Sheet 2 of 2)**

Name	Data Type	Description
refID ?	NMTOKEN	See Response/@refID.
ReturnCode ?	integer	See Response/@ReturnCode.
Time ?	dateTime	See Message/@Time.
Notification ?	element	See Response/Notification.
SubscriptionInfo *	element	One SubscriptionInfo SHALL be provided for each active persistent channel that is selected by QueryKnownSubscriptions/SubscriptionFilter.

**5.8.6.3.1 Element: SubscriptionInfo****5.8.6.4 Element: SubscriptionInfo**New in JDF 1.4

A **SubscriptionInfo** Element describes the **Subscription details of a persistent channel** of existing subscriptions.

**Table 5-35: SubscriptionInfo Element (Sheet 1 of 2)**

Name	Data Type	Description
ChannelID	NMTOKEN	@ChannelID specifies the ID of the Query message (identical to the @refID of the Signal or Response Message) that initiated the Subscription. @ChannelID SHALL match @refID of all Signals that comprise this persistent channel.
DeviceID	NMTOKEN	@DeviceID of the controller that subscribed for the persistent channel. @DeviceID SHALL match @DeviceID of the query that subscribed for this persistent channel.
Family	enumeration	Specifies whether Messages that are submitted in this the persistent channel is a Signal or Command. <b>Allowed values are:</b> Signal Command
JobID ? <u>Deprecated in JDF 1.5</u>	string	@JobID of the JDF Node that this Persistent Channel applies to. If not specified, this Persistent Channel applies to all @JobID values. <b>Deprecation note:</b> Job specific subscriptions are discouraged.
JobPartID ? <u>Deprecated in JDF 1.5</u>	string	@JobPartID of the JDF Node that this Persistent Channel applies to. If not specified, this Persistent Channel applies to all @JobPartID values. <b>Deprecation note:</b> Job specific subscriptions are discouraged.
MessageType	NMTOKEN	Message/@Type value of the subscribed Messages. @MessageType SHALL match the local element name (i.e. without namespace prefix) of the Signals that comprise this persistent channel.
QueueEntryID ? <u>Deprecated in JDF 1.5</u>	string	@QueueEntryID of the QueueEntry that this Persistent Channel applies to. If not, specified, this Persistent Channel applies to all @QueueEntryID values. <b>Deprecation note:</b> Job specific subscriptions are discouraged.
SenderId	string	Device or Controller @SenderId.

**Table 5-35: SubscriptionInfo Element (Sheet 2 of 2)**

Name	Data Type	Description
Part *	element	Part Elements that describe the Partition of the JDF Node that this Persistent Channel applies to. For details on Node Partitions, see Section 4.3.2, “Partial Processing of Nodes with Partitioned Resources” on page 182. <b>Deprecation note:</b> Job specific subscriptions are discouraged.
Subscription Subscription	element	The <b>Subscription</b> <b>Subscription</b> Element that describes the persistent channel.

### 5.8.6.5 **SignalKnownSubscriptions**

**Table 5-36: SignalKnownSubscriptions Message**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
ChannelMode ?= "FireAndForget" New in JDF 1.4	enumeration	See Signal/@ChannelMode.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID	ID	See Signal/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
refID ?	NMTOKEN	See Signal/@refID.
Time ?	dateTime	See Message/@Time.
SubscriptionInfo *	element	Refines the query for known Messages. If not specified, list all supported Message types.

### 5.8.7 Notification

Notification Messages are generally sent as Signals. The Query is defined to allow subscriptions for Notification Messages.

**Notification****Notification** Elements are also used to signal usual events due to any activities of a Device, operator, etc. (e.g., scanning a bar code). Such a **Signal** always has a **@Type = "Notification"**.

**Table 5-37: Notification Signal**

Object Type	Element Name	Description
QueryTypeObj	NotificationFilter ? New in JDF 1.4	Defines the types of Notification Elements that should be returned
ResponseTypeObj	Notification	Notification that describes the event. See Section 3.16.3.7, “Notification” on page 153.

### 5.8.7.1 **QueryNotification**

**Table 5-38: QueryNotification Message**

Name	Data type	Description
<i>AgentName</i> ?	string	See Message/@ <i>AgentName</i> .
<i>AgentVersion</i> ?	string	See Message/@ <i>AgentVersion</i> .
<i>Author</i> ?	string	See Message/@ <i>Author</i> .
<i>DeviceID</i> ?	NMTOKEN	See Message/@ <i>DeviceID</i> .
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ <i>ICSVersions</i> .
<i>ID</i>	ID	See Query/@ <i>ID</i> .
<i>PersonalID</i> ?	NMTOKEN	See Message/@ <i>PersonalID</i> .
<i>Time</i> ?	dateTime	See Message/@ <i>Time</i> .
<i>NotificationFilter</i> ?	element	Defines the types of <b>Notification</b> Elements that should be returned
<i>Subscription</i> ?	element	See Query/Subscription.

#### 5.8.7.1.1 Element: **NotificationFilter**

#### 5.8.7.2 Element: **NotificationFilter**

**Table 5-39: NotificationFilter Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Classes</i> ?	enumerations	<p>Defines the set of <b>Notification</b> /@<i>Class</i> to be queried/subscribed for.</p> <p><b>Default behavior:</b> all <b>Notification</b> Classes are subscribed to.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Event</i></li> <li><i>Information</i></li> <li><i>Warning</i></li> <li><i>Error</i></li> <li><i>Fatal</i></li> </ul> <p><b>Constraint note:</b> If the values both @<i>Classes</i> and @<i>Types</i> are lists of values, the <b>NotificationFilter</b> defines an OR of all combinations.</p>
<i>DeviceID</i> ? <i>Deprecated in JDF 1.3</i>	string	<p>ID of the Device whose Messages are queried/subscribed. MAY be specified for Device selection if the Controller controls more than one Device.</p> <p><b>Deprecation note:</b> starting with JDF 1.3, use JMF/@<i>DeviceID</i>.</p>
<i>JobID</i> ? <i>Deprecated in JDF 1.5</i>	string	<p>JobID of the Job whose Messages are queried/subscribed.</p> <p><b>Deprecation note:</b> Job specific subscriptions are discouraged.</p>
<i>JobPartID</i> ? <i>Deprecated in JDF 1.5</i>	string	<p>JobPartID of the Job whose Messages are queried/subscribed.</p> <p><b>Deprecation note:</b> Job specific subscriptions are discouraged.</p>

**Table 5-39: NotificationFilter Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>MilestoneTypes</i> <a href="#">New in JDF 1.4</a>	NMTOKENS	Matching Milestone types are returned and/or subscribed to. <b>Default value is:</b> all supported @MilestoneType values. <b>Values include those from:</b> Table C-20, “MessageEvents and MilestoneType Values” on page 1146.
<i>QueueEntryID ?</i> <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	string	@QueueEntryID of the Job whose Messages are queried/subscribed. If @QueueEntryID is specified, @JobID, @JobPartID and Part Part are ignored. If none of @JobID, @JobPartID, Part Part or @QueueEntryID are specified, NotificationFilter applies to all Jobs. <b>Deprecation note:</b> Job specific subscriptions are discouraged.
<i>SignalTypes ?= "Notification"</i> <a href="#">New in JDF 1.2</a>	NMTOKENS	Possible Signal/@Type values of the subscribed Messages. <b>Values include:</b> all – specifies that all Signals, regardless of @Type are queried/subscribed. <b>Values include those from:</b> Message Message/@Type. <b>Note:</b> the values are limited to Signal Messages.
<i>Types ?</i>	NMTOKENS	Matching notification types are returned/subscribed. <b>Default value is:</b> all supported notification types. <b>Values include those from:</b> Table C-11, “List of NotificationDetails Elements” on page 1143. See Section 5.8.7.4.2, “Error” on page 244, Section 5.8.7.4.3, Event and Section 5.8.7.4.4, Milestone.
<i>Part *</i> <a href="#">Part * New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	element	Part Part Elements that describe the Partition of the Job whose Messages are queried/subscribed. For details on Job Partitions, see Section 4.3.2, “Partial Processing of Nodes with Partitioned Resources” on page 182. <b>Deprecation note:</b> Job specific subscriptions are discouraged.

**Example 5-11: Notification Signal**

```
<Signal ID="S1" Type="Notification" xsi:type="SignalNotification">
  <Notification Class="Event"TimeStamp="2005-07-25T12:32:48+02:00"
    Type="Barcode">
    <Comment>Palette completed</Comment>
    <Barcode Code="99923AAA123"/>
  </Notification>
</Signal>
```

**5.8.7.3 ResponseNotification****Table 5-40: ResponseNotification Message (Sheet 1 of 2)**

Name	Data Type	Description
<i>AgentName ?</i>	string	See Message/@AgentName.
<i>AgentVersion ?</i>	string	See Message/@AgentVersion.
<i>Author ?</i>	string	See Message/@Author.
<i>DeviceID ?</i>	NMTOKEN	See Message/@DeviceID.
<i>ICSVersions ?</i>	NMTOKENS	See Message/@ICSVersions.
<i>ID ?</i>	ID	See Response/@ID.

**Table 5-40: ResponseNotification Message (Sheet 2 of 2)**

Name	Data Type	Description
PersonalID ?	NMTOKEN	See Message/@PersonalID.
refID ?	NMTOKEN	See Response/@refID.
ReturnCode ?	integer	See Response/@ReturnCode.
Time ?	dateTime	See Message/@Time.
Notification ?	element	See Response/Notification.

#### 5.8.7.4 **SignalNotification**

**Table 5-41: SignalNotification Message**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
ChannelMode ?	enumeration	See Signal/@ChannelMode.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID	ID	See Signal/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
refID ?	NMTOKEN	See Signal/@refID.
Time ?	dateTime	See Message/@Time.
Notification	element	Notification that describes the event. See Section 5.8.7.4.1, “Notification” on page 242.

##### 5.8.7.4.1 Element: **Notification**

This Element contains information about individual events that occurred during processing. For a detailed discussion of event properties, see Section 11.3.6, “Error Handling”.

**Table 5-42: Notification Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Class</i>	enumeration	<p>Class of the notification.</p> <p><b>Allowed values are</b> (in order of severity from lowest to highest):</p> <ul style="list-style-type: none"> <li><i>Event</i> – Indicates that a pure event due to certain operation-related activity has occurred (e.g., Machine events, operator activities, etc.). This Class is used for the transfer of conventional event Messages. In case of <i>@Class</i> = "Event", further event information is to be provided by the <i>@Type</i> Attribute and <a href="#">NotificationDetails Element Error, Event and Milestone Elements</a>. See Section C.3.2, "NotificationDetails" on page 1142</li> <li><i>Information</i> – Any information about a process which cannot be expressed by the other Classes (e.g., the beginning of execution). No user interaction is needed.</li> <li><i>Warning</i> – Indicates that a minor error has occurred, and an automatic fix was applied. Execution continues. <a href="#">The Node's @Status is unchanged</a>. This appears in situations such as A4-Letter substitutions when toner is low or when unknown extensions are encountered in a REQUIRED Resource.</li> <li><i>Error</i> – Indicates that an error has occurred that requires user interaction. <a href="#">Execution cannot continue until the problem has been fixed</a>. The Node's <i>@Status</i> is "Stopped". This value appears in situations such as when resources are missing, when major incompatibilities are detected, or when the toner is empty.</li> <li><i>Fatal</i> – Indicates that a fatal error led to abortion of the process. <a href="#">The Node's @Status is "Aborted"</a>. This value is seen with most protocol errors or when major Device malfunction has occurred.</li> </ul>
<i>CombinedProcessIndex</i> ? <a href="#">New in JDF 1.4</a>	IntegerList	<a href="#">@CombinedProcessIndex</a> attribute specifies the indices of individual processes in the <a href="#">@Types</a> attribute to which a <a href="#">Notification</a> in a Combined Process Node or Process Group Node belongs. Multiple entries in <a href="#">@CombinedProcessIndex</a> specify that the Module specified by <a href="#">Notification</a> is executing the respective multiple processes in the Combined Process Node.
<i>JobID</i> ? <a href="#">New in JDF 1.3</a>	stringNMTO-KEN	<a href="#">@JobID</a> that this <a href="#">Notification</a> applies to.
<i>JobPartID</i> ? <a href="#">New in JDF 1.3</a>	stringNMTO-KEN	<a href="#">@JobPartID</a> that this <a href="#">Notification</a> applies to.
<i>ModuleID</i> ? <a href="#">New in JDF 1.4</a>	stringNMTO-KEN	<a href="#">@ModuleID</a> of the Module that this <a href="#">Notification</a> relates to.
<i>ModuleIndex</i> ? <a href="#">New in JDF 1.4</a>	IntegerRangeList	0-based indices of the module or modules. The list is based on all modules of the Device. If multiple module types are available on one Device, each SHALL be unique in the scope of the Device. <b>Constraint:</b> At least one of <a href="#">@ModuleID</a> or <a href="#">@ModuleIndex</a> SHALL be specified.

**Table 5-42: Notification Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>ModuleType</i> ? <a href="#">New in JDF 1.4</a>	NMTOKEN	Module description. <b>Values include those from:</b> Section C.2, “ModuleType Supported Strings” on page 1138. <b>Note:</b> the allowed values depend on the type of Device. Each type of Device has a separate table of values.
<i>QueueEntryID</i> ?	NMTOKEN	@QueueEntryID of the QueueEntry during which this <b>Notification</b> was generated..
<i>Type</i> ?	NMTOKEN <sub>enumeration</sub>	Identifies the type of notification. <b>Also defines the name of the Abstract NotificationDetails Element.</b> <b>Note:</b> @Type allows parsers that do not have access to the schema to find the instance of NotificationDetails. <b>Values include those from:</b> Table C-11, “List of NotificationDetails Elements” on page 1143. <b>Allowed values are:</b> <i>Error</i> <i>Event</i> <i>Milestone</i>
Comment *	element	A Comment element contains a verbose, human-readable description of the event. If the value of the @Class attribute is one of “Information”, “Warning”, “Error” or “Fatal”, at least one Comment element SHOULD be specified. Otherwise (including for @Class = “Event”), Comment elements are optional and MAY be specified.
CostCenter ?	element	The cost center to which this event is related to.
<b>Employee</b> * <b>ContactRefs</b> ?	refelementI-DREFS	The employees associated with this event or creator of it.
Error ?	element	See Error element below.
Event ?	element	See Event element below.
Milestone ?	element	See Milestone element below.
NotificationDetails ?	element	<b>NotificationDetails</b> is an Abstract Element that is a placeholder for additional structured information. Table C-11, “List of NotificationDetails Elements” on page 1143. It provides additional information beyond the @Class and @Type attribute and beyond the Comment element. For derived specific elements see Table C-11, “List of NotificationDetails Elements” on page 1143.
Part * <a href="#">New in JDF 1.1</a>	element	Describes which parts of a process this <b>Notification</b> belongs to. If Part is not specified for a <b>Notification</b> , it refers to all parts. For example, imagine a print job that is to produce three different sheets. All sheets are described by one partitioned resource. The Part elements define, unambiguously, the sheet to which the <b>Notification</b> refers.

**5.8.7.4.2 Element: Error**

This Element provides additional information for common errors.

**Table 5-43: Error Element**

Name	Data Type	Description
ErrorID ?	string	Internal Error ID of the application that declares the error.
Modified in JDF 1.3		

**5.8.7.4.3 Element: Event**

This Element provides additional information for common events.

**Table 5-44: Event Element**

Name	Data Type	Description
EventID	string	Internal Event ID of the application that emits the event.
EventValue ?	string	Additional user defined value related to this event.

**5.8.7.4.4 Element: Milestone**

In addition to the concrete XJMF feedback both from production to MIS and MIS to production with respect to finished Processes (see Section 5.9.9, “Status” on page 279) and available/consumed Resources (see Section 5.9.6, “Resource” on page 260), many Actors in the workflow want to track certain overall milestones concerning the entire Job across all Resources and Processes in order to display this to the operator. Sometimes the XJMF recipients cannot determine these milestones from the detailed XJDF/XJMF. Therefore a more abstract representation of Job status is described by Milestone events. Note that Milestone Elements usually refer to events involving multiple objects, although the Milestone/@MilestoneType is specified as a singular. The scope of the Milestone is defined by the parent Notification element

**Table 5-45: Milestone Element**

Name	Data Type	Description
MilestoneType	NMTOKEN	Type of Milestone. <b>Values include those from:</b> Table C-20, “MessageEvents and MilestoneType Values” on page 1146.
TypeAmount ?	integer	Indication of how many elements have been processed (if the milestone refers to certain resources) (e.g., number of pages proofed, number of different printed sheets (not the cumulative amount)).

**5.8.8 RepeatMessages**

Deprecated in JDF 1.5

The RepeatMessages Message has been deprecated in JDF 1.5. RepeatMessages was designed to query for missed messages if Signals were required to be complete. This functionality SHOULD preferably be implemented using reliable channels (i.e., by specifying Subscription/@Channelmode = "Reliable". See Section 5.4.3, “Reliable Signalling”. For details of the deprecated RepeatMessages Message, see Section P.3.4, “RepeatMessages” on page 1315.

**5.8.9 RequestForAuthentication**

New in JDF 1.4

The RequestForAuthentication Message can be used as a Command to exchange certificates or as a Query to obtain the authentication status of previously exchanged certificates. Acknowledge Messages SHALL NOT be used to respond to a RequestForAuthentication Command or RequestForAuthentication Query. In other words, the Response element SHALL NOT specify @Acknowledged = "true". If it is not possible to confirm authentication before the HTTP channel times out, the @ReturnCode SHALL be "304", which means “Authentication pending”.

### 5.8.9.1 RequestForAuthentication Command

New in JDF 1.4

The RequestForAuthentication Command is used to request authentication and trust of a certificate that is provided in the RequestForAuthentication Command. The sender of the Command is identified by the `@SenderID` attribute in the JMF Element that contains the RequestForAuthentication Command. The sender MAY be authenticated as both a client and as a server, and a separate certificate SHALL be provided by the sender for each role that the sender wishes to use.

If a RequestForAuthentication Command is received over a secure channel, and a previous RequestForAuthentication Command has already been received, the previous RequestForAuthentication Command SHOULD be ignored, and any certificates associated with the prior Command SHOULD be considered untrusted. This allows for a party that is currently trusted to update its certificate as needed (such as when the previous certificate is about to expire),

Once authentication has been established between two parties, any RequestForAuthentication Command that is sent over a non-secure channel SHALL result in error 305, which is “Authentication already established”. Other `@Reason` values MAY be supported over secure channels.

**Table 5-46: RequestForAuthentication Command Message**

Object Type	Element Name	Description
CommandTypeObj	AuthenticationCmdParams	Details of the certificate of the sender.
ResponseTypeObj	AuthenticationResp ?	<code>@ReturnCode</code> = 0 indicates “I trust you”. The initial response to a RequestForAuthentication Command SHALL include a fully specified AuthenticationResp Element.

#### 5.8.9.1.1 Element: AuthenticationCmdParams

**Table 5-47: AuthenticationCmdParams Element (Sheet 1 of 2)**

Name	Data Type	Description
<code>AuthenticationType</code>	enumeration	<p><b>Allowed values are:</b></p> <p><code>AsClient</code> – Sender of the Message wishes to be authenticated as a client that initiates HTTP requests. Command includes the sender's client certificate, the Response will include the responders server certificate.</p> <p><code>AsServer</code> – Sender of Message wishes to be authenticated as a server that responds to HTTP requests. Command includes the sender's server certificate, the response will include the responders client certificate.</p>

**Table 5-47: AuthenticationCmdParams Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Reason</i>	enumeration	<p>Used to indicate the reason for sending this Message.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>InitiateConnection</i> – the client wishes to exchange certificates with the server.</li> <li><i>ClientCertificateExpired</i> – the previously-sent client certificate has expired.</li> <li><i>ServerCertificateExpired</i> – the previously-received server certificate has expired.</li> <li><i>ClientHostnameMismatch</i> – the client certificate's Common Name couldn't be resolved to match the IP address or domain name from which the request came.</li> <li><i>ServerHostnameMismatch</i> – the server certificate's Common Name couldn't be resolved to match the IP address or domain name from which the response came.</li> <li><i>ClientCertificateRevoked</i> – the previously-sent client certificate has been revoked.</li> <li><i>ServerCertificateRevoked</i> – the previously-received server certificate has been revoked.</li> <li><i>Other</i> – some other reason. Use <i>@ReasonDetails</i> for further explanation.</li> </ul>
<i>ReasonDetails</i> ?	string	Further details on the reason for this Message.
<i>SecureURL</i> ?	URL	URL of the port of the Command sender that will accept JMF Messages via the HTTPS protocol. This Attribute SHALL be specified when the sender of the RequestForAuthentication Command has specified <i>AuthenticationCmdParams/@AuthenticationType = "AsServer"</i> .
<i>Certificate</i> ?	element	<p>The requester's certificate.</p> <p>If <i>@AuthenticationType = "AsClient"</i>, this certificate SHALL be the requester's client certificate. If <i>@AuthenticationType = "AsServer"</i>, this certificate SHALL be the requester's server certificate.</p>

### 5.8.9.1.2 Element: **Certificate**

**Table 5-48: Certificate Element**

Name	Data Type	Description
	text	<p>The certificate in PEM MD5 format.</p> <p><b>Implementation Note:</b> there SHALL NOT be any whitespace between the end of the tag and the start of the certificate, or between the end of the certificate and the start of the end tag. See example below.</p> <p><b>Note:</b> The certificate should only include the public key.</p>

### 5.8.9.1.3 Element: **AuthenticationResp**

**Table 5-49: AuthenticationResp Element**

Name	Data Type	Description
SecureURL ?	URL	URL of the port of the command recipient that will accept JMF Messages via the HTTPS protocol. This Attribute SHALL be specified when the sender of the RequestForAuthentication Command has specified AuthenticationCmdParams/@AuthenticationType = "AsClient".
Certificate ?	element	The Command recipient's certificate. If AuthenticationCmdParams/@AuthenticationType = "AsClient", this certificate SHALL be the Command recipient's server certificate. If AuthenticationCmdParams/@AuthenticationType = "AsServer", this certificate SHALL be the Command recipient's client certificate. When responding to a RequestForAuthentication Command over a non-secure channel with Reason = "InitiateConnection", this Element SHALL be specified. When responding to a RequestForAuthentication Query, the Certificate Element SHALL NOT be specified. See AuthenticationCmdParams/Certificate.

### 5.8.9.2 RequestForAuthentication Query

New in JDF 1.4

The RequestForAuthentication Query is used to determine the authentication status of a certificate that was provided in an earlier RequestForAuthentication Command or the Response to the Command. The sender of the Query is identified by the @SenderId Attribute in the JMF Element that contains the RequestForAuthentication Query. The sender MAY be authenticated as both a client and as a server, and a separate certificate SHALL be provided by the sender for each role that the sender wishes to use.

If a RequestForAuthentication Query is received, and no previous RequestForAuthentication Command has been received, the Response SHALL specify a @ReturnCode of 306, which is “No authentication request in process”.

**Table 5-50: RequestForAuthentication Query Message**

Object Type	Element Name	Description
QueryTypeObj	AuthenticationQuParams	Specifies the type of authentication being queried.
ResponseTypeObj	AuthenticationResp ?	@ReturnCode = 0 indicates “I trust you”.

### 5.8.9.2.1 Element: **AuthenticationQuParams**

**Table 5-51: AuthenticationQuParams Element**

Name	Data Type	Description
AuthenticationType	enumeration	<b>Allowed values are:</b> <i>AsClient</i> – Sender of the Message wishes to check the authentication status of the client certificate associated with it. <i>AsServer</i> – Sender of Message wishes to check the authentication status of the server certificate associated with it..

### Example 5-12: RequestForAuthentication Command

```
<Command ID="M001" Type="RequestForAuthentication"
  xsi:type="CommandRequestForAuthentication">
  <AuthenticationCmdParams AuthenticationType="AsClient"
    Reason="InitiateConnection">
    <Certificate>=====BEGIN CERTIFICATE=====
MIIC3jCCApwCBEIWY6YwCwYHKoZIzjgEAwUAMFUxCzAJBgNVBAYTAKNIMQ8wDQYDVQQHEwZadXJp
Y2gxDTALBgNVBAoTBENJUDQxDzANBgNVBAsTBkpNRIBXRzEVMBMGA1UEAxMMd3d3LmNpcDQuB3Jn
MB4XDTA1MDIxODIxNTIzOFoXDTA1MDUyOTIxNTIzOFowVTELMAkGA1UEBhMCQ0gxDzANBgNVBAcT
Blp1cmljaDENMASGA1UEChMEQ01QNDEPMA0GA1UECxMGSk1GIFdHMRUwEwYDVQQDEwx3d3cuY2lw
NC5vcmcwgG3MIIIBLAYHKoZIzjgEATCCAR8CgYEAX9TgR11Ei1S30qcLuzk5/YRt1I870QAwx4/
gLRJmlFXUAiUftZPY1Y+r/F9bow9subVwzXgTuAHTRv8mZgt2uZUKWkn5/oBHSQIsJPu6nX/rfG
G/g7V+fGqKYVDwT7g/bTxR7DAjVUE1oWkTL2dfOuK2HXKu/yIgMZndFIAccCFQCXYFCPFMSMLzLKS
uYKi64QL8Fgc9QKBgQD34aCF1ps93su8q1w2uFe5eZSvu/o66oL5V0wLPQeCZ1FZV4661F1P5nEH
EIGAtEkWcSPoTCgWE7fpCTKMyKbhPBZ6i1R8jsjgo64eK70mdZFuo38L+iE1YvH7YnoBJDvMpPG+
qFGQiaiD3+Fa5Z8GkomXoB7VSvkAUw7/s9JKgOBhAACgYArHi/BVnf3OG0JIIdzWraVrx1wg9RM
do+tYRjY4bXue7LRDCvVaSX1Ddy9kTyeTTntwUrJ0yx/8qEi/WmraGXhK8wGSrtE/q3S/A16DwEB
CiyeMhlCrd4QiAhp5WtR4KIMBjq2Xn8+0MnnT1qDnmesNaSwdZ/01E0azSPTy5XnDALBgcqhkjo
OAQDBQADLwAwLAIUFZHoJvs03+UYMBZk6yDzhdejzMCFHC0WbkDwfImQCa+dTebXZ1e1G1Q
=====END CERTIFICATE=====</Certificate>
  </AuthenticationCmdParams>
</Command>
```

### Example 5-13: RequestForAuthentication Response

The form of Response that would most likely follow the above Command appears below:

```
<Response ID="M101" Type="RequestForAuthentication" refID="M001"
  xsi:type="ResponseRequestForAuthentication" ReturnCode="304">
  <AuthenticationResp SecureURL="https://printserver.mycompany.com/A3Printer">
    <Certificate>=====BEGIN CERTIFICATE=====
uYKi64QL8Fgc9QKBgQD34aCF1ps93su8q1w2uFe5eZSvu/o66oL5V0wLPQeCZ1FZV4661F1P5nEH
EIGAtEkWcSPoTCgWE7fpCTKMyKbhPBZ6i1R8jsjgo64eK70mdZFuo38L+iE1YvH7YnoBJDvMpPG+
qFGQiaiD3+Fa5Z8GkomXoB7VSvkAUw7/s9JKgOBhAACgYArHi/BVnf3OG0JIIdzWraVrx1wg9RM
do+tYRjY4bXue7LRDCvVaSX1Ddy9kTyeTTntwUrJ0yx/8qEi/WmraGXhK8wGSrtE/q3S/A16DwEB
CiyeMhlCrd4QiAhp5WtR4KIMBjq2Xn8+0MnnT1qDnmesNaSwdZ/01E0azSPTy5XnDALBgcqhkjo
OAQDBQADLwAwLAIUFZHoJvs03+UYMBZk6yDzhdejzMCFHC0WbkDwfImQCa+dTebXZ1e1G1Q
MIIC3jCCApwCBEIWY6YwCwYHKoZIzjgEAwUAMFUxCzAJBgNVBAYTAKNIMQ8wDQYDVQQHEwZadXJp
Y2gxDTALBgNVBAoTBENJUDQxDzANBgNVBAsTBkpNRIBXRzEVMBMGA1UEAxMMd3d3LmNpcDQuB3Jn
MB4XDTA1MDIxODIxNTIzOFoXDTA1MDUyOTIxNTIzOFowVTELMAkGA1UEBhMCQ0gxDzANBgNVBAcT
Blp1cmljaDENMASGA1UEChMEQ01QNDEPMA0GA1UECxMGSk1GIFdHMRUwEwYDVQQDEwx3d3cuY2lw
NC5vcmcwgG3MIIIBLAYHKoZIzjgEATCCAR8CgYEAX9TgR11Ei1S30qcLuzk5/YRt1I870QAwx4/
gLRJmlFXUAiUftZPY1Y+r/F9bow9subVwzXgTuAHTRv8mZgt2uZUKWkn5/oBHSQIsJPu6nX/rfG
G/g7V+fGqKYVDwT7g/bTxR7DAjVUE1oWkTL2dfOuK2HXKu/yIgMZndFIAccCFQCXYFCPFMSMLzLKS
=====END CERTIFICATE=====</Certificate>
  </AuthenticationResp>
</Response>
```

### Example 5-14: Follow up RequestForAuthentication Query

Next, the original command sender would send a follow up RequestForAuthentication Query:

```
<Query ID="M004" Type="RequestForAuthentication"
  xsi:type="QueryRequestForAuthentication">
  <AuthenticationQuParams AuthenticationType="AsClient"/>
</Query>
```

### Example 5-15: RequestForAuthentication Response from Follow Up Query

If authentication has been confirmed, the following Response would be sent to the RequestForAuthentication Query:

```
<Response ID="M102" Type="RequestForAuthentication" refID="M004"
           xsi:type="ResponseRequestForAuthentication" ReturnCode="0">
</Response>
```

### 5.8.10 StopPersistentChannel

The StopPersistentChannel Command Message unregisters a listening Controller from a persistent channel. No more **Signal** Messages are sent to the Controller once the command has been issued. A certain subset of signals MAY be addressed for unsubscription by specifying a **StopPersChParams** Element.

**Table 5-52: StopPersistentChannel Message**

Object Type	Element Name	Description
CommandTypeObj	StopPersChParams	Specifies the persistent channel and the Message types to be unsubscribed.
ResponseTypeObj	SubscriptionInfo	One SubscriptionInfo element SHALL be returned for every Persistent Channel that was removed.

#### 5.8.10.1 CommandStopPersistentChannel

**Table 5-53: CommandStopPersistentChannel Message**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID	ID	See Command/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
RelatedCommands ?	NMTOKENS	See Command/@RelatedCommands.
Time ?	dateTime	See Message/@Time.
TransactionID ?	NMTOKEN	See Command/@TransactionID.
StopPersChParams	element	Specifies the persistent channel and the Message types to be unsubscribed.

##### 5.8.10.1.1 Element: StopPersChParams

##### 5.8.10.2 Element: StopPersChParams

If the **OPTIONAL** attributes are not specified, those attributes default to match anything. Therefore, it is possible to cancel the persistent channel for Messages belonging to a certain type of Message or to a certain Job.

**Table 5-54: StopPersChParams Element (Sheet 1 of 2)**

Name	Data Type	Description
ChannelID ?	NMTOKEN	@ChannelID of the persistent channel to be deleted. If the channel has been created with a Query Message, the @ChannelID specifies the @ID of the Query Message (identical to the @refID of the Response Message).

**Table 5-54: StopPersChParams Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>MessageType</i> ?	NMTOKEN	Only Messages with a matching Message type are suppressed. <b>Default value is:</b> all Message types <b>Values include those from:</b> <a href="#">Message Message/@Type</a> .
<i>DeviceID</i> ?	NMTOKEN	Only Messages from Devices or Controllers with a matching <i>@DeviceID</i> Attribute are suppressed.
<i>JobID</i> ? <a href="#">Deprecated in JDF 1.5</a>	string	Only Messages with a matching <i>@JobID</i> Attribute are suppressed. <b>Deprecation note:</b> Job specific subscriptions are discouraged.
<i>JobPartID</i> ? <a href="#">Deprecated in JDF 1.5</a>	string	Only Messages with a matching <i>@JobPartID</i> Attribute are suppressed. <b>Deprecation note:</b> Job specific subscriptions are discouraged.
<i>QueueEntryID</i> ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	string	<i>@QueueEntryID</i> of the Job whose Messages are queried/subscribed. If <i>@QueueEntryID</i> is specified, <i>@JobID</i> , <i>@JobPartID</i> and <i>Part</i> are ignored. If none of <i>@JobID</i> , <i>@JobPartID</i> , <i>Part</i> or <i>@QueueEntryID</i> are specified, StopPersChParams applies to all Jobs that will be processed by the receiver. <b>Deprecation note:</b> Job specific subscriptions are discouraged.
<i>URL</i>	URL	URL of the receiving Controller. This SHALL be identical to the URL that was used to create the persistent channel. If no <i>@ChannelID</i> is specified, all persistent channels to this URL are deleted.
<i>Part</i> * <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	element	Part Elements that describe the Partition of the Job whose Messages are suppressed. For details on Node Partitions, see Section 4.3.2, “Partial Processing of Nodes with Partitioned Resources” on page 182. <b>Deprecation note:</b> Job specific subscriptions are discouraged.

### 5.8.10.3 [ResponseStopPersistentChannel](#)

**Table 5-55: ResponseStopPersistentChannel Message**

Name	Data Type	Description
<i>AgentName</i> ?	string	See <a href="#">Message/@AgentName</a> .
<i>AgentVersion</i> ?	string	See <a href="#">Message/@AgentVersion</a> .
<i>Author</i> ?	string	See <a href="#">Message/@Author</a> .
<i>DeviceID</i> ?	NMTOKEN	See <a href="#">Message/@DeviceID</a> .
<i>ICSVersions</i> ?	NMTOKENS	See <a href="#">Message/@ICSVersions</a> .
<i>ID</i> ?	ID	See <a href="#">Response/@ID</a> .
<i>PersonalID</i> ?	NMTOKEN	See <a href="#">Message/@PersonalID</a> .
<i>refID</i> ?	NMTOKEN	See <a href="#">Response/@refID</a> .
<i>ReturnCode</i> ?	integer	See <a href="#">Response/@ReturnCode</a> .
<i>Time</i> ?	dateTime	See <a href="#">Message/@Time</a> .
<i>Notification</i> ?	element	See <a href="#">Response/Notification</a> .
<i>SubscriptionInfo</i> ?	element	One SubscriptionInfo element SHALL be returned for every Persistent Channel that was removed.

## 5.9 Messages to Query/Command a Job, Device or Controller Relating to Jobs and Devices

**JDF XJDF** Messaging provides methods to trace the status of individual Devices and Resources and additional Job-dependent Job-tracking data. The status of a Job is described by the Status Elements of that Job.

Devices are uniquely identified by a *name* — that is, by the Attribute `@DeviceID` of the **Device** Resource (see Section 8.47, “Device”) — while Controllers are uniquely identified by their URL. In other words, Controllers are implicitly identified as a result of the fact that they are responding to a Message. One Controller MAY control multiple Devices. The following queries and commands are defined for status and progress tracking.

**Table 5-56: Messages to query/affect a Job, Device or Controller**

Message type	Family	Description
FlushResources <a href="#">New in JDF 1.2</a>	CQRS	Remove temporary Resources from a Device.
ModifyNode <a href="#">New in JDF 1.3</a>	CRS	Modifies details of JDF Nodes that have previously been submitted to a Device.
NewJDF <a href="#">New in JDF 1.2</a>	CQRS	Initiates or reports modifications of new <b>JDF XJDF</b> Nodes.
NodeInfo <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.3</a>	CQRS	Initiates or reports modifications of <b>JDF XJDF</b> Node information (e.g., scheduling). Use either Resource Command Messages with <code>ResourceCmdParams/@ResourceName = "NodeInfo"</code> or Resource Query Messages with <code>ResourceQuParams/@ResourceName = "NodeInfo"</code> instead.
Occupation <a href="#">Deprecated in JDF 1.5</a>	QRS	Queries the occupation of an employee. <b>Deprecation note:</b> use Status Signals with <code>JobPhase/Activity</code> or <code>DeviceInfo/Activity</code> instead.
Resource	CGQRS	Queries and/or modifies <b>JDF XJDF</b> Resources that are used by a Device, such as Device settings, or by a Job. This Message can also be used to query the level of consumables in a Device.
ResourcePull <a href="#">New in JDF 1.2</a>	CGR	Creates a new <code>QueueEntry</code> from an already existing <code>QueueEntry</code> and submits it to the queue in order to be executed.
ShutDown <a href="#">New in JDF 1.2</a>	CR	Shuts down a Device.
Status	QRS	Queries the general status of a Device, Controller or Job.
Track <a href="#">Deprecated in JDF 1.5</a>	QRS	Queries the location of a given Job or Job Part.
UpdateJDF <a href="#">New in JDF 1.3</a>	CRS	Synchronizes and relinks modified JDF Nodes.
WakeUp <a href="#">New in JDF 1.2</a>	CR	Wakes up a Device that is in standby mode.

**Table 5-57: Messages Relating to Jobs and Devices**

Messages	Description
CommandFlushResources QueryFlushResources ResponseFlushResources SignalFlushResources	Remove temporary Resources from a Device.
CommandResource QueryResource ResponseResource SignalResource	Queries and/or modifies <b>JDF XJDF</b> Resources that are used by a Device, such as Device settings, or by a Job. This Message can also be used to query the level of consumables in a Device.
CommandShutDown ResponseShutDown	Shuts down a Device.
QueryStatus ResponseStatus SignalStatus	Queries the general status of a Device, Controller or Job.
CommandWakeUp ResponseWakeUp	Wakes up a Device that is in standby mode.

## 5.9.1 FlushResources

[New in JDF 1.2](#)

The FlushResources Message is used to remove temporary Resources from a Device. FlushResourceParams specifies the Resources to remove.

The Command allows a Controller to Request that a Device actively Flush its resources whereas the Query or Signal allows a Device to Message that it has flushed resources to a Controller.

### 5.9.1.1 **FlushResources Command**

### 5.9.1.2 **CommandFlushResources**

The **FlushResources Command** **CommandFlushResources** is used to remove temporary Resources from a Device. FlushResourceParams allows the specification of which Resources to remove.

**Table 5-58: FlushResources Command**

Object Type	Element Name	Description
CommandTypeObj	FlushResourceParams ?	Defines the Resources to be removed.
	QueueFilter ? <a href="#">Deprecated in JDF 1.5</a>	Defines a filter for the returned Queue Element in the FlushResources Message.
ResponseTypeObj	FlushedResources ?	This Element is a placeholder for future use.

**Table 5-59: CommandFlushResources Message (Sheet 1 of 2)**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.

**Table 5-59: CommandFlushResources Message (Sheet 2 of 2)**

Name	Data Type	Description
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ <i>ICSVersions</i> .
<i>ID</i>	ID	See Command/@ <i>ID</i> .
<i>PersonalID</i> ?	NMTOKEN	See Message/@ <i>PersonalID</i> .
<i>RelatedCommands</i> ?	NMTOKENS	See Command/@ <i>RelatedCommands</i> .
<i>Time</i> ?	dateTime	See Message/@ <i>Time</i> .
<i>TransactionID</i> ?	NMTOKEN	See Command/@ <i>TransactionID</i> .
FlushResourceParams ?	element	Defines the Resources to be removed.

**5.9.1.3 FlushResources Query****5.9.1.4 QueryFlushResources**

The **FlushResources Query** **QueryFlushResources** is used to query whether temporary Resources have been removed by a Device. **FlushResourceParams** allows the specification of which Resources were removed.

**Table 5-60: FlushResources Query**

Object Type	Element Name	Description
QueryTypeObj	FlushResourceParams ?	Defines the Resources to be removed.
	QueueFilter ? <i>Deprecated in JDF 1.5</i>	Defines a filter for the returned Queue Element in the FlushResources Message.
ResponseTypeObj	FlushedResources ?	This Element is a placeholder for future use.

**Table 5-61: QueryFlushResources Message**

Name	Data Type	Description
<i>AgentName</i> ?	string	See Message/@ <i>AgentName</i> .
<i>AgentVersion</i> ?	string	See Message/@ <i>AgentVersion</i> .
<i>Author</i> ?	string	See Message/@ <i>Author</i> .
<i>DeviceID</i> ?	NMTOKEN	See Message/@ <i>DeviceID</i> .
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ <i>ICSVersions</i> .
<i>ID</i>	ID	See Query/@ <i>ID</i> .
<i>PersonalID</i> ?	NMTOKEN	See Message/@ <i>PersonalID</i> .
<i>Time</i> ?	dateTime	See Message/@ <i>Time</i> .
Subscription ?	element	See Query/Subscription.
FlushResourceParams ?	element	Defines the Resources to be removed.

### 5.9.1.4.1 Element: FlushResourceParams

**Table 5-62: FlushResourceParams Element**

Name	Data Type	Description
<i>FlushPolicy</i> ?= "QueueEntry"	enumeration	<p>Policy that defines how much of the QueueEntry Resources is requested to be flushed.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Complete</i> – Remove all temporary Resources belonging to the selected QueueEntry including global resources that MAY be used by other QueueEntry elements.</li> <li><i>QueueEntry</i> – The local Resources belonging to the selected QueueEntry are completely removed and no longer available — the default.</li> <li><i>Intermediate</i> – Remove any intermediate Resources that belong to the QueueEntry (e.g., intermediate raster files in a combined RIP and Image-Setting Process), and retain the original Input Resources. A <b>ResourcePull PipeControl</b> Message with <i>@Operation</i> = "Pull" is still possible after executing <b>FlushResources</b> with <i>@FlushPolicy</i> = "Intermediate".</li> </ul>
QueueFilter ?	element	Defines a QueueFilter that specifies the QueueEntry Elements to which the Resources to be removed belong. If not specified, all temporary resources on the Device are completely flushed according to the value of <i>@FlushPolicy</i> .

### 5.9.1.5 ResponseFlushResources

**Table 5-63: ResponseFlushResources Message**

Name	Data Type	Description
<i>AgentName</i> ?	string	See Message/@AgentName.
<i>AgentVersion</i> ?	string	See Message/@AgentVersion.
<i>Author</i> ?	string	See Message/@Author.
<i>DeviceID</i> ?	NMTOKEN	See Message/@DeviceID.
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ICSVersions.
<i>ID</i> ?	ID	See Response/@ID.
<i>PersonalID</i> ?	NMTOKEN	See Message/@PersonalID.
<i>refID</i> ?	NMTOKEN	See Response/@refID.
<i>ReturnCode</i> ?	integer	See Response/@ReturnCode.
<i>Time</i> ?	dateTime	See Message/@Time.
<i>FlushedResources</i> ?	element	This Element is a placeholder for future use.
<i>Notification</i> ?	element	See Response/Notification.

### 5.9.1.5.1 Element: FlushedResources

**Table 5-64: FlushedResources Element**

Name	Data Type	Description

### 5.9.1.6 **SignalFlushResources**

**Table 5-65: SignalFlushResources Message**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
ChannelMode ?	enumeration	See Signal/@ChannelMode.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID	ID	See Signal/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
refID ?	NMTOKEN	See Signal/@refID.
Time ?	dateTime	See Message/@Time.
FlushedResources ?	element	This Element is a placeholder for future use.

## 5.9.2 **ModifyNode**

New in JDF 1.3

This JMF is used to modify either the *@Activation* or *@CommentURL* Attributes of a JDF Node and to add or modify Comment Elements of a JDF Node or a Resource.

### 5.9.2.1 **ModifyNode Command**

The ModifyNode Command is sent by a Controller to a Device to modify the JDF Node on the Device.

**Table 5-66: ModifyNode Command**

Object Type	Element Name	Description
CommandTypeObj	ModifyNodeCmdParams ?	Defines the details of the ModifyNode Message.
ResponseTypeObj	-	-

### 5.9.2.2 **ModifyNode Signal**

The ModifyNode Signal is sent by a Device to a Control to Signal that the JDF Node on the Device has been modified.

**Table 5-67: ModifyNode Signal**

Object Type	Element Name	Description
QueryTypeObj	ModifyNodeCmdParams ?	Defines the details of the ModifyNode Message.
ResponseTypeObj	-	-

#### 5.9.2.2.1 Element: **ModifyNodeCmdParams**

The ModifyNodeCmdParams specifies the details of the JDF Node to be modified.

**Table 5-68: ModifyNodeCmdParams Element**

Name	Data Type	Description
<i>Activation</i> ?	enumeration	The new value for <i>@Activation</i> . <b>Allowed values are from:</b> JDF/ <i>@Activation</i> (Table 3-4, “JDF XJDF Node”).
<i>CommentURL</i> ?	URL	The new value for <i>@CommentURL</i> . Note that <i>@CommentURL</i> is specified in Table 3-1, “Any Element (generic content)” on page 48 and that the semantics are overridden by the definition in this table.
<i>JobID</i>	string	<i>@JobID</i> of the Node to be modified. In case of adding a Comment to a Resource or Audit, this <i>@JobID</i> SHALL be an Attribute of the Node where the AuditPool or AuditPool resides.
<i>JobPartID</i>	string	<i>@JobPartID</i> of the Node to be modified. In the case of adding a Comment to a Resource or Audit, this <i>@JobPartID</i> SHALL be an Attribute of the Node where the AuditPool or ResourcePool resides.
NewComment *	element	Details of modifications of Comment Elements.

**5.9.2.2.2 Element: NewComment****Table 5-69: NewComment Element**

Name	Data Type	Description
<i>Action</i>	enumeration	<b>Allowed values are:</b> <i>Add</i> – A new Comment is added. If <i>@refID</i> is specified, the Comment is stored in the Resource or Audit with <i>@ID</i> = <i>@refID</i> . <i>Concat</i> – Comment is concatenated to the Comment with Comment/ <i>@ID</i> = <i>@CommentID</i> . <i>Replace</i> – Comment replaces the Comment with Comment/ <i>@ID</i> = <i>@CommentID</i> . <i>Remove</i> – The Comment with Comment/ <i>@ID</i> = <i>@CommentID</i> is removed.
<i>CommentID</i> ?	NMTOKEN	<i>@ID</i> of the existing Comment. SHALL be specified if <i>@Action</i> = “ <i>Concat</i> ”, “ <i>Replace</i> ” or “ <i>Remove</i> ”.
<i>refID</i> ?	NMTOKEN	<i>@ID</i> of the Resource or Audit where the Comment SHALL be added. The <i>@refID</i> SHALL NOT be set unless <i>@Action</i> = “ <i>Add</i> ”.
<i>Comment</i> ?	element	The Comment to “ <i>Add</i> ”, “ <i>Concat</i> ” or “ <i>Replace</i> ”. Comment SHALL NOT be specified if <i>@Action</i> = “ <i>Remove</i> ”. Note that Comment * is specified in Table 3-1, “Any Element (generic content)” on page 48 and that the cardinality and semantics are overridden by the definition in this table.
<i>Part</i> ? <a href="#">New in JDF 1.4</a>	element	Partition of the Resource where the Comment SHALL be added. Part SHALL NOT be specified unless <i>@refID</i> references a Resource and <i>@Action</i> = “ <i>Add</i> ”.

### 5.9.3 NewJDF

New in JDF 1.2

The NewJDF Message can be used to query and initiate the modification of JDF Nodes by either a subordinate Controller or a master Controller. It is mainly used to synchronize JDF/@*JobID* and JDF/@*JobPartID* between an MIS and a Device or Controller. Either side MAY initiate synchronization. A Query Message or Signal Message informs a Controller or MIS system that a JDF Node has been created. A command initiates a modification.

#### 5.9.3.1 NewJDF Query

The NewJDF Query Message is sent to a Device or Controller in order to extract information about previously unknown JDF Nodes. For instance, an MIS that has received a JMF with an unknown @*JobPartID* MAY query the JMF sender about details of the JDF with that @*JobPartID*. When used as a Signal, the Signaling Device specifies that it has created a new JDF with the properties defined by IDInfo, for instance when a Workflow Controller has instantiated an abstract Process Group Node with new Subnodes. NewJDF is made selective by specifying a NewJDFQuParams Element.

The query's Response Message returns a list of IDInfo Elements that contains the queried information concerning the newly created Nodes.

**Table 5-70: NewJDF Query Message**

Object Type	Element Name	Description
QueryTypeObj	NewJDFQuParams	Specifies the details of the Nodes that information is requested about.
ResponseTypeObj	IDInfo *	Contains the information about the newly created Nodes.

##### 5.9.3.1.1 Element: NewJDFQuParams

**Table 5-71: NewJDFQuParams Element**

Name	Data Type	Description
<i>JobID</i> ?	stringN-MTOKEN	@ <i>JobID</i> of the JDF Node that is being queried.
<i>JobPartID</i> ?	stringN-MTOKEN	@ <i>JobPartID</i> of the JDF Node that is being queried.
<i>QueueEntryID</i> ?	stringN-MTOKEN	@ <i>QueueEntryID</i> of the Job that is currently being executed. If @ <i>QueueEntryID</i> is specified, @ <i>JobID</i> and @ <i>JobPartID</i> are ignored.

#### 5.9.3.2 NewJDF Command

The NewJDF Command Message is sent to an MIS, Device or Controller to initiate creation of new JDF Nodes by that Device or Controller. For instance, a Workflow Controller might have received content data and now requires a JDF Job from an MIS to which work on the content can be booked. The NewJDF Command Message does not imply any Job submission or request for Job submission. Job queue submission SHALL still be requested with a RequestQueueEntry Message, and the MIS SHALL still subsequently submit the Job to the requesting Controller or Device.

**Table 5-72: NewJDF Command Message**

Object Type	Element Name	Description
CommandTypeObj	NewJDFCmdParams	Specifies the details of the Nodes that are to be created
ResponseTypeObj	IDInfo ?	Contains the information about the newly created Node.

### 5.9.3.2.1 Element: [NewJDFCmdParams](#)

**Table 5-73: NewJDFCmdParams Element**

Name	Data Type	Description
<i>JDFDetails ?= "Brief"</i>	string	<p>Level of detail requested for the returned IDInfo Elements.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>None</i> – Do not return any IDInfo Elements.</li> <li><i>Brief</i> – Return IDInfo Elements without embedded JDF or Device.</li> <li><i>Full</i> – Return IDInfo Elements with embedded JDF and Device.</li> </ul>
IDInfo	element	Details of the new JDF Node that is to be created.

### 5.9.3.2.2 Element: [IDInfo](#)

**Table 5-74: IDInfo Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Category ?</i>	NMTOKEN	<p>JDF/@Category of the JDF Node.</p> <p><b>Values include those from:</b> JDF/@Category.</p>
<i>JDFURL ?</i> <i>New in JDF 1.5</i>	URL	<p>URL to detailed JDF description. Provides a way of referencing a JDF Element instead of embedding it at IDInfo/JDF. At most one of JDF and @JDFURL SHALL be specified.</p> <p><b>Note:</b> the referenced <b>JDF XJDF</b> MAY be an ancestor <b>JDF Node XJDF Node</b> of the newly created node. In this case the recipient SHALL search the returned <b>JDF XJDF</b> for the <b>JDF Node XJDF Node</b> with the correct @JobPartID.</p>
<i>JobID ?</i>	string	@JobID of the JDF Node.
<i>JobPartID ?</i>	string	@JobPartID of the JDF Node.
<i>ParentJobID ?</i>	string	@JobID of the parent Node of the JDF Node. If not specified, it defaults to the value of @JobID.
<i>ParentJobPartID ?</i>	string	Job Part ID of the parent Node of the JDF Node.
<i>ProjectID ?</i> <i>New in JDF 1.5</i>	string	Identification of the project context that the JDF described by this IDInfo belongs to. Enables usage of NewJDF in a web to print environment where @ProjectID represents the shopping cart.
<i>Type ?</i>	NMTOKEN	<p>JDF/@Type of the JDF Node.</p> <p><b>Values include those from:</b> JDF/@Type.</p>
<i>Types ?</i>	NMTOKENS	<p>JDF/@Types of the JDF Node.</p> <p><b>Values include those from:</b> JDF/@Types.</p>
<i>Device ?</i>	element	Description of the Device that the JDF is targeted for. <b>The data type of Device is ResourceElement. See Section 3.15.1, “ResourceElement – Subelement of a Resource” on page 113.</b>

**Table 5-74: IDInfo Element (Sheet 2 of 2)**

Name	Data Type	Description
JDF?	element	Detailed JDF description. Contains information that allows the receiver of the NewJDF Message to properly respond. Note that the JDF is not implicitly submitted. At most one of JDF and @JDFURL SHALL be specified.  Note: this may be an ancestor <b>JDF Node XJDF Node</b> of the newly created <b>Node</b> . In this case the recipient SHALL search the returned <b>JDF XJDF</b> for the <b>JDF Node XJDF Node</b> with the correct <b>@JobPartID</b> .

## 5.9.4 NodeInfo

[New in JDF 1.2](#)

[Deprecated in JDF 1.3](#)

The NodeInfo Message has been replaced with the Resource Message in JDF 1.3. For details of the deprecated NodeInfo Message, see Section P.3.5, “NodeInfo” on page 1316.

## 5.9.5 Occupation

[Deprecated in JDF 1.5](#)

The Occupation Message has been deprecated in JDF 1.5. For details of the deprecated Occupation Message, see Section P.3.7, “Occupation” on page 1320.

**Deprecation note:** the Activity elements provide the functionality that makes Occupation is redundant.

## 5.9.6 Resource

The Resource Message can be a Command Message or a Query Message to modify or to query **JDF XJDF** Resources. In both cases (query and command), it is possible to address either global Device Resources, such as Device settings or Job-specific Resources. The Query Message retrieves information about the Resources without modifying them, while the Command Message modifies those settings within the Resource that are specified. Settings that are not specified remain unchanged.

### 5.9.6.1 Resource Query

#### 5.9.6.2 QueryResource

The **Resource Query QueryResource** Message can be made selective by specifying a **ResourceQuParams** Element. The presence of the **@JobID** Attribute determines whether global Device Resources or Job-related Resources are returned. If no **ResourceQuParams** Element is specified, only the global Device Resources are returned.

The query’s Response Message returns a list of **ResourceInfo** Elements that contains the queried information concerning the Resources. If the list is empty because the selective query parameters of the **ResourceQuParams** lead to a null selection of the known Device/Job Resources, then the **@ReturnCode** is 103 (@**JobID** unknown), 104 (@**JobPartID** unknown) or 108 (empty list) and SHOULD be flagged as a warning with **Notification**[@**Class** = "Warning" and @**Type** = "Error"].

**Table 5-75: Resource Query Message**

Object Type	Element Name	Description
QueryTypeObj	ResourceQuParams ?	Specifies the Resources queried.
ResponseTypeObj	ResourceInfo *	Contains the amount data of Resources and if requested, the Resources itself.

**Table 5-76: QueryResource Message**

Name	Data Type	Description
<i>AgentName</i> ?	string	See Message/@ <i>AgentName</i> .
<i>AgentVersion</i> ?	string	See Message/@ <i>AgentVersion</i> .
<i>Author</i> ?	string	See Message/@ <i>Author</i> .
<i>DeviceID</i> ?	NMTOKEN	See Message/@ <i>DeviceID</i> .
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ <i>ICSVersions</i> .
<i>ID</i>	ID	See Query/@ <i>ID</i> .
<i>PersonalID</i> ?	NMTOKEN	See Message/@ <i>PersonalID</i> .
<i>Time</i> ?	dateTime	See Message/@ <i>Time</i> .
<i>Subscription</i> ?	element	See Query/Subscription.
<i>ResourceQuParams</i> ?	element	Specifies the Resources queried.

### 5.9.6.2.1 Element: ResourceQuParams

**Table 5-77: ResourceQuParams Element (Sheet 1 of 3)**

Name	Data Type	Description
<i>Classes</i> ?	enumerations	<p>List of the Resource Classes to be queried. For example, in order to query the actual level of consumables in a Device outside of any Job context, specify @<i>Classes</i> = "Consumable" in the query without a @<i>JobID</i> Attribute.</p> <p><b>Default value is:</b> all Classes (if @<i>Classes</i> is empty or not specified).</p> <p><b>Allowed values are from:</b> <a href="#">Resource/@<i>Classes</i> (Table 3-10, “Abstract Resource Element” on page 75)</a>.</p>
<i>Context</i> ? <a href="#">New in JDF 1.5</a>	enumeration	<p>Specifies the job context of the queried resources.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Job</i> – the query is for all resources in the context of the specified job.</li> <li><i>Global</i> – the query is for a catalog of all known resources.</li> </ul>
<i>Exact</i> ? = "false"	boolean	Requests an exact description of the <a href="#">JDF XJDF</a> Resource. If "true", the response will also return the requested <a href="#">JDF XJDF</a> Resource.
<i>ProductID</i> ? <i>ExternalID</i> ? <a href="#">New in JDF 1.2</a>	string NMTOKEN	@ <i>ProductID</i> @ <i>ExternalID</i> of the Resource that is queried.
<i>JobID</i> ? <a href="#">Modified in JDF 1.4</a>	string NMTOKEN	<p>@<i>JobID</i> of the JDF Node <b>that is for which resource information is</b> being queried. If no @<i>JobID</i> is specified, the request applies to the currently running Job or global resources, depending on the value of @<i>Context</i>.</p> <p><b>@<i>JobID</i> SHALL NOT be specified if QueryResource/Subscription is present.</b></p>
<i>JobPartID</i> ?	string NMTOKEN	<p>@<i>JobPartID</i> of the JDF Node <b>that is for which resource information is</b> being queried. If no @<i>JobPartID</i> is specified, all resources related to @<i>JobID</i> are queried. <b>@<i>JobPartID</i> SHALL NOT be specified if @<i>JobID</i> is absent. @<i>JobPartID</i> SHALL NOT be specified if QueryResource/Subscription is present.</b></p>

**Table 5-77: ResourceQuParams Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>Location</i> ?  <i>New in JDF 1.4</i>	stringNMTO-KEN	<p>Identifies the location of a Resource, such as paper tray, ink container or thread holder. The name is the same name used in the Partition Key <i>@Location</i> of distributed Resources (see also <a href="#">Section 3.15.6.4, “Locations of PhysicalResources”</a> <a href="#">Section 3.13.1, “Location”</a>).</p> <p><b>Default value is:</b> the location will be selected by the Device</p> <p><b>Values include those from:</b> Table C-21, “Input Tray and Output Bin Names” on page 1147.</p> <p><b>Note:</b> the specified values are for printer locations.</p>
<i>LotDetails</i> ?= "Brief"  <i>New in JDF 1.4</i>	enumeration	<p>Refines the level of information provided about individual lots of the Resources.</p> <p>This attribute is most useful when querying an MIS, and SHOULD NOT be specified when querying a device.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Brief</i> – Provides only the <i>@LotControlled</i> Attribute in the Response indicating whether or not the Resources are lot controlled.</li> <li><i>Full</i> – Provides <i>Lot</i> Elements related to the Resources.</li> <li><i>Amount</i> – Same as "<i>Full</i>", but with the addition of the <i>@Amount</i> Attribute so the MIS can indicate what the current “on hand” balance for the <i>Lot</i> is in the MIS.</li> </ul>
<i>LotID</i> ?  <i>New in JDF 1.4</i>	string	<i>@LotID</i> of the individual lot of the Resource that is queried.
<i>ProcessUsage</i> ?	stringNMTO-KEN	<p>Selects a Resource in which <i>ResourceLink/@ProcessUsage</i> matches the token specified.</p> <p>Only necessary if a Resource name is used more than once by one Node. For example, the <b>Component</b> input <b>ExposedMedia</b> of a <b>ConventionalPrinting</b> Process SHALL be distinguished by specifying <i>@ProcessUsage</i> = "Plate" and <i>@ProcessUsage</i> = "Proof", respectively.</p> <p>The <i>@ResourceName</i>, <i>@Usage</i> and <i>@ProcessUsage</i> Attributes are combined by a logical AND conjunction to select the Resource to be queried.</p> <p><b>Values include those from:</b> <i>ResourceLink/@ProcessUsage</i> (Table 3-23, “<i>ResourceLink Element</i>” on page 100).</p>
<i>ProductID</i> ? <i>ExternalID</i> ?  <i>New in JDF 1.2</i>	stringNMTO-KEN	<i>@ProductID</i> <i>@ExternalID</i> of the Resource that is queried.
<i>QueueEntryID</i> ?  <i>New in JDF 1.2</i>	stringNMTO-KEN	<i>@QueueEntryID</i> of the Job that is currently being executed. If <i>@QueueEntryID</i> is specified, <i>@JobID</i> , <i>@JobPartID</i> and <b>PartPart</b> SHALL be ignored. If none of <i>@JobID</i> , <i>@JobPartID</i> , <b>PartPart</b> or <i>@QueueEntryID</i> are specified, ResourceQuParams applies to all Jobs. <i>@QueueEntryID</i> SHALL NOT be specified if <b>QueryResource/Subscription</b> is present.

**Table 5-77: ResourceQuParams Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>ResourceDetails</i> ?= "Full" <a href="#">New in JDF 1.4</a>	enumeration	Refines the level of information provided about the Resources. <b>Allowed values are:</b> <i>Brief</i> – Provides appropriate ID information specific to the type of Resource and @DescriptiveName Attributes only. For example, @PersonalID@ExternalID would be included for <b>Consumable Resource</b> Elements that represent consumables, @PersonalID for <b>EmployeeContact</b> Resources that represent employees. <i>Full</i> – Provides all of the attributes of the resources.
<i>ResourceID</i> ? <a href="#">New in JDF 1.3</a> <a href="#">Deprecated in JDF 1.5</a>	NMTOKEN	Resource/@ID of the Resource that is queried. Note: The data type is NMTOKEN and not IDREF because the referenced @ID need not be present in the JMF. <b>Deprecation note:</b> starting with JDF 1.5, Resources SHOULD be identified by @ProductID in Resource JMF messages.
<i>ResourceName</i> ? <a href="#">Modified in JDF 1.4</a>	NMTOKENS	Name of the Resource(s) being queried. <b>Values include those from:</b> Section 8, “Resources”. <b>Modification note:</b> starting with JDF 1.4, the data type was expanded from NMTOKEN to NMTOKENS.
<i>Scope</i> ? <a href="#">New in JDF 1.4</a>	Scopeenumeration	Specifies whether the query refers to a complete list of all potential Resources or to the currently loaded Resources or the Resources related to a specific job. <b>Allowed values are:</b> <i>Allowed</i> – All known Resources SHALL be returned, including those that are not currently available. <i>Present</i> – Currently available Resources SHALL be returned.
<i>Usage</i> ?	enumeration	Selects a Resource in which the value of the ResourceLink/@Usage Attribute matches the token specified here in this Attribute. Only necessary if a Resource with a given name is used both as input and output by one Node. <b>Allowed values are from:</b> ResourceLink/@Usage (Table 3-23, “ResourceLink Element” on page 100).
Part * <a href="#">Part *New in JDF 1.2</a>	element	PartElements that describe the Resource whose Messages are which is being queried.

**Example 5-16: Resource Query about Paper**

The following is an example of a press system sending a **Resource QueryQueryResource** to an MIS to get information on all paper known by the MIS:

TBD 2.x Example.

```
<Query ID="M170" type="Resource" xsi:type="QueryResource" >
  <ResourceQuParams ResourceDetails="Brief" LotDetails="Full" Scope="Allowed"/>
</Query>
```

**Example 5-17: Resource Response about Paper**

The following is an example of a Resource Response to the previous **Resource QueryQueryResource**

TBD 2.x Example.

```

<Response ID="M1001" Type="Resource" xsi:type="ResponseResource" refID="M170">
    <ResourceInfo LotControlled="false">
        <Media ID="R01" Class="Consumable" Status="Available"
            ProductID="9902-1" DescriptiveName="60 lb #3 Gloss Book"/>
    </ResourceInfo>
    <ResourceInfo LotControlled="true">
        <Media ID="R01" Class="Consumable" Status="Available"
            ProductID="9903-1" DescriptiveName="80 lb #3 C1S Cover"/>
        <Lot LotID="LN8845739CN7787399-03"/>
        <Lot LotID="LN8845739CN7787399-04"/>
        <Lot LotID="LN8845739CN7787399-06"/>
        <Lot LotID="LN8845739CN7787399-10"/>
    </ResourceInfo>
    <!-- ... -->
    <ResourceInfo LotControlled="false">
        <Media ID="R01" Class="Consumable" Status="Available"
            ProductID="9989-5" DescriptiveName="110 lb #1 Coated Cover"/>
    </ResourceInfo>
</Response>

```

### Example 5-18: Resource Query about Employees

The following is an example of a press system sending a [Resource QueryQueryResource](#) to an MIS to get a list of all known employees in the MIS:

TBD 2.x Example.

```

<Query ID="M170" Type="Resource" xsi:type="QueryResource">
    <ResourceQuParams resourceName="Employee" resourceDetails="Brief"/>
</Query>

```

### Example 5-19: Resource Response about Employees

The following is an example of a Resource Response to the previous [Resource QueryQueryResource](#)

TBD 2.x Example.

```

<Response ID="M1001" Type="Resource" xsi:type="ResponseResource"
    refID="M170">
    <ResourceInfo>
        <Employee ID="E01" Class="Implementation" Status="Available"
            PersonalID="1034" DescriptiveName="John Allen"/>
    </ResourceInfo>
    <ResourceInfo>
        <Employee ID="E02" Class="Implementation" Status="Available"
            PersonalID="1057" DescriptiveName="Sally Brown"/>
    </ResourceInfo>
    <ResourceInfo>
        <Employee ID="E03" Class="Implementation" Status="Available"
            PersonalID="2105" DescriptiveName="Mike Davison"/>
    </ResourceInfo>
    <!-- ... -->
    <ResourceInfo>
        <Employee ID="E04" Class="Implementation" Status="Available"
            PersonalID="6410" DescriptiveName="Will Smith"/>
    </ResourceInfo>
</Response>

```

## Example 5-20: Resource Signal about Consumed Resources

The following is an example of a Resource Signal used to report the inventory identification of the Resources that were used:

TBD 2.x Example.

```

<Signal ID="P172" Type="Resource" xsi:type="SignalResource">
  <ResourceQuParams JobID="34028" JobPartID="_F05A84BD"/>
  <ResourceInfo>
    <Media PartIDKeys="SheetName" ID="RI007" Class="Consumable"
      ProductID="3002" Brand="Roll Stock"
      Dimension="2520 8640000" MediaType="Paper">
      <Media SheetName="1"/>
      <Media SheetName="2"/>
    </Media>
    <AmountPool>
      <PartAmount ActualAmount="9700">
        <Part SheetName="1"/>
        <Lot ActualAmount="4850" Consumption="Full"
          LotID="LN1040788312RN20050917-04"/>
        <Lot ActualAmount="4850" Consumption="Partial"
          LotID="LN1040788339RN20050919-01"/>
      </PartAmount>
      <PartAmount ActualAmount="5027">
        <Part SheetName="2"/>
        <Lot ActualAmount="5027" Consumption="Partial"
          LotID="LN1040788319RN20050917-04"/>
      </PartAmount>
    </AmountPool>
  </ResourceInfo>
</Signal>
```

### 5.9.6.3 Resource Command

#### 5.9.6.4 CommandResource

The Resource Command Message is used to modify or create either global Device settings or resources of a running Job. It can be made selective by specifying the OPTIONAL Attributes in the ResourceCmdParams Element. The presence of ResourceCmdParams/@JobID determines whether global Device Resources or Job-related Resources are modified. If no Resource exists in the target JDF that matches the filter settings in ResourceCmdParams, and ResourceCmdParams/@JobID is present, then the specified Resource SHALL be created as an Input Resource to the JDF Node.

The Resource Message contains a list of ResourceInfo Elements with all Resources and private extensions of the Device after the changes have been applied. The type of the Resource that is given as a response depends on the type of the Resource given in the command.

If the Resource Command Message was successful, the value of @ReturnCode is "0". If it is not successful, the value of @ReturnCode is one of those that have been described in the above section about the Resource Query Message; or it is "200" (invalid Resource parameters) or "201" (insufficient Resource parameters). Partial application of the Resource SHOULD also be flagged as a warning with Notification[@Class = "Warning" and @Type = "Error"]. If the value of @ReturnCode is larger than "0", the Controller that issued the command can evaluate the returned Resource in order to find the setting that could not be applied.

The CommandResource Message is used to modify or create global Device resources such as media catalogs or lists of known machine operators. It can be made selective by specifying the attributes that MAY be present in the ResourceCmdParams Element.

If it is not successful, the value of `@ReturnCode` SHALL be set to "140" (CommandResource rejected). If the data could only be partially updated ResponseResource`@ReturnCode` SHALL be "141" (CommandResource partially rejected).

If the value of `@ReturnCode` is larger than "0", the Controller that issued the command SHOULD submit a global QueryResource and evaluate the returned ResourceInfo elements in order to find the setting that could not be applied.

**Table 5-78: Resource Command Message**

Object Type	Element Name	Description
CommandTypeObj	ResourceCmdParams	Specifies the Resources to be modified.
ResponseTypeObj	ResourceInfo *	Contains information about the Resources after modification.

**Table 5-79: CommandResource Message**

Name	Data Type	Description
<i>AgentName</i> ?	string	See Message/ <code>@AgentName</code> .
<i>AgentVersion</i> ?	string	See Message/ <code>@AgentVersion</code> .
<i>Author</i> ?	string	See Message/ <code>@Author</code> .
<i>DeviceID</i> ?	NMTOKEN	See Message/ <code>@DeviceID</code> .
<i>ICSVersions</i> ?	NMTOKENS	See Message/ <code>@ICSVersions</code> .
<i>ID</i>	ID	See Command/ <code>@ID</code> .
<i>PersonalID</i> ?	NMTOKEN	See Message/ <code>@PersonalID</code> .
<i>RelatedCommands</i> ?	NMTOKENS	See Command/ <code>@RelatedCommands</code> .
<i>Time</i> ?	dateTime	See Message/ <code>@Time</code> .
<i>TransactionID</i> ?	NMTOKEN	See Command/ <code>@TransactionID</code> .
ResourceCmdParams ?	element	Specifies the Resources to be modified.

### 5.9.6.4.1 Element: ResourceCmdParams

**Table 5-80: ResourceCmdParams Element (Sheet 1 of 3)**

Name	Data Type	Description
<i>Activation</i> ?= "Active" New in JDF 1.1	enumeration	<p>Describes the activation status of the uploaded Resource. Allows for a range of activity, including deactivation and test running of a Resource prior to actually committing the change to the Device.</p> <p>Values are in order of involvement from least to most active.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Hold</i> – Used for uploading a Resource that requires operator intervention before being applied.</li> <li><i>TestRun</i> – Used for a test run check by the Controller or a Device. This does not imply that the update is automatically applied when the check is completed.</li> <li><i>TestRunAndGo</i> – Similar to "<i>TestRun</i>", but requests a subsequent automatic update of the Resource if the test run has been completed successfully.</li> <li><i>Active</i> – Used for applying the update immediately.</li> </ul> <p><b>Note:</b> that @Activation uses an identical syntax to JDF/@Activation, but that is does not explicitly set JDF/@Activation in the JDF on the Device. The "<i>Inactive</i>" value defined in JDF/@Activation is not a valid value in this list.</p>
<i>Exact</i> ?= "false"	boolean	Requests an exact description of the JDF XJDF Resource. If "true", the Response Message will also return the requested JDF XJDF Resource.
<i>ProductID</i> ? <i>ExternalID</i> ? New in JDF 1.2	string NMTOKEN	@ <i>ProductID</i> @ <i>ExternalID</i> of the Resource that is updated.
<i>JobID</i> ?	string	@ <i>JobID</i> of the JDF Node that the Resource being modified is linked to. If no @ <i>JobID</i> is specified, global Resource settings are modified.
<i>JobPartID</i> ?	string	@ <i>JobPartID</i> of the JDF Node that the Resource being modified is linked to.
<i>ProcessUsage</i> ?	NMTOKEN	<p>Selects a Resource in which the value of the ResourceLink/@<i>ProcessUsage</i> Attribute matches the token specified here in this Attribute.</p> <p>Only necessary if a Resource name is used more than once by one Node. For example, the <b>ExposedMedia</b> Input Resources of a <b>ConventionalPrinting</b> Process can be distinguished by specifying @<i>ProcessUsage</i> = "Plate" and @<i>ProcessUsage</i> = "Proof", respectively.</p> <p>The @<i>ResourceName</i>, @<i>Usage</i> and @<i>ProcessUsage</i> Attributes are combined by a logical AND conjunction to select the Resource to be modified.</p> <p><b>Values include those from:</b> ResourceLink/@<i>ProcessUsage</i> (Table 3-23, "ResourceLink Element" on page 100).</p>

**Table 5-80: ResourceCmdParams Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>ProductID ?</i> <i>ExternalID ?</i> <a href="#">New in JDF 1.2</a>	string	<i>@ProductID@ExternalID</i> of the Resource that is updated.
<i>ProductionAmount ?</i>	double	New requested amount of Resource production. This value replaces the <i>ResourceLink PartAmount/@Amount</i> of the selected Resource.
<i>QueueEntryID ?</i> <a href="#">New in JDF 1.2</a>	string	<i>@QueueEntryID</i> of the Job that is currently being executed. If <i>@QueueEntryID</i> is specified, <i>@JobID</i> , <i>@JobPartID</i> and <i>PartPart</i> are ignored. If none of <i>@JobID</i> , <i>@JobPartID</i> , <i>PartPart</i> or <i>@QueueEntryID</i> are specified, ResourceCmdParams applies to global resources.
<i>ResourceID ?</i> <a href="#">New in JDF 1.3</a> <a href="#">Deprecated in JDF 1.5</a>	NMTOKEN	Resource/ <i>@ID</i> the Resource that is modified. If both <i>@ResourceID</i> and Resource are specified, Resources with a non-matching Resource/ <i>@ID</i> SHALL NOT be updated. Note: The data type is NMTOKEN and not IDREF because the referenced <i>@ID</i> NEED NOT be present in the JMF. <b>Deprecation note:</b> starting with JDF 1.5, Resources SHOULD be identified by <i>@ProductID</i> in Resource JMF messages.
<i>ResourceName ?</i>	NMTOKEN	Name of the Resource whose production amount will be modified. <b>Values include those from:</b> Chapter 8, “Resources”.
<i>Status ?</i> <a href="#">New in JDF 1.2</a>	enumeration	Updated <i>@StatusNodeInfo/@NodeStatus</i> of the selected Resource <i>NodeInfo</i> . <b>Values include those from:</b> Resource/ <i>@Status</i> (Table 3-10, “Abstract Resource Element” on page 75).
<i>UpdateIDs ?</i> <a href="#">New in JDF 1.1</a> <a href="#">Deprecated in JDF 1.3</a>	NMTOKENS	The <i>@UpdateID</i> Attributes of one or more ResourceUpdate that are defined in Resources known to the recipient. The data type is NMTO-KENS and not IDREFS because no matching IDs exist within this Message. The order of tokens in defines the order in which the updates are applied.
<i>UpdateMethod ?=</i> <i>“Complete”</i> <a href="#">New in JDF 1.3</a> <a href="#">Modified in JDF 1.4</a>	enumeration	Method how the Resource is updated. Attributes that are required to correctly identify the Resource SHALL be specified, even if <i>@UpdateMethod</i> = “Remove” or <i>@UpdateMethod</i> = “Incremental”. These Attributes include <i>@ProductID@ExternalID</i> , <i>@Class</i> , <i>@PartIDKeys</i> , and any Partition Keys. <b>Allowed values are:</b> <i>Complete</i> – The Resource Partitions defined by <i>PartPart</i> are completely overwritten by <i>Resource Resource</i> in this Message. <i>Incremental</i> – The Resource Partitions defined by <i>PartPart</i> are incrementally updated by the values that are explicitly set in <i>Resource Resource</i> in this Message. <i>Remove</i> – The Resources or Resource Partitions are removed. <a href="#">New in JDF 1.4</a>

**Table 5-80: ResourceCmdParams Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>Usage</i> ? <a href="#">New in JDF 1.4</a>	enumeration	Selects a Resource in which the value of the ResourceLink/@ <i>Usage</i> Attribute matches the token specified here in this Attribute. Only necessary if a Resource name is used both as input and output by one Node. <b>Allowed values are from:</b> ResourceLink/@ <i>Usage</i> (Table 3-23, “ResourceLink Element” on page 100).
MISDetails ? <a href="#">New in JDF 1.2</a>	element	Definition how the costs for the modification of the Resource are to be charged.
Part * <a href="#">Part * New in JDF 1.2</a>	element	<b>Part</b> Elements that describe the Partitions of the Resource that is being modified. If not specified, the entire Resource is selected. If a Resource is the final instance of set of Partitioned Resources, and thus the properties of the Partition that represents the set are modified in addition to the properties of the instance, then the <b>Part</b> that represents the set SHOULD also be specified explicitly. For example, if the fourth plate of a four color process set is now available, and thus the entire surface is now available, <b>Part</b> Elements for both the fourth plate and for the entire surface SHOULD be specified. If the other surface is also available, then a <b>Part</b> Element for the sheet SHOULD be specified as well.
Resource *	element	Resources to be uploaded to the Device. They replace the original Resources according to the policy specified in @ <i>UpdateMethod</i> . The Resource SHOULD be identified by ResourceCmdParams/@ <i>ResourceName</i> , ResourceCmdParams/@ <i>Usage</i> , ResourceCmdParams/@ <i>ProcessUsage</i> or ResourceCmdParams/@ <i>ProductID</i> @ <i>ExternalID</i> . The data type and @ <i>Class</i> of Resource MAY be derived from the Abstract Resource. See Section 3.10.3, “Abstract Resource” on page 75.
ResourceSet ?	element	ResourceSet lists the Resources that are uploaded to the Device. They replace the original Resources in the Device according to the policy specified in @ <i>UpdateMethod</i> .

**Example 5-21: Resource Command: Single Resource is Available**

The following is an example for specifying that the Cyan, Front plate of Sheet2, Signature 1 has become available

**TBD 2.x Example.**

```
<Command ID="C1" Type="Resource" xsi:type="CommandResource">
  <ResourceCmdParams JobID="MakeBrochure 012" ResourceID="ExposedMediaID"
    Status="Available">
    <Part SignatureName="Sig1" SheetName="Sheet2" Side="Front"
      Separation="Cyan"/>
  </ResourceCmdParams>
</Command>
```

**Example 5-22: Resource Command: Multiple Resources are Available**

The following is an example for specifying that the Black, Front plate of Sheet2, Signature 1 has become available and is also the last plate of Sheet 2.

**TBD 2.x Example.**

```
<Command ID="C2" Type="Resource" xsi:type="CommandResource">
```

```

<ResourceCmdParams JobID="MakeBrochure_012" ResourceID="ExposedMediaID"
    Status="Available">
    <Part SignatureName="Sig1" SheetName="Sheet2" Side="Front"
        Separation="Black"/>
    <!-- the entire front of Sheet2 is also available -->
    <Part SignatureName="Sig1" SheetName="Sheet2" Side="Front"/>
    <!-- the entire Sheet2 is also available -->
    <Part SignatureName="Sig1" SheetName="Sheet2"/>
</ResourceCmdParams>
</Command>

```

### 5.9.6.5 ResponseResource

**Table 5-81: ResponseResource Message**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID ?	ID	See Response/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
refID ?	NMTOKEN	See Response/@refID.
ReturnCode ?	integer	See Response/@ReturnCode.
Time ?	dateTime	See Message/@Time.
Notification ?	element	See Response/Notification.
ResourceInfo *	element	Response to a Command: contains information about the Resources after modification. Response to a Query: contains the amount data of Resources and if requested, the Resources itself.

#### 5.9.6.5.1 Element: ResourceInfo

**Table 5-82: ResourceInfo Element (Sheet 1 of 5)**

Name	Data Type	Description
ActualAmount ? <i>New in JDF 1.2</i>	double	When querying a Device, this Attribute reflects the current accumulated amount of the Resource that has been consumed (input) or produced (output) by the Process. This corresponds to the current value of ResourceLink PartAmount/@ActualAmount if it would be written now. When querying an MIS, this Attribute SHOULD NOT be specified.
Amount ?	double	When querying a Device, this Attribute reflects the intended accumulated amount of the Resource that will be consumed (input) or produced (output) by the Process. This corresponds to the current value of ResourceLink PartAmount/@Amount if it would be written now. When querying an MIS, this Attribute specifies the amount of the Consumable Resource PartAmount that is available in inventory.

**Table 5-82: ResourceInfo Element (Sheet 2 of 5)**

Name	Data Type	Description
<i>AvailableAmount</i> ?  <a href="#">New in JDF 1.4</a>	double	When querying a Device, this Attribute specifies the Device-specific amount of the <b>Consumable Resource PartAmount</b> that is available in the Device.  When querying an MIS, this Attribute specifies the amount of the <b>Consumable Resource PartAmount</b> that is available in inventory
<i>CommandResult</i> ?  <a href="#">New in JDF 1.4</a>	enumeration	Result of a <b>Resource CommandCommandResource</b> .  <b>Allowed values are:</b> <i>Rejected</i> – the <b>Resource CommandCommandResource</b> was not applied to this Resource. <i>Removed</i> – An existing Resource was removed completely by a Resource specified in <b>ResourceCmdParams</b> . <i>New</i> – A new Resource with the values specified in <b>ResourceCmdParams</b> was created. <i>Merged</i> – Values from the Resource in <b>ResourceCmdParams</b> were merged into an existing Resource. See the <b>ResourceInfo/Resource Resource</b> for the merged result. <i>Replaced</i> – An existing Resource was replaced completely by a Resource specified in <b>ResourceCmdParams</b> .
<i>DeviceID</i> ?  <a href="#">New in JDF 1.5</a>	NMTOKEN	Used to disambiguate the location of a Resource when a Controller is returning cumulative Resource information from its controlled Devices.
<i>JobID</i> ?	NMTOKEN	@ <i>JobID</i> species the @ <i>JobID</i> of the job that this <b>ResourceInfo</b> applies to.
<i>JobPartID</i> ?	NMTOKEN	@ <i>JobPartID</i> species the @ <i>JobPartID</i> of the work step that this <b>ResourceInfo</b> applies to.
<i>Level</i> ?  <a href="#">Modified in JDF 1.4</a>	enumeration	Level of consumable resources in the device. A Device MAY specify a level status that describes a low or empty consumable level.  <b>Allowed values are:</b> <i>Empty</i> – Specification is left to the Device manufacturer. <i>Low</i> – Specification is left to the Device manufacturer. <i>OK</i> – Specification is left to the Device manufacturer.  <b>Modification note:</b> starting with JDF 1.4, the default of "OK" is removed to allow job independent Resource information.
<i>Location</i> ?	string	Device-specific string to identify the location of a given consumable, such as paper tray, ink container or thread holder. The name is the same name used in the Partition Key @ <i>Location</i> of distributed Resources (see also <a href="#">Section 3.15.6.4, “Locations of PhysicalResources”</a> <a href="#">Section 3.13.1, “Location”</a> ).  <b>Default value is:</b> the location will be selected by the Device  <b>Values include those from:</b> Table C-21, “Input Tray and Output Bin Names” on page 1147.  <b>Note:</b> the specified values are for printer locations.
<i>LotControlled</i> ?  <a href="#">New in JDF 1.4</a>	boolean	Indicates that the Resource is lot controlled.

**Table 5-82: ResourceInfo Element (Sheet 3 of 5)**

Name	Data Type	Description
<i>ModuleID</i> ? <a href="#">New in JDF 1.3</a>	string NMTOKEN	@ModuleID of the Module that the Resource is consumed or produced by. If neither of @ModuleID or @ModuleIndex are specified, it defaults to the entire Device specified by JMF/@SenderId.
<i>ModuleIndex</i> ? <a href="#">New in JDF 1.3</a>	IntegerRangeList	The 0-based indices of the module or modules that the Resource is consumed or produced by. If neither of @ModuleID or @ModuleIndex are specified, defaults to the entire Device specified by JMF/@SenderId.
<i>Orientation</i> ? <a href="#">New in JDF 1.5</a>	Orientation	Named orientation describing the transformation of the orientation of the resource relative to the ideal Process coordinate that uses the Resource. This Attribute can be used to describe Orientation dependent Resources such as paper in a paper tray.
<i>ProcessUsage</i> ?	NMTOKEN	Selects a Resource in which the value of the ResourceLink Resource/@ProcessUsage Attribute matches the token specified here in this Attribute. Only necessary if a Resource name is used more than once by one Node. For example, the ExposedMedia Input Resources of a ConventionalPrinting Process can be distinguished by specifying @ProcessUsage = "Proof" and @ProcessUsage = "Plate", respectively. The @ResourceName and @ProcessUsage Attributes are combined by a logical AND conjunction to select the Resource to be queried. <b>Values include those from:</b> ResourceLink/@ProcessUsage (Table 3-23, "ResourceLink Element" on page 100).
<i>ProductID</i> ? <i>ExternalID</i> ? <a href="#">New in JDF 1.2</a>	string	@ProductID@ExternalID of the Resource.
<i>QueueEntryID</i> ?	NMTOKEN	@QueueEntryID species the @QueueEntryID of the queue entry that this ResourceInfo applies to.
<i>ResourceID</i> ? <a href="#">New in JDF 1.3</a> <a href="#">Deprecated in JDF 1.5</a>	NMTOKEN	Resource/@ID of the Resource. Note: The data type is NMTOKEN and not IDREF because the referenced @ID NEED NOT be present in the JMF. <b>Deprecation note:</b> starting with JDF 1.5, Resources SHOULD be identified by @ProductID in Resource JMF messages.
<i>ResourceName</i> ?	NMTOKEN	Name of the Resource if @Exact = "false" in the query. @ResourceName specifies the primary Resource that this ResourceInfo applies to. Additional Resources MAY be specified to ensure complete references from the primary Resource. <b>Values include those from:</b> Chapter 8, "Resources".

**Table 5-82: ResourceInfo Element (Sheet 4 of 5)**

Name	Data Type	Description
<i>Scope</i> ? <a href="#">New in JDF 1.5</a>	Scopeenumeration	<p><i>@Scope</i> specifies the context of the resources defined in this <b>ResourceInfo</b>. Specifies whether the query refers to a complete list of all potential Resources or to the currently loaded Resources.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Allowed</i> – All known Resources SHALL be returned, including those that are not currently available.</li> <li><i>Present</i> – Currently available Resources SHALL be returned.</li> </ul>
<i>Speed</i> ?	double	The current speed at which the Resource that this <b>ResourceInfo</b> describes is being consumed or produced. <i>@Speed</i> is defined in the units specified by <b>ResourceSet/@Unit</b> / hour.
<i>Status</i> ? <a href="#">New in JDF 1.2</a>	enumeration	<p>Updated <i>@StatusNodeInfo/@NodeStatus</i> of the selected <b>ResourceNodeInfo</b>.</p> <p><b>Allowed values are from:</b> <b>Resource/@StatusNodeInfo/@NodeStatus</b> (Table 3-10, “Abstract Resource Element” on page 75 Table 8-202, “NodeInfo Resource” on page 805 and Table 8-203, “NodeStatus Attribute Values” on page 808).</p>
<i>TotalAmount</i> ? <a href="#">New in JDF 1.6</a>	double	<p><i>@TotalAmount</i> specifies the job independent total counter setting for a given type of resource.</p> <p><b>Note:</b> this allows tracking of power consumption without requiring a Device to track it individually for each job.</p>
<i>Unit</i> ?	string	<p>Unit of the amount Attributes.</p> <p>In a Job context it is strongly discouraged to specify a unit other than the unit defined in the respective <b>JDF XJDF</b> Resource, although this might be necessary due to technical considerations, such as when ink is specified in weight (g) and ink measurement is specified in volume (liter).</p> <p><b>Values include those from:</b> Table 1-8, “Units Used in JDF XJDF”.</p>
<i>Usage</i> ? <a href="#">New in JDF 1.3</a>	enumeration	<p>Specifies a Resource in which the value of the <b>ResourceLink/@Usage</b> Attribute matches the value of this Attribute. Only required if a Resource name is used both as input and output by one Node.</p> <p><b>Allowed values are from:</b> <b>ResourceLink/@Usage</b> (Table 3-23, “ResourceLink Element” on page 100).</p>
<i>AmountPool</i> ? <a href="#">New in JDF 1.3</a>	element	<p>Definition of partial amounts and pipe parameters for this Resource. The contents of the <b>AmountPool</b> are described for the various types of <b>ResourceLink</b> Elements in Table 3-25, “AmountPool Element” on page 107. If <b>AmountPool</b> is specified, the <b>ResourceInfo</b> SHALL NOT contain any of the amount related Attributes defined in <b>AmountPool/PartAmount</b>.</p>
<i>CostCenter</i> ?	element	Cost center to which the Resource consumption is allocated.
<i>Lot</i> * <a href="#">New in JDF 1.4</a>	element	Used when a Device is querying a Controller to determine what lots exist for the Resource being queried. When a Device is the sender of this Message, lot information is specified in the <b>AmountPool</b> , and SHALL NOT be specified here.
<i>MISDetails</i> ? <a href="#">New in JDF 1.2</a>	element	Definition how the costs for the production of the <b>Resource</b> <b>Resource</b> are to be charged.

**Table 5-82: ResourceInfo Element (Sheet 5 of 5)**

Name	Data Type	Description
Part * Part * <u>New in JDF 1.4</u>	element	<b>Part</b> Elements that describe the Resource. <b>Creation note:</b> starting with JDF 1.4, Part is back after being deprecated in JDF 1.3.
Resource *ResourceSet * <u>Modified in JDF 1.4</u>	element	<b>JDFXJDF</b> Detailed description of the Resource. If the query or command leading to this <b>ResourceInfo Response Message Element</b> contains <b>Part</b> Elements, the <b>ResourceSet</b> Resource SHALL contain only the appropriate matching <b>Resource elements</b> Partitions. The data type and <b>@Class</b> of Resource is derived from the Abstract Resource. See Section 3.10.3, “Abstract Resource” on page 75 <b>Modification note:</b> starting with JDF 1.4, there can be multiple occurrences of Resource Elements. See <b>@ResourceName</b> for the reason.

**Example 5-23: Resource Query for Consumables**

The following is an example for retrieving settings:

TBD 2.x Example.

```
<Query ID="Q1" Type="Resource" xsi:type="QueryResource">
  <ResourceQuParams Classes="Consumable" Exact="true"/>
</Query>
```

**Example 5-24: Resource Response about Consumables**

The following is a possible Response Message to the Query Message above:

TBD 2.x Example.

```
<Response ID="M1" Type="Resource" xsi:type="ResponseResource" refID="Q1">
  <ResourceInfo AvailableAmount="2120" Location="Paper Tray 1">
    <Media ID="ID123" Class="Consumable" Status="Available">
      <!-- Media resource defined in JDF -->
    </Media>
  </ResourceInfo>
  <ResourceInfo AvailableAmount="0" Level="Empty" Location="Ink1" Unit="l">
    <Ink ID="ID124" Class="Consumable" Status="Available">
      <!-- Ink description resource defined in JDF -->
    </Ink>
  </ResourceInfo>
</Response>
```

**Example 5-25: Resource Command for Changing Amount**

The following is an example for modifying the production amount of a specific Job to produce brochures

TBD 2.x Example.

```
<Command ID="C1" Type="Resource" xsi:type="CommandResource">
  <ResourceCmdParams JobID="MakeBrochure 012" ProductionAmount="7500"
    ResourceName="Component"/>
</Command>
```

**Example 5-26: Resource Response for Changing Amount**

The following is a possible response to the **Resource CommandCommandResource** Message above:

TBD 2.x Example.

```
<Response ID="M2" Type="Resource" xsi:type="ResponseResource" refID="C1">
  <ResourceInfo Amount="7500" ResourceName="Component"/>
</Response>
```

### 5.9.6.6 SignalResource

**Table 5-83: SignalResource Message**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
ChannelMode ?= "FireAndForget" New in JDF 1.4	enumeration	See Signal/@ChannelMode.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID	ID	See Signal/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
refID ?	NMTOKEN	See Signal/@refID.
Time ?	dateTime	See Message/@Time.
ResourceInfo *	element	Signal from a Command: contains information about the Resources after modification. Signal from a Query: contains the amount data of Resources and if requested, the Resources itself.

### 5.9.7 ResourcePull

New in JDF 1.2

The ResourcePull Message requests a Resource from a Controller or Device. The Resource is specified as the Output Resource of a JDF Node. The requested Resource MAY be a subset of the Resource specified in the original JDF. The ResourcePullParams Element provides the parameters. The command can be used to regenerate the output of a QueueEntry or JDF Node with any *@Status*.

If the ResourcePull is accepted, the respective QueueEntry is requeued with QueueEntry/*@Status* = "Waiting". After processing, the processing result SHALL be sent to the original submitter of the QueueEntry that is being repeated using a ReturnQueueEntry Message. The sender of the ResourcePull Message SHOULD be informed of the completion of the ResourcePull Message with a Resource Command.

#### Workflow Integration with ResourcePull

When ResourcePull is submitted directly to a Device in a workflow that is monitored by an MIS system, the MIS system SHALL be informed about the re-execution of the JDF Node, so that it can update the state of the entire Job appropriately.

**Note:** It is preferred to pull a Resource from a Device in a workflow that is monitored by an MIS system by sending the ResourcePull Message to the MIS. The MIS can then control the Device in the standard manner and also maintain consistency of its internal Job representation.

**Table 5-84: ResourcePull Message**

Object Type	Element	Description
CommandTypeObj	QueueFilter <i>Deprecated in JDF 1.5</i>	Defines a filter for the returned Queue Element in the ResourcePull Message.
	ResourcePullParams	Defines the parameters of the repeated Job.
ResponseTypeObj	Queue <i>Deprecated in JDF 1.5</i>	Describes the state of the queue after the command has been executed.
	QueueEntry	Provides the queue entry of the repeated Job.

### 5.9.7.1 Element: ResourcePullParams

The ResourcePullParams MAY contain queue-ordering Attributes equivalent to those used by the SetQueueEntryPriority and SetQueueEntryPosition Messages. The OPTIONAL list of Part Elements refers to the Output Resource that is produced by the JDF Node.

**Table 5-85: ResourcePullParams Element (Sheet 1 of 2)**

Name	Data Type	Description
Amount ?	double	The @Amount Attribute identifies the amount of the Output Resource to be created by the JDF Node that is executed by the cloned QueueEntry. This @Amount is the amount to be produced by the Process that is executed due to the ResourcePull. Thus if 200 copies had been created previously and 100 copies are requested by the ResourcePull, @Amount = "100" and not "300".
Hold ?= "false"	boolean	If "true", the entry is submitted as held.
JobID ?	stringN-MTOKEN	@JobID of the JDF Node that creates the requested Resource. If @QueueEntryID is specified, @JobID is ignored. Exactly one of @JobID or @QueueEntryID SHALL be specified.
NextQueueEntryID ?	string	ID of the queue entry that is to be positioned directly behind the entry.
PrevQueueEntryID ?	string	ID of the queue entry that is to be positioned directly in front of the entry.
Priority ?= "1"	integer	Number from 0 to 100, where 0 is the lowest priority and 100 is the maximum priority.
QueueEntryID ?	string	@QueueEntryID of the JDF Node that creates the requested Resource. If @QueueEntryID is specified, @JobID and Part are ignored. Exactly one of @JobID or @QueueEntryID SHALL be specified.
RepeatPolicy ?	enumeration	Policy that defines how to reuse intermediate Resources that were generated in the original processing step (e.g., intermediate raster files in a combined RIP and ImageSetting Process). <b>Allowed values are:</b> <i>Complete</i> – Restart from the original Input Resources if they are available. The Process can run based on intermediate Resources if any original Resources are not available. <i>CompleteOnly</i> – Restart from the original Input Resources. The Process SHALL NOT run if any original Resources are not available. <i>Fast</i> – Reuse as many intermediate Resources as possible (e.g., restart ImageSetting from stored intermediate raster files and do not reRIP if possible).
ResourceID	string	ID Attribute of the Resource requested.

**Table 5-85: ResourcePullParams Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>ReturnURL</i> ? <a href="#">Deprecated in JDF 1.4</a>	URL	URL where the JDF file is to be written when the Job is completed or aborted. If not specified, the JDF is to placed in the default output hot folder of the queue Controller. If @ <i>ReturnURL</i> is specified with the "file" scheme, @ <i>ReturnURL</i> SHALL specify an individual file. @ <i>ReturnURL</i> takes precedence when <b>NodeInfo</b> /@ <i>TargetRoute</i> is specified in the previously submitted JDF.
<i>WatchURL</i> ? <a href="#">Deprecated in JDF 1.4</a>	URL	URL of the Controller that is to be notified when the status of the QueueEntry or the underlying Job changes. Specifying @ <i>WatchURL</i> is equivalent to sending a Subscription for an Events Message with @ <i>SignalTypes</i> = "All".
Disposition ?	element	Specifies how long the QueueEntry SHOULD be retained in the queue. If not specified, the QueueEntry MAY be removed from the queue immediately after Process completion of the QueueEntry.
MISDetails ?	element	Definition how the costs for the production of the Resource are to be charged.
<i>Part</i> * <i>Part</i> *	element	The <b>Part</b> Elements identify the parts of a Partitioned Output Resource to be created by the JDF Node. The structure of the <b>Part</b> Element is defined in <a href="#">Table 3-33, “Part Element” on page 129</a> <a href="#">Table 3-15, “Part Element” on page 85</a> . For details on Partitioned Resources, see <a href="#">Section 3.15.5, “Description of Partitioned Resources”</a> <a href="#">Section 3.13.2.2, “Selecting a Partition”</a> . For details on Node Partitions, see <a href="#">Section 4.3.2, “Partial Processing of Nodes with Partitioned Resources” on page 182</a> .

**Example 5-27: ResourcePull Command**

For example, if an **ImageSetting** Process produces a Partitioned set of plates, the following example Message would request only the yellow plate of the "Front" @*Surface* of *Sheet1*.

```
<Command ID="C3" Type="ResourcePull" xsi:type="CommandResourcePull">
  <ResourcePullParams QueueEntryID="AllPlates" Priority="100" ResourceID="R42">
    <Part SheetName="Sheet1" Side="Front" Separation="Yellow"/>
  </ResourcePullParams>
</Command>
```

**5.9.8 ShutDown**[New in JDF 1.2](#)

The ShutDown Command Message shuts down a Controller or Device. A Device SHALL use the Status Message if it signals its own shutdown.

**Table 5-86: ShutDown Message (Sheet 1 of 2)**

Object Type	Element	Description
CommandTypeObj	QueueFilter <a href="#">Deprecated in JDF 1.5</a>	Defines a filter for the returned Queue Element in the ShutDown Message.
	ShutDownCmdParams	Defines the details of a shutdown.

**Table 5-86: ShutDown Message (Sheet 2 of 2)**

Object Type	Element	Description
ResponseTypeObj	DeviceInfo	Describes the Device status as anticipated after the shutdown.
	Queue <i>Deprecated in JDF 1.5</i>	Provides information about the queue and all its entries as anticipated after the shutdown. This Element will only be provided if the Device has queue capabilities. The Queue Element is described in Section 5.14, “Elements for Queues” on page 333.

### 5.9.8.1 **CommandShutDown**

**Table 5-87: CommandShutDown Message**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID	ID	See Command/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
RelatedCommands ?	NMTOKENS	See Command/@RelatedCommands.
Time ?	dateTime	See Message/@Time.
TransactionID ?	NMTOKEN	See Command/@TransactionID.
ShutDownCmdParams	element	Defines the details of a shutdown.

#### 5.9.8.1.1 Element: ShutDownCmdParams

#### 5.9.8.2 Element: ShutDownCmdParams

**Table 5-88: ShutDownCmdParams Element**

Name	Data Type	Description
ShutDownType ?= "StandBy"	enumeration	Defines the Device shutdown method. <b>Allowed values are:</b> <i>StandBy</i> – The Device is set to standby mode. It can be restarted with a WakeUp JMF Message. <i>Full</i> – Completely shut down the Device. It is no longer accessible via <b>JMF XJMF</b> after the shutdown.
FlushQueueParams ?	element	Defines the policy for flushing the queue upon shutdown. If not specified, the queue is not flushed. The behavior of a queue after shutdown is system specific.

### 5.9.8.3 ResponseShutDown

**Table 5-89: ResponseShutDown Message**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID ?	ID	See Response/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
refID ?	NMTOKEN	See Response/@refID.
ReturnCode ?	integer	See Response/@ReturnCode.
Time ?	dateTime	See Message/@Time.
DeviceInfo ?	element	Describes the Device status as anticipated after the shut-down.
Notification ?	element	See Response/Notification.

### 5.9.9 Status

The Status Message queries the general status of a Device or a Controller and the status of Jobs associated with this Device or Controller. No Job context is needed to issue a Status Message. The response contains one or more **DeviceInfo** Elements, which contain the Device specific information and which MAY contain other JobPhase Elements that in turn contain the Job specific information. The response MAY also provide a Queue Element.

**Table 5-90: Status Message**

Object Type	Element Name	Description
QueryTypeObj	StatusQuParams	Refines the query to include various aspects of the Device and Job states.
ResponseTypeObj	DeviceInfo +	Describes the actual device Status. If multiple <b>DeviceInfo</b> Elements are specified, these describe multiple Devices. A sequential state change of an individual Device SHALL be encoded as 2 separate Signals.
	Queue ? <a href="#">Deprecated in JDF 1.6</a>	Provides information about the queue and all its entries. This Element will only be provided if the Device has queue capabilities. The Queue Element is described in Section 5.14, “Elements for Queues”.

### 5.9.9.1 QueryStatus

**Table 5-91: QueryStatus Message (Sheet 1 of 2)**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.

**Table 5-91: QueryStatus Message (Sheet 2 of 2)**

Name	Data Type	Description
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ <i>ICSVersions</i> .
<i>ID</i>	ID	See Query/@ <i>ID</i> .
<i>PersonalID</i> ?	NMTOKEN	See Message/@ <i>PersonalID</i> .
<i>Time</i> ?	dateTime	See Message/@ <i>Time</i> .
<i>StatusQuParams</i>	element	Refines the query to include various aspects of the Device and Job states.
<i>Subscription</i> ?	element	See Query/Subscription.

### Example 5-28: Status Signal

New in JDF 1.4

Example of a Status Signal for a phase switch from setup to running

TBD 2.x Example.

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1"
      SenderID="MIS master A"TimeStamp="2007-08-09T11:35:41+02:00"
      MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <Signal ID="m18" Type="Status" xsi:type="SignalStatus">
    <DeviceInfo DeviceStatus="Running">
      <JobPhase JobID="jID" JobPartID="jpID"
                PhaseStartTime="2007-08-09T11:35:40+02:00" Status="Setup"/>
    </DeviceInfo>
  </Signal>
  <Signal ID="m19" Type="Status" xsi:type="SignalStatus">
    <DeviceInfo DeviceStatus="Running">
      <JobPhase JobID="jID" JobPartID="jpID"
                PhaseStartTime="2007-08-09T11:35:41+02:00" Status="InProgress"/>
    </DeviceInfo>
  </Signal>
</JMF>
```

#### 5.9.9.1.1 Element: StatusQuParams

#### 5.9.9.2 Element: StatusQuParams

The various aspects of the Device, queue and Job states are refined by the **StatusQuParams** Element. This Element contains three groups of parameters. The first group serves to refine the Device-specific status information queried. The parameters *@EmployeeInfo* and *@DeviceDetails* belong to this group. The second group serves to refine the Job specific status information. These are *@JobDetails*, *@JobID* and *@JobPartID*. And the third determines simply whether a queue Element is requested to be appended. This is specified by the Attribute *@QueueInfo*.

In order to focus on the status of a certain Job, the Job SHALL be uniquely identified using the *@JobID* Attribute. It might be necessary to define a Process or a part of a Job as the query target under certain circumstances, such as when a Job is processed in parallel. This is accomplished using the *@JobPartID* Attribute of the **StatusQuParams** Element. A value of *@JobDetails = "Full"* requests a complete JDF description of a snapshot of the specified Job or Job Part. **Activity** Elements SHOULD be created and put in **DeviceInfo** and/or **JobPhase** Elements when *@JobDetails = "Brief"* and *@DeviceDetails = "Details"*.

If the specified Job or Job Part is unknown, the value of the *@ReturnCode* Attribute is 103 or 104 (for error codes, see Appendix D, “Supported Error Codes in JMF XJMF and Notification Elements” on page 1151).

**Table 5-92: StatusQuParams Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>DeviceDetails</i> ?= "None"	enumeration	<p>Refines the provided status information about the Device.</p> <p><b>Allowed values are:</b></p> <p><i>None</i> – Provide only <b>DeviceInfo</b>/<i>DeviceID</i> and <b>DeviceInfo</b>/<i>DeviceStatus</i>.</p> <p><i>Brief</i> – Provide all available Device information except for <b>Device</b> Elements. The provided information includes <b>Contact</b>, <b>JobPhase</b>, <b>ModuleStatus</b> and <b>Activity</b> Elements SHALL be provided if they are known.</p> <p><i>Modules</i> – Provide <b>ModuleStatus</b> Elements with module specific status details.</p> <p><i>Details</i> – Provide maximum available Device information excluding Device capability descriptions. Includes <b>Device</b> Elements which represent details of the Device.</p> <p><i>Capability</i> – Provide <b>Device</b> Elements with <b>DeviceCap</b> Subelements which represent details of the capabilities of the Device.</p> <p><i>Full</i> – Provide maximum available Device information including Device capability descriptions. Includes <b>Device</b> Elements which represent details of the Device.</p>
<i>EmployeeInfo</i> ?= "false"	boolean	If "true", <b>EmployeeContact</b> Elements are to be provided in the response. Those Elements describe the employees which are associated to the Device independent on any Job.
<i>JobDetails</i> ?= "None"	enumeration	<p>Refines the provided status information about the Jobs associated with the Device. Each higher entry includes the values specified in the lower entries.</p> <p><b>Allowed values are:</b></p> <p><i>None</i> – Specify only @<i>JobID</i>, @<i>JobPartID</i> and @<i>Amount</i> and/or @<i>PercentCompleted</i>.</p> <p><i>MIS</i> – Provide business with the relevant information contained in the <b>CostCenter</b> Element and the @<i>Deadline</i>, @<i>DeviceStatus</i>, @<i>Status</i>, @<i>StatusDetails</i> and the various @<i>Counter</i> Attributes. In JDF 1.2 and beyond, this value is identical to "<i>Brief</i>". <u>Deprecated in JDF 1.2</u></p> <p><i>Brief</i> – Provide all available status information including <b>JobPhase</b> and <b>Activity</b> Elements except for <b>JDF</b>.</p> <p><i>Full</i> – Provide maximum available status information. Includes a URL reference to an actual <b>JDF</b> which represents a snapshot of the current job state.</p>
<i>JobID</i> ?	stringN-MTOKEN	@ <i>JobID</i> of the JDF Node whose status is being queried. The @ <i>JobID</i> SHALL be unique within the workflow. If not specified, list all known Jobs. <i>@JobID</i> SHALL NOT be specified if <b>QueryStatus/Subscription</b> is present.
<i>JobPartID</i> ?	stringN-MTOKEN	@ <i>JobPartID</i> of the JDF Node whose status is being queried. <i>@JobPartID</i> SHALL NOT be specified if <b>QueryStatus/Subscription</b> is present.

**Table 5-92: StatusQuParams Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>QueueEntryID</i> ? <a href="#">New in JDF 1.2</a>	stringN-MTOKEN	@QueueEntryID of the Job that is being queried. If @QueueEntryID is specified, @JobID, @JobPartID and PartPart are ignored. If none of @JobID, @JobPartID, PartPart or @QueueEntryID are specified, StatusQuParams applies to all Jobs. @QueueEntryID SHALL NOT be specified if QueryStatus/Subscription is present.
<i>QueueInfo</i> ? <a href="#">Deprecated in JDF 1.6</a>	boolean	If "true", a Queue element is requested to be provided. This is analogous to a QueueStatus Query message. <b>Deprecation note:</b> In JDF 1.6 and beyond, use a QueueStatus message.
<i>Part</i> * <a href="#">Part * New in JDF 1.2</a>	element	PartPart Elements that describe the Partition of the Job whose status is queried. For details on Node Partitions, see Section 4.3.2, “Partial Processing of Nodes with Partitioned Resources” on page 182. Part SHALL NOT be specified if QueryStatus/Subscription is present.

### 5.9.9.3 ResponseStatus

**Table 5-93: ResponseStatus Message**

Name	Data Type	Description
<i>AgentName</i> ?	string	See Message/@AgentName.
<i>AgentVersion</i> ?	string	See Message/@AgentVersion.
<i>Author</i> ?	string	See Message/@Author.
<i>DeviceID</i> ?	NMTOKEN	See Message/@DeviceID.
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ICSVersions.
<i>ID</i> ?	ID	See Response/@ID.
<i>PersonalID</i> ?	NMTOKEN	See Message/@PersonalID.
<i>refID</i> ?	NMTOKEN	See Response/@refID.
<i>ReturnCode</i> ?	integer	See Response/@ReturnCode.
<i>Time</i> ?	dateTime	See Message/@Time.
<i>DeviceInfo</i> *	element	Describes the actual device Status. If multiple DeviceInfo Elements are specified, these describe multiple Devices. A sequential state change of an individual Device SHALL be encoded as 2 separate Signals.
<i>Notification</i> ?	element	See Response/Notification.

#### 5.9.9.3.1 Element: DeviceInfo

#### 5.9.9.4 Element: DeviceInfo

The Response Message returns a DeviceInfo DeviceInfo Element for the queried Device.

Table 5-94: DeviceInfo Element (Sheet 1 of 3)

Name	Data Type	Description
<i>CounterUnit</i> ?  <a href="#">New in JDF 1.2</a>	string N- MTOKEN	The unit of the <i>@ProductionCounter</i> , the <i>@TotalProductionCounter</i> and numerator unit of <i>@Speed</i> . The default unit is the default unit defined by <b>JDF XJDF</b> for the Output Resource of the Node executed by the Device. For example, in case of a Sheet-Fed printer, it is the number of Sheets; in case of a Web Printer, it is the length of printed Web in meters. <b>Values include those from:</b> Table 1-8, “Units Used in JDF XJDF”.
<i>DeviceCondition</i> ?  <a href="#">New in JDF 1.2</a>	enumeration	The general condition of a Device. <b>Allowed values are:</b> <i>OK</i> – The Device is in working condition. <i>NeedsAttention</i> – The Device is still in working condition but requires attention. <i>Failure</i> – The Device is not in working condition. <i>OffLine</i> – The Device is off line and its condition is unknown.
<i>DeviceID</i> ?  <a href="#">New in JDF 1.3</a>	string N- MTOKEN	<i>@DeviceID</i> of the <b>Device</b> that this <b>DeviceInfoDeviceInfo</b> describes. <i>@DeviceID</i> SHALL match <b>Device</b> / <i>@DeviceID</i> if <b>Device</b> is specified in this <b>DeviceInfoDeviceInfo</b> .
<i>DeviceStatus</i>	enumeration	The status of a Device. <b>Allowed values are:</b> <i>Unknown</i> – No Device is known or the Device cannot provide a <i>@DeviceStatus</i> . <i>Idle</i> – No Job is being processed and the Device is accepting new Jobs. <i>Down</i> – No Job is being processed and the Device currently cannot execute a Job. The Device might be broken, switched off, etc. <i>Setup</i> – The Device is currently being set up. This state is allowed to occur also during the execution of a Job. <i>Running</i> – The Device is currently executing a Job. <i>Cleanup</i> – The Device is currently being cleaned. This state is allowed to occur also during the execution of a Job. <i>Stopped</i> – The Device has been stopped, probably temporarily. This status indicates some kind of break, including a pause, maintenance or a breakdown, as long as execution has not been aborted.
<i>HourCounter</i> ?	duration	The total integrated time (life time) of Device operation in hours.
<i>IdleStartTime</i> ?  <a href="#">New in JDF 1.4</a>	dateTime	Specifies the beginning of the last phase with no <b>JobPhase</b> entries. A Device is idle when no active Jobs are being processed. Multiple phases with different status values and no active Job phases MAY be specified, for instance a maintenance phase followed by an idle phase. <i>@IdleStartTime</i> SHALL NOT be specified if <b>JobPhase</b> Elements are present in the <b>DeviceInfoDeviceInfo</b> or <i>@DeviceStatus</i> != "Idle", "Down" or "Stopped".
<i>PowerOnTime</i> ?	dateTime	Date and time when the Device was switched on.

**Table 5-94: DeviceInfo Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>ProductionCounter</i> ?	double	The current Machine production counter. This counter can be reset. Typically, it starts counting at power-on time. The reset of this counter MAY be signaled by a <a href="#">Notification</a> [ <i>@Class</i> ="Event", <i>@Type</i> = "CounterReset"] Message (see <a href="#">Section C.3, “NotificationDetails” on page 1142</a> <a href="#">Section 5.8.7.4.3, “Event”</a> ).
<i>Speed</i> ?	double	The current Machine speed. <i>@Speed</i> is defined in the same units as <i>@ProductionCounter</i> / hour.
<i>Status</i>	enumeration	<p><i>@Status</i> describes the overall status of the Device.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Idle</i> – No Job is being processed and the Device is accepting new Jobs.</li> <li><i>Production</i> – At least one job is in a productive status on the Device (XJDF@NodeStatus = "Setup, Running, Cleanup") .</li> <li><i>Offline</i> – The Device is switched off or the machine can not be accessed.</li> <li><i>Stopped</i> – At least one job is in a productive status on the Device (XJDF@NodeStatus = "Setup, Running, Cleanup") and the Device has been stopped and needs attention. This status indicates some kind of break as long as execution has not been aborted.</li> <li><i>NonProductive</i> – The device is not doing productive work but rather doing something like maintenance or running a test job.</li> </ul>
<i>StatusDetails</i> ?	string	String that defines the Device state more specifically. <b>Values include those from:</b> <a href="#">Section C.1, “StatusDetails Supported Strings” on page 1133</a> .
<i>TotalProductionCounter</i> ?	double	The current total Machine production counter since the Machine was produced.
<i>Activity</i> * <i>New in JDF 1.5</i>	element	Device and Operator activities that are related to the Device and are unrelated to a specific job.
<b>Contact</b> *	element	<b>Contact</b> Resources that describe which employees are currently working at the Device. <a href="#">The data type of Employee is ResourceElement. See Section 3.15.1, “ResourceElement – Subelement of a Resource” on page 113.</a>
<b>Device</b> ?	element	A <b>Device</b> Resource that describes details of the Device. <a href="#">The data type of Device is ResourceElement. See Section 3.15.1, “ResourceElement – Subelement of a Resource” on page 113.</a>
<b>Employee</b> *	element	<b>Employee</b> Resources that describe which employees are currently working at the Device. <a href="#">The data type of Employee is ResourceElement. See Section 3.15.1, “ResourceElement – Subelement of a Resource” on page 113.</a>

**Table 5-94: DeviceInfo Element (Sheet 3 of 3)**

Name	Data Type	Description
<b>FileSpec</b> (CurrentSchema) ?	element	Reference to an XML schema in XSD format [XMLSchema] that describes the present limitations of the device that can be used without operator intervention. The referenced XML schema SHALL use the xjdf namespace to describe elements and attributes that are defined in the xjdf namespace.
<b>FileSpec</b> (Schema) ?	element	Reference to an XML schema in XSD format [XMLSchema] that describes the global limitations of the device including those that can only be used with operator intervention. The referenced XML schema SHALL use the xjdf namespace to describe elements and attributes that are defined in the xjdf namespace.
JobPhase *	element	<p>Describes the actual status of Jobs in the Device. All Jobs that are active on the Device SHALL be specified. Supplying no JobPhase specifies that no Job is currently active on the Device.</p> <p>Active Jobs have JDF/@Activation = "Active", "TestRun" or "TestRunAndGo" and JDF/@Status or JDF/StatusPool/PartStatus/@Status = "TestRunInProgress", "Setup", "InProgress", "Cleanup" or "Stopped".</p> <p>Multiple JobPhase Elements specify that multiple Job phases are active simultaneously on the Device.</p> <p>For details on using JobPhase Elements, see Table 5-96, "JobPhase Element" on page 286.</p>
ModuleStatus *	element	Status of individual modules that are in use independent of a Job. ModuleStatus SHALL not be specified for modules that are specified in JobPhase/ModuleStatus. For details on using ModuleStatus Elements, see Table 5-97, "ModuleStatus Element" on page 288.

#### 5.9.9.4.1 Activity

Activity Elements allow tracking of device and operator tasks.

**Table 5-95: Activity Element**

Name	Data Type	Description
<b>ActivityID</b> ?	stringN-MTOKEN	ID of the Activity being performed. This ID is unique, site specific and internal to the MIS.
<b>ActivityName</b> ?	string	Name of the Activity being performed.
<b>PersonalID</b> ?	stringN-MTOKEN	ID MIS identifier of the employee that performs the activity. This value SHALL match the @PersonalID of an Employee element that is contained in the Activity element's parent or ancestor element.
<b>StartTime</b> ?	dateTime	Date and time that the Employee started the Activity. This value MAY remain the same in multiple messages.

#### 5.9.9.5 Element: JobPhase

A Status Response Message MAY provide JobPhase Elements. The JobPhase Element represents the actual state of a Job. Any Amounts specified in JobPhase are cumulated amounts since @StartTime. The JobPhase Element is an analogue to the PhaseTime Audit Element described in Section 3.16.3.8, "PhaseTime". The main difference between a JobPhase Element within an XJMF message and a AuditStatus PhaseTime Audit Element is that a JobPhase Message Element reflects a snapshot of the current Job status whereas the AuditStatus PhaseTime Audit Element reflects a time span bordered by two (sub-) status transitions.

For exact information about the Job phase, a **JobPhase** Element MAY include a URL reference to a copy of the current state of the Job described as **JDF**. If **PartPart** Elements are specified, all Attributes in **JobPhase** apply only to the specified parts. If an actual **JDF** is not supported by the Controller, the same rules apply for the **Status** Response Message as those which apply for the Resource Response Message.

**Table 5-96: JobPhase Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Activation ?</i> <a href="#">New in JDF 1.1</a>	enumeration	The activation of the <b>JDF</b> Node. <b>Allowed values are from:</b> <b>JDF/@Activation</b> (Table 3-4, “ <b>JDF XJDF Node</b> ”).
<i>Amount ?</i>	double	Sum of actual <b>@Amount</b> that the Node defined in this <b>JobPhase</b> produced since <b>@StartTime</b> . If <b>@Waste</b> is also specified, the value is without waste. The unit is specified in the <b>@CounterUnit</b> Attribute of the parent Element <b>DeviceInfo</b> .
<i>CostCenterID ?</i>	NMOKEN	The cost center that the job is currently being charged to. Defaults to the cost center specified in the <b>DeviceInfo</b> Element.
<i>DeadLine ?</i>	enumeration	Scheduling state of the Job. <b>Allowed values are:</b> <i>InTime</i> – The Job or Job Part will probably not miss the deadline. <i>Warning</i> – The Job or Job Part could miss the deadline. <i>Late</i> – The Job or Job Part will miss the deadline. <b>Note:</b> for more details on scheduling, see <b>NodeInfo</b> .
<i>JobID ?</i>	<a href="#">stringN-MTOKEN</a>	<b>@JobID</b> of the <b>JDF</b> Node that is executing.
<i>JobPartID ?</i>	<a href="#">stringN-MTOKEN</a>	<b>@JobPartID</b> of the <b>JDF</b> Node that is executing.
<i>PercentCompleted ?</i>	double	Node processing progress in percent (%) completed.
<i>PhaseAmount ?</i> <a href="#">New in JDF 1.2</a>	double	Actual amount that the Node defined in this <b>JobPhase</b> produced during this <b>JobPhase</b> . If <b>@PhaseWaste</b> is also specified, the value is without waste. The unit is specified in the <b>@CounterUnit</b> Attribute of the parent Element <b>DeviceInfo</b> .
<i>PhaseStartTime ?</i> <a href="#">New in JDF 1.2</a>	dateTime	Time that this <b>JobPhase</b> started.
<i>PhaseWaste ?</i> <a href="#">New in JDF 1.2</a>	double	Actual amount of waste that the Node defined in this <b>JobPhase</b> produced during this <b>JobPhase</b> . The unit is specified in the <b>@CounterUnit</b> Attribute of the parent Element <b>DeviceInfo</b> .
<i>QueueEntryID ?</i>	<a href="#">stringN-MTOKEN</a>	If the Job was submitted to a <b>Queue</b> and the <b>@QueueEntryID</b> is known, this Attribute SHOULD be provided.
<i>RestTime ?</i> <a href="#">New in JDF 1.1</a>	duration	Estimated duration of time to finishing processing this Node.
<i>SpawnID ?</i> <a href="#">New in JDF 1.5</a>	NMOKEN	<b>@SpawnID</b> allows distinguishing multiple spawned Jobs with the same <b>@JobID</b> .
<i>Speed ?</i>	double	The current Job speed. <b>@Speed</b> is defined in the same units as <b>@ProductionCounter</b> / hour. Defaults to the speed specified in the <b>DeviceInfo</b> Element.

**Table 5-96: JobPhase Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>StartTime</i> ? <a href="#">New in JDF 1.1</a>	dateTime	Time when execution of the Node that is described by this JobPhase has been started, defined by the transition of <b>JDF/@StatusNodeInfo/@NodeStatus</b> from "Waiting" or "Ready" to any active value.
<i>Status</i>	enumeration	The status of the JDF Node. <b>Allowed values are from:</b> <b>JDF/@StatusNodeInfo/@NodeStatus</b> (Table 3.3, "JDF XJDF Node" on page 50)(Table 8.98, "NodeInfo" on page 805 and Table 8-203, "NodeStatus Attribute Values" on page 808).
<i>StatusDetails</i> ?	string	<b>String Machine readable description</b> that defines the Job state more specifically. <b>Values include those from:</b> Section C.1, "StatusDetails Supported Strings" on page 1133.
<i>TotalAmount</i> ? <a href="#">New in JDF 1.1</a>	double	Planned amount that will be produced when this Job phase is 100% completed. The unit is specified in the <b>@CounterUnit</b> Attribute of the parent Element <b>DeviceInfo</b> .
<i>URL</i> ? <a href="#">New in JDF 1.4</a>	URL	URL of a copy of the complete JDF that represents a snapshot of the Job that is currently being processed. The JDF is for reference only and SHALL not be merged with the main JDF of the Job using spawning and merging methods. <b>JDF/@Activation</b> SHOULD be set to " <i>Informative</i> " in this JDF Element. The URL SHOULD reference a MIME part using a " <i>cid</i> " URL scheme.
<i>Waste</i> ? <a href="#">New in JDF 1.1</a>	double	Total <b>@Amount</b> of waste that the Node defined in this JobPhase produced since <b>@StartTime</b> . The unit is specified in the <b>@CounterUnit</b> Attribute of the parent Element <b>DeviceInfo</b> .
<i>Activity</i> * <a href="#">New in JDF 1.5</a>	element	Device and Operator activities that are related to a specific job or job phase.
<i>CostCenter</i> <b>?CostCenterID</b> ?	element-string	The cost center that the Job is currently being charged to. Defaults to the cost center specified in the <b>DeviceInfo</b> Element.
<i>JDF</i> ? <a href="#">Deprecated in JDF 1.4</a>	element	Complete JDF Node that represents a snapshot of the Job that is currently being processed. This Element is for reference only and SHALL NOT be merged with the main JDF of the Job using spawning and merging methods. <b>JDF/@Activation</b> SHALL be set to " <i>Informative</i> " in this JDF Element. <b>Deprecation note:</b> starting with JDF 1.4, JDF has been replaced by <b>@URL</b> . This avoids clashes of identical <b>@ID</b> Attributes when multiple JobPhase Elements from the same JDF are specified.
<i>MISDetails</i> ? <a href="#">New in JDF 1.2</a>	element	Definition how the costs for this JobPhase are to be charged.
<i>ModuleStatus</i> * <a href="#">New in JDF 1.3</a>	element	Status of individual modules that are used to execute this JobPhase. ModuleStatus SHALL NOT be specified for modules that are specified in <b>DeviceInfo</b> / <b>DeviceInfo/ModuleStatus</b> . For details on using ModuleStatus Elements, see Table 5-97, "ModuleStatus Element" on page 288.
<i>Part</i> * <a href="#">Part * Modified in JDF 1.1</a>	element	Describes which parts of a Job are currently being processed. For details on Node Partitions, see Section 4.3.2, "Partial Processing of Nodes with Partitioned Resources" on page 182.

### 5.9.9.6 Element: ModuleStatus

The ModuleStatus Element restricts the scope of a JobPhase or DeviceInfoElement to apply only to the device modules that are selected by the list of ModuleStatus Elements. The ModuleStatus Element is similar to the ModulePhase Element of the PhaseTime Audit Element (see Table 3-48, “ModulePhase Element” on page 159). ModulePhase/@DeviceID Attribute is not specified because it is already uniquely identified in DeviceInfo/@DeviceID. The ModuleStatus Element is described in the following table.

**Table 5-97: ModuleStatus Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>CombinedProcessIndex</i> ?  <a href="#">New in JDF 1.3</a>	IntegerList	@CombinedProcessIndex Attribute specifies the indices of individual Processes in the @Types Attribute to which a ModuleStatus that describes a Combined Process Node or Process Group Node belongs. Multiple entries in @CombinedProcessIndex specify that the Module specified by ModuleStatus is executing the respective multiple Processes in the Combined Process Node.
<i>DeviceStatus</i> ?	enumeration	<p>Status of the module.</p> <p><b>Allowed values are:</b></p> <p><i>Unknown</i> – The module status is unknown.</p> <p><i>Idle</i> – The module is not used. An example is a color print module that is inactive during a black-and-white print.</p> <p><i>Down</i> – The module cannot be used. It might be broken, switched off etc.</p> <p><i>Setup</i> – The module is currently being set up.</p> <p><i>Running</i> – The module is currently executing.</p> <p><i>Cleanup</i> – The module is currently being cleaned.</p> <p><i>Stopped</i> – The module has been stopped, but running might be resumed later. This status can indicate any kind of break, including a pause, maintenance or a breakdown, as long as running can be easily resumed.</p>
<i>ModuleID</i> ?  <a href="#">New in JDF 1.3</a>	stringNMTO-KEN	@ModuleID of the Module that ModuleStatus refers to. If not specified, the module is specified in @ModuleIndex. At least one of @ModuleID or @ModuleIndex SHALL be specified.
<i>ModuleIndex</i> ?  <a href="#">Modified in JDF 1.3</a>	IntegerRangeList	The 0-based indices of the module or modules. If multiple module types are available on one Machine, indices SHALL also be unique. @ModuleIndex is unique within the machine.
<i>ModuleType</i> ?  <a href="#">Modified in JDF 1.5</a>	NMTOKEN	<p>Module description</p> <p><b>Values include those from:</b> Section C.2, “ModuleType Supported Strings” on page 1138.</p> <p><b>Note:</b> the allowed values depend on the type of Device. Each type of Device has a separate table of values.</p> <p><b>Modification note:</b> starting with JDF 1.5, @ModuleType is optional.</p>

**Table 5-97: ModuleStatus Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>StatusDetails</i> ?	string	Description of the module status phase that provides details beyond the enumerative values given by the <i>@DeviceStatus</i> Attribute. <b>Values include those from:</b> Section C.1, “StatusDetails Supported Strings” on page 1133.
<b>Employee</b> *	element <i>Deprecated in JDF 1.5</i>	<b>Employee</b> Resource(s) that represent the employee(s) that are working at this module (the module is specified by the Attributes <i>@ModuleIndex</i> and <i>@ModuleType</i> ). The data type of <b>Employee</b> is ResourceElement. See Section 3.15.1, “ResourceElement – Subelement of a Resource” on page 113.

**Example 5-29: Status Response to Query**

The following is an example of a Response Message to a Status Query Message. The Device in this example holds one Job and executes another Job that is currently printed duplex (each side) on four-color modules for the front and three-color modules for the back, with one idle:

TBD 2.x Example.

```
<Response ID="M1" refID="Q1" Type="Status" xsi:type="ResponseStatus">
  <DeviceInfo DeviceStatus="Running" StatusDetails="Waste">
    <JobPhase Amount="2560" DeadLine="InTime" JobID="678" JobPartID="01"
      PercentCompleted="52" QueueEntryID="Job-05" Status="InProgress"
      StatusDetails="Waste"/>
    <JobPhase Amount="0" DeadLine="Warning" JobID="679" JobPartID="01"
      PercentCompleted="0" QueueEntryID="Job-06" Status="Ready"/>
    <ModuleStatus ModuleIndex="0~3 6~8" ModuleType="PrintModule"
      DeviceStatus="Running"/>
    <ModuleStatus ModuleIndex="4" ModuleType="PrintModule" DeviceStatus="Idle"/>
    <ModuleStatus ModuleIndex="5" ModuleType="PerfectingModule"
      DeviceStatus="Running"/>
  </DeviceInfo>
</Response>
```

**5.9.9.7 SignalStatus****Table 5-98: SignalStatus Message (Sheet 1 of 2)**

Name	Data Type	Description
<i>AgentName</i> ?	string	See Message/@ <i>AgentName</i> .
<i>AgentVersion</i> ?	string	See Message/@ <i>AgentVersion</i> .
<i>Author</i> ?	string	See Message/@ <i>Author</i> .
<i>ChannelMode</i> ?= "FireAndForget" <i>New in JDF 1.4</i>	enumeration	See Signal/@ <i>ChannelMode</i> .
<i>DeviceID</i> ?	NMTOKEN	See Message/@ <i>DeviceID</i> .
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ <i>ICSVersions</i> .
<i>ID</i>	ID	See Signal/@ <i>ID</i> .
<i>PersonalID</i> ?	NMTOKEN	See Message/@ <i>PersonalID</i> .

**Table 5-98: SignalStatus Message (Sheet 2 of 2)**

Name	Data Type	Description
refID ?	NMTOKEN	See Signal/@refID.
Time ?	dateTime	See Message/@Time.
DeviceInfo +	element	Describes the actual device Status. If multiple DeviceInfo Elements are specified, these describe multiple Devices. A sequential state change of an individual Device SHALL be encoded as 2 separate Signals.

## 5.9.10 Track

Deprecated in JDF 1.5

The Track Message has been deprecated in JDF 1.5. For details of the deprecated Track Message, see Section P.3.8, “Track” on page 1322.

## 5.9.11 UpdateJDF

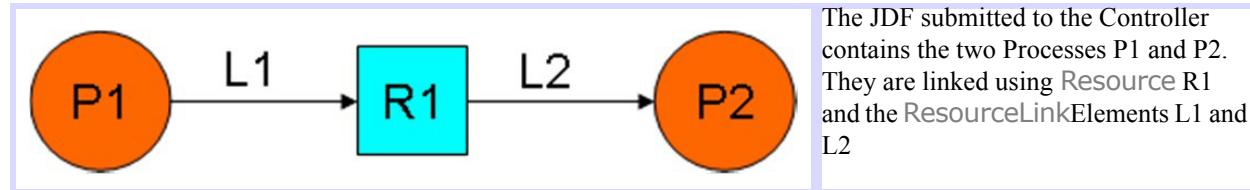
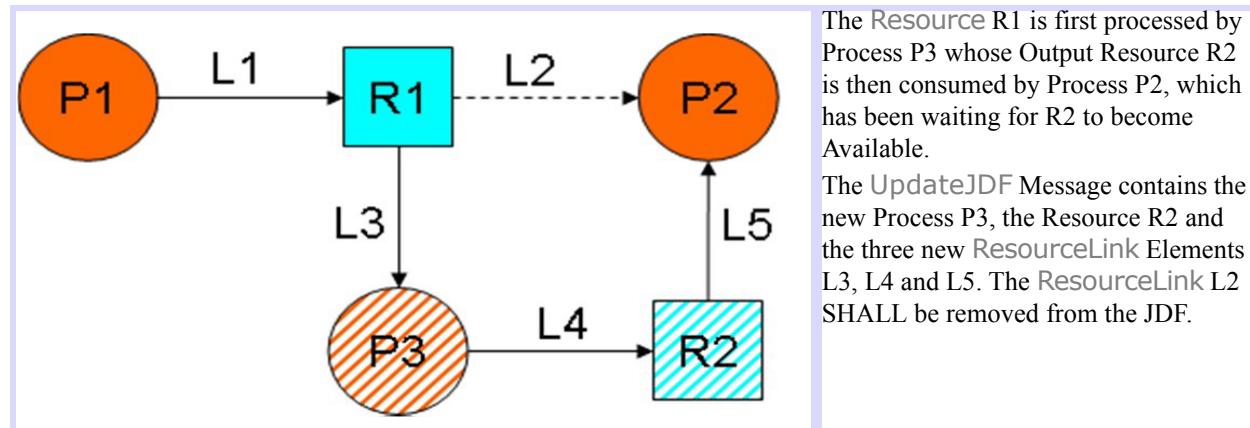
New in JDF 1.3

This JMF is used to synchronize a JDF Node that has been submitted by a Controller to a Device.

### 5.9.11.1 UpdateJDF Command

The UpdateJDF Command will be sent from a Controller (e.g., an MIS) to a Device (e.g., a Workflow System) which received the original Job. The changes SHALL be applied to Processes that have not started yet. If the MIS tries to do update a running Job, the Controller or Device MAY return an error 107.

Any JDF@Type value MAY be added to the original JDF with this Message.

**Figure 5-5: Without UpdateJDF Message****Figure 5-6: With UpdateJDF Message**

**Table 5-99: UpdateJDF Command**

Object Type	Element Name	Description
CommandTypeObj	UpdateJDFCmdParams ?	Defines the details of the UpdateJDF Message.
ResponseTypeObj	-	-

**5.9.11.2 UpdateJDF Signal**New in JDF 1.4

The **UpdateJDF Signal** will be sent from the Device to a Controller. It notifies the Controller about modifications that have occurred on the Device.

**Table 5-100: UpdateJDF Signal**

Object Type	Element Name	Description
QueryTypeObj	UpdateJDFCmdParams ?	Defines the details of the UpdateJDF Message.
ResponseTypeObj	-	-

**5.9.11.2.1 Element: UpdateJDFCmdParams**

The **UpdateJDFCmdParams** specifies a JDF Node, new Resource Elements and new ResourceLink Elements to add to existing Nodes.

**Table 5-101: UpdateJDFCmdParams Element**

Name	Data Type	Description
<i>ParentJobID</i>	string	@ <i>JobID</i> of the Node in which the new Node is to be inserted.
<i>ParentJobPartID</i>	string	@ <i>JobPartID</i> of the Node in which the new Node is to be inserted.
CreateLink *	element	New ResourceLink Elements to be added to the previously submitted JDF Nodes.
CreateResource *	element	Newly created Resources to be added to previously submitted JDF Nodes. The Resources are used to link the new Node to existing Nodes. Resources that are linked only internally within the new Node SHOULD be in the new Node and SHOULD NOT be placed in a another ResourcePool using CreateResource Elements.
JDF	element	The new JDF Node to become a child of the parent Node. It is an error (204 - Cannot create Node) to specify a JDF with a combination of @ <i>JobID</i> and @ <i>JobPartID</i> that matches an existing JDF Node in the JDF ticket in which the parent Node resides.
MoveResource *	element	Specifies Resources in previously submitted JDF Nodes that are to be moved to another ResourcePool so that they are accessible for all new JDF Nodes that link to the Resources. Note: MoveResource does not create new Partitions in existing Resources.
RemoveLink *	element	ResourceLink Elements in the previously submitted Job that are no longer in use and are to be removed.

**5.9.11.2.2 Element: CreateLink****Table 5-102: CreateLink Element**

Name	Data Type	Description
<i>JobID</i>	string	@ <i>JobID</i> of the Node in which the new ResourceLink is inserted.
<i>JobPartID</i>	string	@ <i>JobPartID</i> of the Node in which the new ResourceLink is inserted.
ResourceLink +	element	The new ResourceLink Elements which link the new Node to the existing Nodes. If the Node already has a link to this Resource with a different Part Element, the Part Elements that are specified in this ResourceLink SHALL be added to the existing ResourceLink.

**5.9.11.2.3 Element: CreateResource****Table 5-103: CreateResource Element**

Name	Data Type	Description
<i>JobID</i>	string	@ <i>JobID</i> of the Node in which the new Resources are to be inserted.
<i>JobPartID</i>	string	@ <i>JobPartID</i> of the Node in which the new Resources are to be inserted.
Resource +	element	The new Resource Elements. In general, these are created to link the new Node to existing Nodes. The data type and @ <i>Class</i> of Resource is derived from the Abstract Resource. See Section 3.10.3, “Abstract Resource” on page 75.

**5.9.11.2.4 Element: MoveResource****Table 5-104: MoveResource Element**

Name	Data Type	Description
<i>JobID</i>	string	@ <i>JobID</i> of the Node to which the new Resource is to be moved.
<i>JobPartID</i>	string	@ <i>JobPartID</i> of the Node in which the new Resource is to be moved.
<i>ResourceID</i>	NMTOKEN	Resource/@ <i>ID</i> of the Resource that is moved. Note: If the Resource has been spawned, an error MAY be reported back.

**5.9.11.2.5 Element: RemoveLink****Table 5-105: RemoveLink Element**

Name	Data Type	Description
<i>JobID</i>	string	@ <i>JobID</i> of the Node from which the ResourceLink Elements are to be removed.
<i>JobPartID</i>	string	@ <i>JobPartID</i> of the Node from which the ResourceLink Elements are to be removed.
ResourceLink +	element	The ResourceLink Elements to be removed. Note: If this ResourceLink contains fewer Part Elements than the corresponding ResourceLink in the JDF, only the Part Elements specified in this ResourceLink are to be removed.

**Note:** This Message might not work:

- if one of the Resources or Links have references to a Pipe.

- if the Controller has submitted parts of the Job to a second Controller or a Device.
- The JDF after executing the Message is valid
- on a Job which is waiting.
  - if all Nodes, to which the new Node is linked are waiting.
  - if the link to a running Node is not using a pipe.

### Example 5-30: UpdateJDF Command

```

<Command ID="ID1" Type="UpdateJDF" xsi:type="CommandUpdateJDF">
    <UpdateJDFCmdParams ParentJobID="ID100" ParentJobPartID="ID112">
        <CreateLink JobID="ID100" JobPartID="ID111">
            <MediaLink Usage="Input" rRef="link001111"/>
        </CreateLink>
        <CreateResource JobID="100" JobPartID="110">
            <Component rRef="link001112"/>
        </CreateResource>
        <RemoveLink JobID="100" JobPartID="111">
            <MediaLink Usage="Input" rRef="link001113"/>
        </RemoveLink>
        <MoveResource JobID="100" JobPartID="101" ResourceID="link000004"/>
        <JDF JobPartID="200" Type="Cutting">
            <AuditPool>
                <Created AgentName="MIS"TimeStamp="2005-06-02T09:01:45+01:00" AgentVersion="1.0"/>
            </AuditPool>
            <ResourcePool>
                <Component ID="link000002" Class="Quantity" Status="Available" ComponentType="Sheet"/>
                <CuttingParams ID="link000007" Class="Parameter" Status="Available"/>
            </ResourcePool>
            <ResourceLinkPool>
                <ComponentLink Usage="Output" rRef="link000002"/>
                <CuttingParamsLink Usage="Input" rRef="link000007"/>
            </ResourceLinkPool>
        </JDF>
    </UpdateJDFCmdParams>
</Command>

```

### 5.9.12 WakeUp

New in JDF 1.2

The WakeUp Command Message activates a Controller or Device that has been in stand-by mode. All queues that belong to the Device are held upon its receiving a WakeUp and SHALL be resumed with an explicit ResumeQueue Message. All Jobs that were running on the Device at shutdown are also in a held state. All QueueEntry elements SHALL have an *@Activation = "Held"* and SHALL be explicitly resumed with a ResumeQueueEntry Message ModifyQueueEntry with a "Resume" operation. A Device SHALL use the Status Message if it signals its own awakening.

Table 5-106: WakeUp Message (Sheet 1 of 2)

Object Type	Element Name	Description
CommandTypeObj	WakeUpCmdParams ?	Defines the details of the WakeUp Message.

**Table 5-106: WakeUp Message (Sheet 2 of 2)**

Object Type	Element Name	Description
ResponseTypeObj	DeviceInfo	Describes the Device status immediately after the WakeUp Message has been sent. The Device SHOULD also send an Acknowledge/WakeUp Message after its warm up cycle has been completed if applicable.

**5.9.12.1 CommandWakeUp****Table 5-107: CommandWakeUp Message**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID	ID	See Command/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
RelatedCommands ?	NMTOKENS	See Command/@RelatedCommands.
Time ?	dateTime	See Message/@Time.
TransactionID ?	NMTOKEN	See Command/@TransactionID.
WakeUpCmdParams ?	element	Defines the details of the WakeUp Message.

**5.9.12.1.1 Element: WakeUpCmdParams****5.9.12.2 Element: WakeUpCmdParams**

**WakeUpCmdParams** is a placeholder for future use and for extensions to the WakeUp Message.

**Table 5-108: WakeUpCmdParams Element**

Name	Data Type	Description
—	—	—

**5.9.12.3 ResponseWakeUp****Table 5-109: ResponseWakeUp Message (Sheet 1 of 2)**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID ?	ID	See Response/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.

**Table 5-109: ResponseWakeUp Message (Sheet 2 of 2)**

Name	Data Type	Description
refID ?	NMTOKEN	See Response/@refID.
ReturnCode ?	integer	See Response/@ReturnCode.
Time ?	dateTime	See Message/@Time.
DeviceInfo ?	element	Describes the Device status immediately after the WakeUp Message has been sent.
Notification ?	element	See Response/Notification.

## 5.10 Messages for Pipe Control

JDF XJDF Messaging provides methods a message to control dynamic pipes. Dynamic pipes are described in detail in Section 4.3.3, “Overlapping Processing Using Pipes”.

**Table 5-110: Messages for Control of Dynamic Pipes**

Message type	Family	Description
PipeClose	CR	Closes a pipe because no further Resources are needed. This is typically used to terminate the producing Process.
PipePause	CR	Pauses a Process if no further Resources can be consumed or produced.
PipePull	CGR	Requests a new Resource from a pipe.
PipePush	CGR	Notifies that a new Resource is available in a pipe.

**Table 5-111: Messages for Control of Dynamic Pipes**

Messages	Description
CommandPipeControl	All pipe related commands are implemented using the PipeControl message.
ResponsePipeControl	

### 5.10.1 PipeControl

The PipeControl message modulates a flow of resources in a Pipe. The type of pipe operation is specified in PipeParams/@Operation

A Pipe describes the Resource dependency in which a Process begins to consume a Resource while it is being produced by another Process (e.g., stacking components while they are being printed) or consuming a data stream while it is being written by an upstream Process. Note that defining a Pipe Resource does not automatically set up communication between Processes. The Controllers and Devices that execute the Process SHALL still implement the protocol that defines the Pipe.

Using dynamic pipe control, a downstream Process can control the total quantity produced by an upstream Process, and/or the quantity buffered by an inter-Process transport Device (i.e., Conveyor belt). Additional description of pipes and Process communication via pipes is provided in Section 4.3.3, “Overlapping Processing Using Pipes”.

Dependent elements MAY contain a @PipeProtocol that declares the Resource to be a pipe, and identifies it in a dynamic-pipe messaging environment. A pipe that is also controlled by XJMF pipe Messages is called **dynamic pipe**. or more information about dynamic pipes, see Section 11.3.4.1, “Dynamic Pipes”.

### 5.10.1.1 CommandPipeControl

Table 5-112: CommandPipeControl Message

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID	ID	See Command/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
RelatedCommands ?	NMTOKENS	See Command/@RelatedCommands.
Time ?	dateTime	See Message/@Time.
TransactionID ?	NMTOKEN	See Command/@TransactionID.
PipeParams ?	element	Details of the PipeControl message.

### 5.10.2 Element: PipeParams

### 5.10.3 Common PipeControl Element

#### 5.10.3.1 Element: PipeParams

The PipeParams Element is also used by the Messages PipePull, PipePush and PipePause.

Table 5-113: PipeParams Element (Sheet 1 of 2)

Name	Data Type	Description
JobID ? <small>New in JDF 1.2</small>	stringN-MTOKEN	Specifies the @JobID of the Node at the receiving end of the Message that links to the Resource specified in @PipeID.
JobPartID ? <small>New in JDF 1.2</small>	string	Specifies the @JobPartID of the Node at the receiving end of the Message that links to the Resource specified in @PipeID.
Operation	enumeration	<p>@Operation specifies whether the flow is being pushed or pulled.  <b>Allowed values are:</b></p> <p><i>Close</i>: The PipeControl is a request to the other end of a dynamic pipe that the sender of this Message needs no further Resources or will produce no further Resources through the pipe.</p> <p><i>Pause</i>: The PipeControl is a request to the other end of a dynamic pipe that the sender of this Message can currently not process Resources through the pipe.</p> <p><i>Pull</i> – The PipeControl is a request to the Producer to create resources by the Consumer of the resources.</p> <p><i>Push</i> – The PipeControl is a notification to the Consumer that resources have been created by the Producer of the resources.</p>
PipeID	stringN-MTOKEN	Pipe ID of the JDF XJDF Resource ResourceSet that defines the dynamic pipe. @PipeID SHALL be unique in the scope of the job that is selected by @JobID.

**Table 5-113: PipeParams Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>ProjectID</i> ? <small>New in JDF 1.5</small>	string	Specifies the <i>@ProjectID</i> of the Node at the receiving end of the Message that links to the Resource specified in <i>@PipeID</i> .
<i>Status</i> ?= "InProgress"	enumeration	<p>Process status after the request.</p> <p><b>Allowed values are from:</b> <i>JDF/@StatusNodeInfo/@NodeStatus</i> (Table 3.3, “JDF XJDF Node” on page 50) (Table 8.98, “NodeInfo” on page 805 and Table 8-203, “NodeStatus Attribute Values” on page 808).</p>
<i>UpdatedStatus</i> ?	enumeration	<p>This value represents the actual status of the pipe Resource and MAY be used by the receiving Process for Process termination control. <a href="#">For details see Section 4.3.5.2, “Formal Iterative Processing”.</a></p> <p><b>Allowed values are from:</b> <i>Resource@StatusNodeInfo/@NodeStatus</i> (Table 3-10, “Abstract Resource Element” on page 75) (Table 8.98, “NodeInfo” on page 805 and Table 8-203, “NodeStatus Attribute Values” on page 808).</p>
<i>AmountPool</i> ? <i>AmountPool</i> ? <small>New in JDF 1.5</small>	element	<p>Updated <i>AmountPool AmountPool</i> for the pipe Resource. The <i>AmountPool/PartAmount/Part AmountPool/PartAmount/Part</i> MAY contain additional metadata related to the updated Resource. The ordering of the <i>PartAmount PartAmount</i> elements in the <i>AmountPool AmountPool</i> is relevant.</p>
<i>MISDetails</i> ?	element	Definition how the costs for the production of the <i>Resource Resource</i> are to be charged.
<i>Resource *ResourceSet *</i>	element	<p>Updated Resources to be used by the Process that receives the <i>pipe PipeControl</i> command: <i>PipePull</i> (the receiver creates the pipe Resource), <i>PipePush</i> (the receiver consumes the pipe Resource) and <i>PipePause</i> (the receiver only updates the inputs).</p> <p>Possible commands are: <i>PipePull</i>, <i>PipePush</i> or <i>PipePause</i>. In case of the <i>PipeClose</i> Command Message, the Resources are ignored. The data type and <i>@Class</i> of Resource is derived from the Abstract Resource. See Section 3.10.3, “Abstract Resource” on page 75.</p>
<i>ResourceLink ?Resource ?</i> <small>Deprecated in JDF 1.5</small>	element	<p>Updated <i>ResourceLink Resource</i> to the pipe Resource: <i>PipePull</i> (it is an output link), <i>PipePush</i> (it is an input link) and <i>PipePause</i> (depends on the pipe end). This <i>ResourceLink Resource</i> MAY be used by the Process that links to the pipe Resource.</p> <p>The Attributes <i>@rRef</i> and <i>@Usage</i> of a <i>ResourceLink ResourceSet</i> SHALL NOT be modified by the Agent that sends the Pipe Control Message because these Attributes are used by the JMF receiver to identify the <i>ResourceLink ResourceSet</i> that is to be modified.</p> <p>In case of the <i>PipeClose</i> Command Message, the <i>ResourceLink Resource</i> is ignored..</p> <p><b>Deprecation note:</b> starting with JDF 1.5, <i>AmountPool</i> replaces <i>ResourceLink</i>. This change allows for amounts and partitions without using <i>@rRef</i> and <i>@Usage</i>. The Resource is identified by <i>@PipeId</i></p>

### 5.10.3.2 **@Operation = "Close"**

#### 5.10.4 PipeClose

The **PipeClose @Operation = "Close"** Message notifies the Process at the other end of a dynamic pipe that the sender of this Message needs no further Resources or will produce no further Resources through the pipe. The **PipeClose Command Message PipeControl message response with @Operation = "Close"** is equivalent to the **PipePull and PipePush Command Message responses PipeControl message responses with PipePull@Operation = "Pull" and @Operation = "Push"** described below.

If **Resource Resource/@PipeProtocol = "JMFPush"** the producer SHALL terminate the pipe with a **PipeClose@Operation = "Close"**\_Message. If **Resource Resource/@PipeProtocol = "JMFPull"** the consumer SHALL terminate the pipe with a **PipeClose Message PipeControl message with @Operation = "Close"**.

**Table 5-114: PipeClose Message**

Object Type	Element Name	Description
CommandTypeObj	PipeParams	Describes the pipe Resource. The PipeParams Element is described in Section 5.10.5, “PipePull”.
ResponseTypeObj <a href="#">Modified in JDF 1.5</a>	JobPhase <a href="#">Deprecated in JDF 1.5</a>	The status of the responding Process. The JobPhase Element is defined in Table 5-96, “JobPhase Element” on page 286.

### 5.10.4.1 **@Operation = "Pull"**

#### 5.10.5 PipePull

The **PipePull@Operation = "Pull"** Message requests Resources that are described in a **JDF** an **XJDF** dynamic pipe (see [Section 3.13.6, “Pipe Resources”](#) [Section 3.13, “Subelements of Resource”](#) and [Section 4.3.3, “Overlapping Processing Using Pipes”](#)). **PipePull@Operation = "Pull"** Messages are the **JMF XJMF** equivalent of a dynamic input **ResourceLink Resource**. Below, depicts the mode of operation of a **PipePull Message PipeControl message with @Operation = "Pull"**.

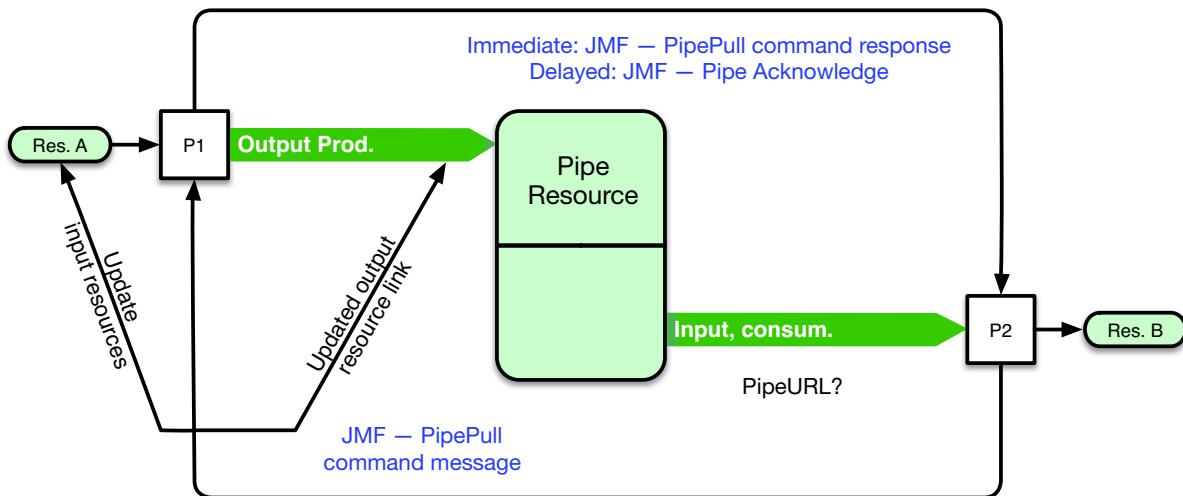
The **PipePull Command Message PipeControl message with @Operation = "Pull"** response returns a **@ReturnCode** of 0 if the command has been accepted by the receiving Controller. If not successful the **@ReturnCode** is one of the codes presented in [Section D, “Supported Error Codes in JMF XJMF and Notification Elements”](#). The Response Message MAY contain a **NotificationNotification** Element. The JobPhase Element (see [Section 5.9.9, “Status”](#)) returned SHOULD provide only the **@Status** Attribute that describes the Job status of the responding Process after receiving the command.

If **Resource Resource/@PipeProtocol = "JMFPull"**, the consumer SHALL initiate the pipe with a **PipePull Command Message PipeControl message with @Operation = "Pull"**.

**Table 5-115: PipePull Message**

Object Type	Element Name	Description
CommandTypeObj	PipeParams	Describes the requested pipe Resource.
ResponseTypeObj <a href="#">Modified in JDF 1.5</a>	JobPhase <a href="#">Deprecated in JDF 1.5</a>	The status of the responding Process. The JobPhase Element is defined in Table 5-96, “JobPhase Element” on page 286.

Figure 5-7: Mechanism of a PipePull Message



#### 5.10.5.1 **@Operation = "Push"**

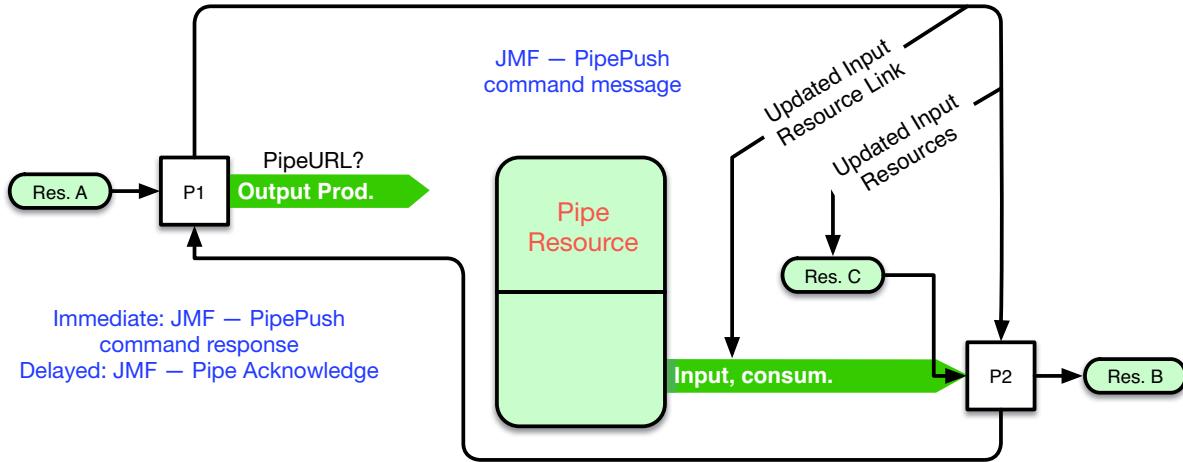
#### 5.10.6 **PipePush**

The **PipePush@Operation = "Push"** Message notifies the availability of pipe Resources that are described in a **JDF** or **XJDF** dynamic pipe (see [Section 3.13.6, “Pipe Resources”](#) [Section 3.13, “Subelements of Resource”](#) and [Section 4.3.3, “Overlapping Processing Using Pipes”](#)). **PipePush @Operation = "Push"** Messages are the **JMF XJMF** equivalent of a dynamic output **ResourceLink Resource**. The Figure 5-8 depicts the mode of operation of a **PipePush@Operation = "Push"** Message. The **PipePush Command Message response PipeControl message response with @Operation = "Push"** is equivalent to the **PipePull Command Message Response the PipeControl message response with @Operation = "Pull"** described above.

If **Resource Resource/@PipeProtocol = "JMFPush"**, the producer SHALL initiate the pipe with a **PipePush Message PipeControl message with @Operation = "Push"**.

Table 5-116: PipePush Message

Object Type	Element Name	Description
CommandTypeObj	PipeParams	Describes the produced pipe Resource. The PipeParams Element is described in <a href="#">Section 5.10.5, “PipePull”</a> .
ResponseTypeObj <a href="#">Modified in JDF 1.5</a>	JobPhase <a href="#">Deprecated in JDF 1.5</a>	The status of the responding Process. The JobPhase Element is defined in <a href="#">Table 5-96, “JobPhase Element”</a> on page 286.

**Figure 5-8: Mechanism of a PipePush Message****5.10.6.1 `@Operation = "Pause"`****5.10.7 `PipePause`**

The `PipePause@Operation = "Pause"` Message pauses execution of a Process that is at the other end of a dynamic pipe.

`PipePause@Operation = "Pause"` MAY be emitted by either the consumer or the producer whenever a condition exists that requires a resynchronization.

If `Resource Resource/@PipeProtocol = "JMFPush"`, and the consumer sends a `PipePause@Operation = "Pause"`, the producer SHALL NOT send further `PipePush@Operation = "Push"` messages until the consumer has reopened the pipe by sending a `PipePull@Operation = "Pull"` message.

If `Resource Resource/@PipeProtocol = "JMFPull"`, and the producer sends a `PipePause@Operation = "Pause"`, the consumer SHALL NOT send further `PipePull@Operation = "Pull"` messages until the producer has reopened the pipe by sending a `PipePush@Operation = "Push"` message.

`PipePause@Operation = "Pause"` MAY be sent by the respective other end of the pipe even if the pipe is already paused. In this case the resynchronization requirements above still apply.

The `PipePause@Operation = "Pause"` Command Message response is equivalent to the `PipePull@Operation = "Pull"` Command Message response described above.

**Table 5-117: PipePause Message**

Object Type	Element Name	Description
CommandTypeObj	PipeParams	Describes the pipe Resource. The PipeParams Element is described in Section 5.10.5, “PipePull”.
ResponseTypeObj <a href="#">Modified in JDF 1.5</a>	JobPhase <a href="#">Deprecated in JDF 1.5</a>	The status of the responding Process. The JobPhase Element is defined in Table 5-96, “JobPhase Element” on page 286.

### 5.10.7.1 ResponsePipeControl

**Table 5-118: ResponsePipeControl Message**

Name	Data Type	Description
<i>AgentName</i> ?	string	See Message/@ <i>AgentName</i> .
<i>AgentVersion</i> ?	string	See Message/@ <i>AgentVersion</i> .
<i>Author</i> ?	string	See Message/@ <i>Author</i> .
<i>DeviceID</i> ?	NMTOKEN	See Message/@ <i>DeviceID</i> .
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ <i>ICSVersions</i> .
<i>ID</i> ?	ID	See Response/@ <i>ID</i> .
<i>PersonalID</i> ?	NMTOKEN	See Message/@ <i>PersonalID</i> .
<i>refID</i> ?	NMTOKEN	See Response/@ <i>refID</i> .
<i>ReturnCode</i> ?	integer	See Response/@ <i>ReturnCode</i> .
<i>Time</i> ?	dateTime	See Message/@ <i>Time</i> .
<i>Notification</i> ?	element	See Response/ <i>Notification</i> .

## 5.11 Queue Support

In **JMF XJMF**, a Controller or Device is assumed to have one input queue that accepts submitted Jobs. Controllers which receive submitted Jobs SHALL in turn submit these Jobs to lower level Controllers or Devices to pass the submission on. In other words, Job submission “cascades” down through Controllers until they get to the Device. Similarly, **ReturnQueueEntry** Messages “cascade” back up through each level. If a Machine supports multiple queues, it SHALL be represented by multiple logical Devices in **JDF XJDF**. In other words, a Device SHALL NOT have more than one Queue. The simple case of a Device with no queue can be mapped to a queue with two @*Status* states: “Waiting” and “Full”. **JMF XJMF** supports simple handling of priority queues. The following assumptions are made:

- Queues support priority. Priority SHALL only be changed for waiting Jobs. A queue MAY round priorities to the number of supported priorities, which MAY be one, indicating no priority handling.
- Priority is described by an integer from 0 to 100. Priority 100 defines a Job that SHOULD pause another Job that is in progress and commence immediately. If a Device does not support the pausing of running Jobs, it SHOULD queue a priority 100 Job before the last pending priority 100 Job.
- A Controller MAY control multiple Devices/Queues.
- Queue entries can be unambiguously identified by a @*QueueEntryID*.
- A Controller or Device MAY analyze a **JDF** or **XJDF** that is submitted to a queue at submission or execution time. A Queue MAY treat a **JDF** or **XJDF** as a closed envelope that is passed on to the Device without checking. The behavior is implementation dependent.

Some conventions used in the following sections have already been introduced in Section 5.7, “Message Template”. This affects the Message Families and the descriptive tables at the beginning of each Message section that describe the type objects related to the corresponding Message. The type objects are **QueryTypeObj**, **CommandTypeObj** and **ResponseTypeObj** (see also Figure 5-1). Each explicit message element will be described in the respective message section. In case of traits that are inherited from abstract **Command**, **Query**, **Signal** or **Response** elements, the descriptions will be referenced.

### 5.11.1 Queue Entry ID Generation

Queue entries are accessed using a @*QueueEntryID* Attribute, which the queue’s Controller or Device generates when it receives the submitted Job, and which is returned in the **SubmitQueueEntry** Response Message.

`@QueueEntryID` SHALL uniquely identify an entry within the scope of one queue. An implementation is free to choose the algorithm that generates `@QueueEntryID` values.

## 5.12 Messages for Queue Entry Handling

Queue-entry handling is provided so that the state of individual Jobs within a queue can be changed. Job submission, queue-entry grouping, priorities and hold / suspend / resume of entries are all supported. The individual commands are defined in the table and explained in greater detail in the sections that follow.

Starting with JDF 1.5, the Queue Element is deprecated in the response to all queue entry handling messages. The QueueFilter that limits the Queue is also deprecated in the respective commands and queries. The status of the resulting queue SHOULD therefore be queried with an explicit QueueStatus message. See Section 5.13.6, "QueueStatus" on page 329.

**Table 5-119: Messages for queue entry handling**

Message type	Family	Description
AbortQueueEntry <small>Modified in JDF 1.2</small>	CR	The QueueEntry is aborted and remains in the Queue with <code>QueueEntry/@Status = "Aborted"</code> .
HoldQueueEntry	CR	The entry remains in queue but is not executed until a ResumeQueueEntry Command Message is received.
ModifyQueueEntry	CR	The QueueEntry is modified by performing: <code>"AbortQueueEntry"</code> , <code>"HoldQueueEntry"</code> , <code>"RemoveQueueEntry"</code> , <code>"ResubmitQueueEntry"</code> , <code>"ResumeQueueEntry"</code> , <code>"SetQueueEntryPosition"</code> , <code>"SetQueueEntryPriority"</code> or <code>"SuspendQueueEntry"</code> .
RemoveQueueEntry	CR	A Job is removed from the queue.
RequestQueueEntry <small>New in JDF 1.2</small>	CR	A new Job is requested by the Device. This Message is used to signal that a Device has processing capabilities available.
ResubmitQueueEntry	CR	Replaces a queue entry without affecting the entry's parameters. The command is used, for example, for late changes to a submitted <b>JDF XJDF</b> .
ResumeQueueEntry	CR	A held Job is resumed. The Job is re-queued at the position defined by its current priority. Submission time is set to the current time stamp.
ReturnQueueEntry <small>New in JDF 1.2</small>	CR	Returns a Job that had been submitted with a SubmitQueueEntry to the queue that represents the Controller that originally submitted the Job.
SetQueueEntryPosition	CR	Queues a Job behind a given position n, where n represents a numerical value. <code>"0"</code> = pole position. Priority is set to the priority of the Job at position n.
SetQueueEntryPriority	CR	Sets the priority of a queued Job to a new value. This does not apply to Jobs that are already running.
SubmitQueueEntry	CR	A Job is submitted to a queue in order to be executed.
SuspendQueueEntry <small>New in JDF 1.2</small>	CR	The entry is suspended if it is already running. It remains suspended until a ResumeQueueEntry Command Message is received.

**Table 5-120: Messages for queue entry handling (Sheet 1 of 2)**

Messages	Description
CommandModifyQueueEntry ResponseModifyQueueEntry	The QueueEntry is modified by performing: <code>"AbortQueueEntry"</code> , <code>"HoldQueueEntry"</code> , <code>"RemoveQueueEntry"</code> , <code>"ResubmitQueueEntry"</code> , <code>"ResumeQueueEntry"</code> , <code>"SetQueueEntryPosition"</code> , <code>"SetQueueEntryPriority"</code> or <code>"SuspendQueueEntry"</code> .

**Table 5-120: Messages for queue entry handling (Sheet 2 of 2)**

Messages	Description
CommandRequestQueueEntry ResponseRequestQueueEntry	A new Job is requested by the Device. This Message is used to signal that a Device has processing capabilities available.
CommandResubmitQueueEntry ResponseResubmitQueueEntry	Replaces a queue entry without affecting the entry's parameters. The command is used, for example, for late changes to a submitted <b>JDF XJDF</b> .
CommandReturnQueueEntry ResponseReturnQueueEntry	Returns a Job that had been submitted with a <b>SubmitQueueEntry</b> to the queue that represents the Controller that originally submitted the Job.
CommandSubmitQueueEntry ResponseSubmitQueueEntry	A Job is submitted to a queue in order to be executed.

The following table specifies the status transitions for the respective queue entry handling Messages. The error(n) indicates the ReturnCode which is returned on an illegal Status transition and the queue entry Status is unchanged. For details on error codes, see Appendix D, “Supported Error Codes in JMF XJMF and Notification Elements” on page 1151.

The following are codes for the following table:

**A:** Aborted

**C:** Completed

**H:** Held

**PR:** PendingReturn [New in JDF 1.4](#)

**Rm:** Removed

**Rn:** Running

**S:** Suspended

**W:** Waiting

**number:** Error that specified number (e.g., “105” means “error(105)”).

**Table 5-121: Status Transitions for QueueEntry Handling Messages (Sheet 1 of 2)**

Previous Status Message type	Non-existent	W	H	Rn	S	PR	C	A
AbortQueueEntry <i>AbortQueueEntry</i>	105	A	A	A	A	114	114	113
HoldQueueEntry <i>HoldQueueEntry</i>	105	H	113	106	106	114	114	114
RemoveQueueEntry <i>RemoveQueueEntry</i>	105	Rm	Rm	106	106	106	Rm	Rm
ResumeQueueEntry <i>ResumeQueueEntry</i>	105	113	W	113	R/W	114	114	114
SetQueueEntryPosition <i>SetQueueEntryPosition</i>	105	W	H	107	107	114	114	114
SetQueueEntryPriority <i>SetQueueEntryPriority</i>	105	W	H	107	107	114	114	114
SuspendQueueEntry <i>SuspendQueueEntry</i>	105	115	115	S	113	114	114	114

**Table 5-121: Status Transitions for QueueEntry Handling Messages (Sheet 2 of 2)**

Previous Status Message type	Non-existent	W	H	Rn	S	PR	C	A	
RequestQueueEntry	RequestQueueEntry is emitted by the Controller of the queue and not sent to the queue. Therefore it is not applicable in this section.								
ResubmitQueueEntry	105	W	H	Rn + W + 107	S + 107	114	Rn + W + 114	Rn + W + 114	
ReturnQueueEntry	ReturnQueueEntry is emitted by the Controller of the queue and not sent to the queue. Therefore it is not applicable in this section.								
SubmitQueueEntry	W,H, Rn	A new <i>@QueueEntryID</i> is generated by the queue owner on submission. Therefore these states are not applicable.							

The following *@Status* transition diagram depicts the life cycle of a queue entry.

Figure 5-9: JMF QueueEntry Status Transition Diagram

## Lifecycle of a QueueEntry

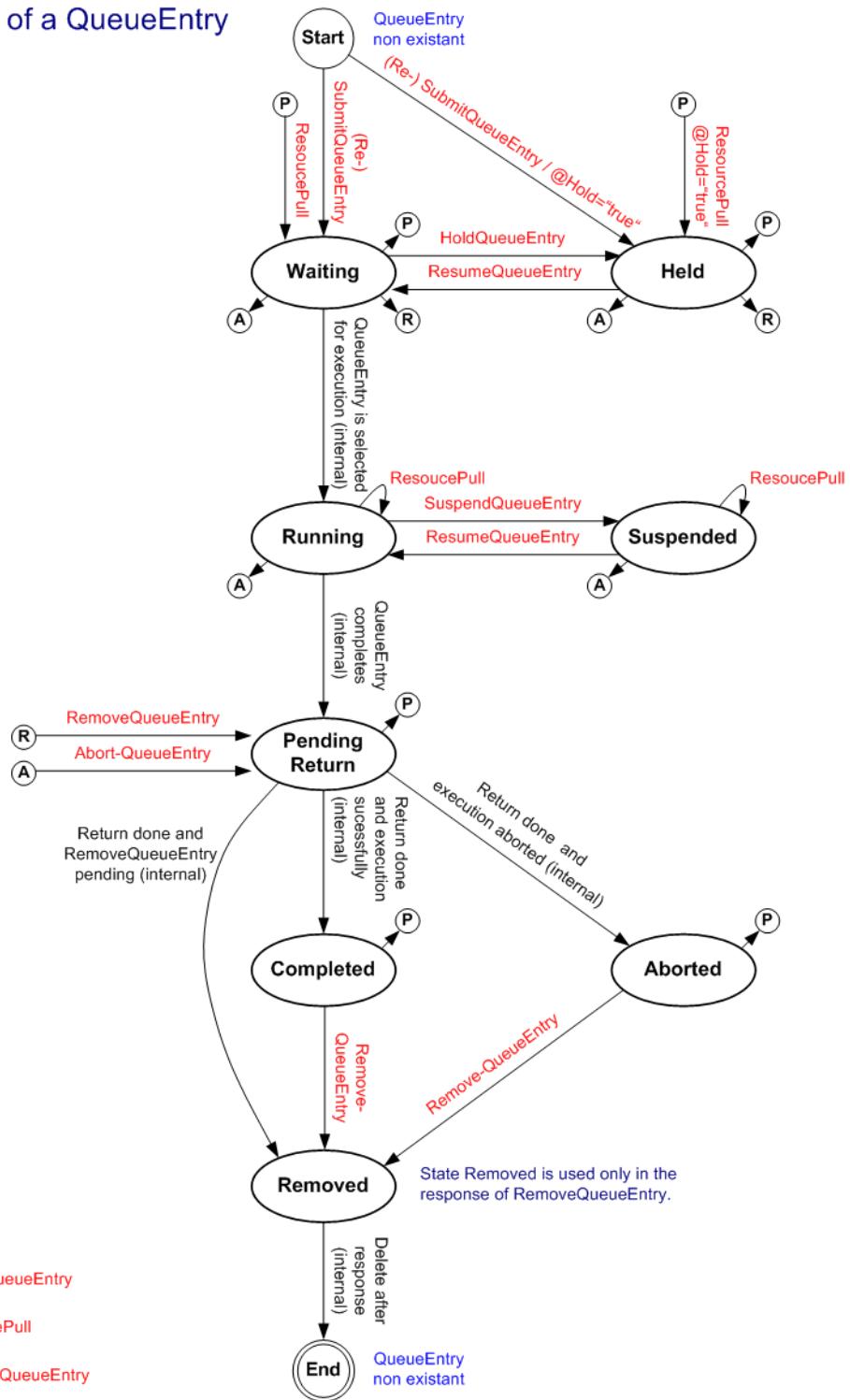
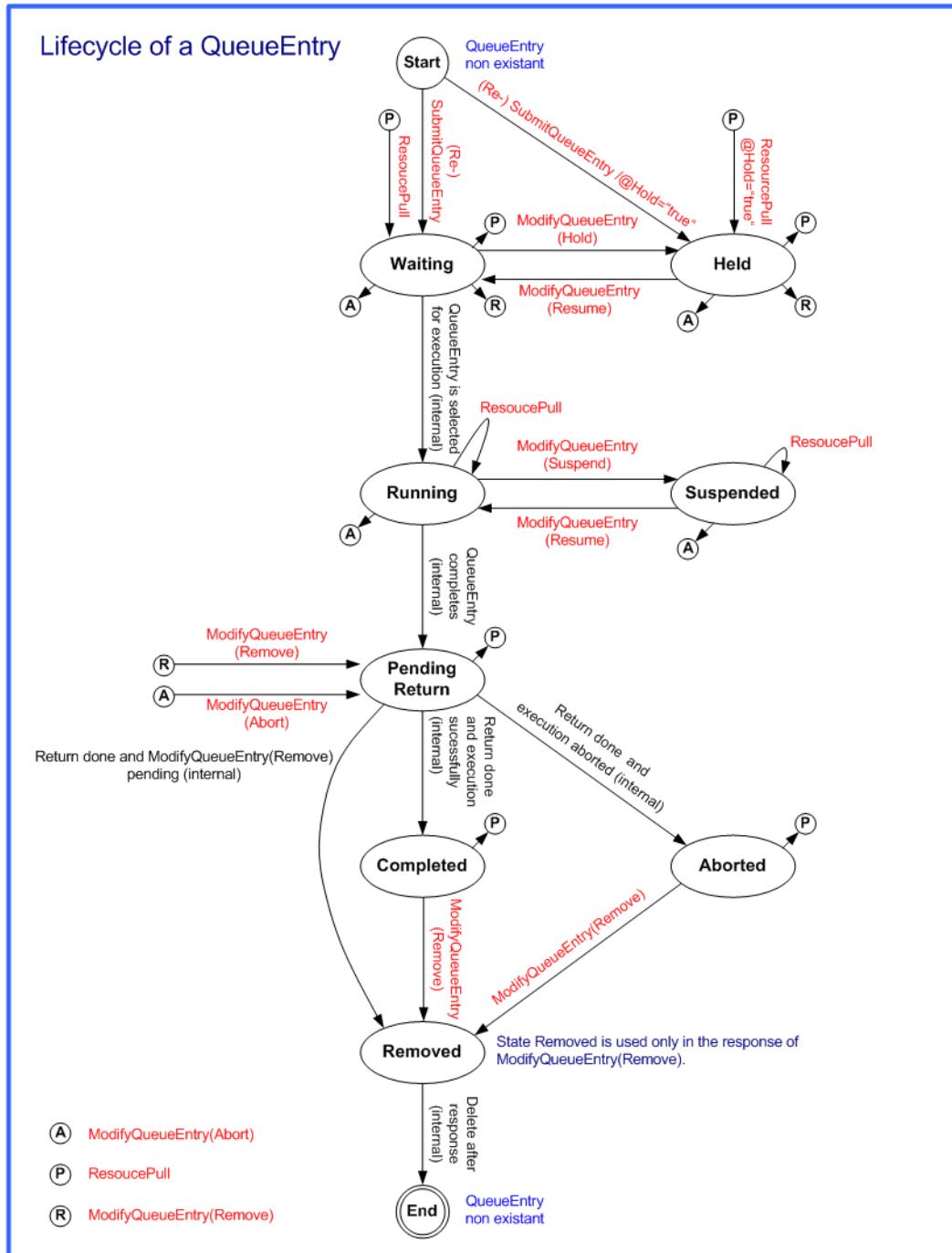




Figure 5-10: XJMF QueueEntry Status Transition Diagram



### 5.12.1 AbortQueueEntry

Once this command is issued, the entry specified by AbortQueueEntryParams/QueueFilter is stopped or aborted and remains in the Queue with QueueEntry/@Status = "Aborted" or "Completed" depending on the value of AbortQueueEntryParams/@EndStatus. The Audit Elements and JDF/@Status of the processing JDF Node are to be appropriately set to "Aborted" or "Completed" and the JDF Node is to be delivered to the URL as specified by SubmitQueueEntry/@ReturnURL, SubmitQueueEntry/@ReturnJMF or **NodeInfo/@TargetRoute**.

**Table 5-122: AbortQueueEntry Message**

Object Type	Element Name	Description
CommandTypeObj  <a href="#">Modified in JDF 1.2</a>  <a href="#">Modified in JDF 1.5</a>	AbortQueueEntryParams ?  <a href="#">New in JDF 1.5</a>	
	QueueEntryDef  <a href="#">Deprecated in JDF 1.5</a>	Defines the queue entry or set of queue entries.  <b>Deprecation note:</b> starting with JDF 1.5, this QueueEntryDef SHOULD be located in AbortQueueEntryParams/QueueFilter.
	QueueFilter ?  <a href="#">New in JDF 1.2</a>  <a href="#">Deprecated in JDF 1.5</a>	Defines a filter for the returned Queue Elements in the AbortQueueEntry Message.
ResponseTypeObj  <a href="#">Modified in JDF 1.5</a>	Queue  <a href="#">Deprecated in JDF 1.5</a>	Describes the state of the queue after the command has been executed.

For the definition of the Elements listed above, see Section 5.14, "Elements for Queues".

#### 5.12.1.1 Element: AbortQueueEntryParams

[New in JDF 1.5](#)

**Table 5-123: AbortQueueEntryParams Element**

Name	Data Type	Description
EndStatus	enumeration	End Status of the job after completing processing.  <b>Allowed values are:</b>  <i>Completed</i> <i>Aborted</i>
QueueFilter ?	element	This QueueFilter selects the QueueEntry elements to apply this Message to.

#### Example 5-31: AbortQueueEntry Command

The following example demonstrates how an AbortQueueEntry Command Message causes a Job in a queue to be aborted and only return the @Status of the aborted QueueEntry in the response, rather than the entire Queue:

```
<Command ID="M009" Type="AbortQueueEntry" xsi:type="CommandAbortQueueEntry">
  <AbortQueueEntryParams>
    <QueueFilter>
      <QueueEntryDef QueueEntryID="job-0032"/>
    </QueueFilter>
  </AbortQueueEntryParams>
</Command>
```

### Example 5-32: AbortQueueEntry Response

The following example shows a possible Response Message to the Command Message example above:

```
<Response ID="M109" Type="AbortQueueEntry" xsi:type="ResponseAbortQueueEntry"
    refID="M009" ReturnCode="0">
</Response>
```

### 5.12.2 HoldQueueEntry

The entry specified by HoldQueueEntryParams/QueueFilter remains in the queue but is not executed. If its *@Status* is "Waiting", its *@Status* is set to "Held". The HoldQueueEntry Command Message has no effect on Jobs with a *@Status* other than "Waiting". If QueueEntry/@GangPolicy is other than "NoGang", a held QueueEntry retains its respective gang data but does not influence execution of other Jobs that are in the gang. For details, see Table 5-121, "Status Transitions for QueueEntry Handling Messages" on page 303.

**Table 5-124: HoldQueueEntry Message**

Object Type	Element Name	Description
CommandTypeObj  <a href="#">Modified in JDF 1.5</a>	HoldQueueEntryParams ?  <a href="#">New in JDF 1.5</a>	
	QueueEntryDef  <a href="#">Deprecated in JDF 1.5</a>	Defines the queue entry.
	QueueFilter ?  <a href="#">New in JDF 1.2</a>  <a href="#">Deprecated in JDF 1.5</a>	Defines a filter for the returned Queue Elements in the HoldQueueEntry Message.
ResponseTypeObj  <a href="#">Modified in JDF 1.5</a>	Queue  <a href="#">Deprecated in JDF 1.5</a>	Describes the state of the queue after the command has been executed.

#### 5.12.2.1 Element: HoldQueueEntryParams

[New in JDF 1.5](#)

**Table 5-125: HoldQueueEntryParams Element**

Name	Data Type	Description
QueueFilter ?	element	This QueueFilter selects the QueueEntry elements to apply this Message to.

### 5.12.3 ModifyQueueEntry

ModifyQueueEntry modifies the state of one or more QueueEntry elements specified by ModifyQueueEntryParams. *Operation* specifies the operation on the selected queue entries. For details, see ModifyQueueEntryParams and Table 5-121, "Status Transitions for QueueEntry Handling Messages" on page 303.

See also ResubmitQueueEntry command for modifications of the underlying XJDF without modifying the queues.

#### 5.12.3.1 CommandModifyQueueEntry

**Table 5-126: CommandModifyQueueEntry Message (Sheet 1 of 2)**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.

**Table 5-126: CommandModifyQueueEntry Message (Sheet 2 of 2)**

Name	Data Type	Description
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID	ID	See Command/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
RelatedCommands ?	NMTOKENS	See Command/@RelatedCommands.
Time ?	dateTime	See Message/@Time.
TransactionID ?	NMTOKEN	See Command/@TransactionID.
ModifyQueueEntryParams	element	ModifyQueueEntryParams defines the operation, the selected queue entry (or selected queue entries) and the operation to be performed.

#### 5.12.3.1.1 Element: **ModifyQueueEntryParams**

**Table 5-127: ModifyQueueEntryParams Element**

Name	Data Type	Description
NextQueueEntryID ?	string NMTOKEN	ID of the queue entry that is to be positioned directly behind the entry. If more than one QueueEntry is selected, the ordering of these elements in the resulting queue is implementation dependent. Not more than one of @NextQueueEntryID, @PrevQueueEntryID @Position or @Priority SHALL be specified.
Operation	NMTOKEN	The operation to perform on the specified queue entries: <b>Values include those from:</b> Table 5-128, “Operation Attribute Values” on page 311.
Position ?	integer	Position in the queue. "0" = pole position. Note that the position is based on the queue before modification. Thus if a queue entry is moved back in the queue, its final position is one lower than specified in Position. If more than one QueueEntry is selected, the ordering of these elements in the resulting queue is implementation dependent. Not more than one of @NextQueueEntryID, @PrevQueueEntryID, @Position or @Priority SHALL be specified.
PrevQueueEntryID ?	string NMTOKEN	ID of the queue entry that is to be positioned directly in front of the entry. If more than one QueueEntry is selected, the ordering of these elements in the resulting queue is implementation dependent. Not more than one of @NextQueueEntryID, @PrevQueueEntryID @Position or @Priority SHALL be specified.
Priority ?	integer	New priority of the selected QueueEntry elements. Priority is a number from 0 to 100, where "0" = lowest priority and "100" = maximum priority. If more than one QueueEntry is selected, the ordering of these elements in the resulting queue is implementation dependent. Not more than one of @NextQueueEntryID, @PrevQueueEntryID @Position or @Priority SHALL be specified.
QueueFilter	element	This QueueFilter selects the QueueEntry elements to apply to

— Attribute: **Operation**

**Table 5-128: Operation Attribute Values**

Value	Description
Abort	The QueueEntry elements selected by QueueFilter SHALL be aborted and remain in the Queue with QueueEntry/@Status = "Aborted". The Audit Elements and //NodeInfo//@NodeStatus of the processing JDF Nodes SHALL be set to "Aborted" and the JDF Nodes SHALL be delivered to the URL as specified by SubmitQueueEntry/@ReturnJMF.
Complete	The QueueEntry elements selected by QueueFilter SHALL be stopped and remain in the Queue with QueueEntry/@Status = "Completed". The Audit Elements and NodeInfo//@NodeStatus of the processing JDF Nodes SHALL be appropriately set to "Completed" and the JDF Nodes SHALL be delivered to the URL as specified by SubmitQueueEntry/@ReturnJMF.
Hold	If QueueEntry/@Status is "Waiting", QueueEntry/@Activation SHALL be set to "Held". The "Hold" Operation SHALL NOT be applied to QueueEntry elements with a @Status other than "Waiting" or an @Activation other than "Active". If @GangPolicy is other than "NoGang", a held QueueEntry retains its respective gang data but SHALL NOT influence execution of other QueueEntry elements that are in the gang.
Move	The position of the QueueEntry elements selected by QueueFilter SHALL be modified. The position of a QueueEntry SHALL NOT be modified unless @Status = "Waiting" or @Status = "Held". QueueEntry elements can either be set to a specific position within the queue or positioned next to an existing QueueEntry. QueueEntry/@Priority SHALL be set to the value of QueueEntry/@Priority of the entry that precedes it, after it has been repositioned.
Remove	The QueueEntry elements selected by QueueFilter SHALL be removed from the queue. The Remove operation does not affect QueueEntry [@Status = "Running" or @Status = "Suspended"].
Resume	If QueueEntry/@Activation = "Held", QueueEntry/@Activation SHALL be set to "Active". If QueueEntry/ @Status = "Suspended", QueueEntry/@Status SHALL be set to "Running". If @GangPolicy is other than "NoGang", a resumed QueueEntry joins its respective gang.
Suspend	The QueueEntry elements selected by QueueFilter SHALL be suspended if its QueueEntry/@Status is "Running". Its QueueEntry/@Status is set to "Suspended". Whether other queue entries can be run while the queue entries remain suspended depends on implementation. The "Suspend" Operation Command Message has no effect on QueueEntry elements with a @Status other than "Running".

### 5.12.3.2 ResponseModifyQueueEntry

**Table 5-129: ResponseModifyQueueEntry Message (Sheet 1 of 2)**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID ?	ID	See Response/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.

**Table 5-129: ResponseModifyQueueEntry Message (Sheet 2 of 2)**

Name	Data Type	Description
refID ?	NMTOKEN	See Response/@refID.
ReturnCode ?	integer	See Response/@ReturnCode.
Time ?	dateTime	See Message/@Time.
Notification ?	element	See Response/Notification.
QueueEntry *	element	Describes the selected QueueEntry elements after the command has been executed. For the definition of the QueueEntry element, see Section 5.14, “Elements for Queues” on page 333

### 5.12.4 RemoveQueueEntry

This command causes the entries specified by RemoveQueueEntryParams/QueueFilter to be removed from the queue. It does not affect QueueEntry [*@Status* = "Running" or *@Status* = "Suspended"]. Use AbortQueueEntry to stop a running or suspended Job and then remove it with RemoveQueueEntry. For details, see Table 5-121, “Status Transitions for QueueEntry Handling Messages” on page 303.

**Table 5-130: RemoveQueueEntry Message**

Object Type	Element Name	Description
CommandTypeObj  Modified in JDF 1.2  Modified in JDF 1.5	QueueEntryDef  Deprecated in JDF 1.5	Defines the queue entry.
	QueueFilter ?  New in JDF 1.2  Deprecated in JDF 1.5	Defines a filter for the returned Queue Elements in the RemoveQueueEntry Message.
	RemoveQueueEntryParams ?  New in JDF 1.5	
ResponseTypeObj  Modified in JDF 1.5	Queue  Deprecated in JDF 1.5	Describes the state of the queue after the command has been executed.

#### 5.12.4.1 Element: RemoveQueueEntryParams

New in JDF 1.5

**Table 5-131: RemoveQueueEntryParams Element**

Name	Data Type	Description
QueueFilter ?	element	This QueueFilter selects the QueueEntry elements to apply the RemoveQueueEntry Message to.

### 5.12.5 RequestQueueEntry

New in JDF 1.2

This command requests a new queue entry from a potential submitting Agent Controller. The actual submission is still handled by the standard queue entry handling parameters. Note that this command is emitted from the Device that is represented by the queue to a Controller or Device and not to the queue, as is the case with most other queue handling commands.

Whereas **JDF XJDF** generally assumes a "Push" workflow, where a controller or MIS assigns a task to a given Device, **RequestQueueEntry** allows a "Pull" workflow to be implemented, where a Device with free processing capabilities dynamically requests a new task.

**Table 5-132: RequestQueueEntry Message**

Object Type	Element Name	Description
CommandTypeObj	RequestQueueEntryParams	Defines the specifics for the requested Job.
ResponseTypeObj	—	The response to this message contains no <b>ResponseTypeObj</b> , only an empty Response element that specifies the <b>@ReturnCode</b> . Any Job submission is handled using <b>hot folders</b> or the standard <b>SubmitQueueEntry</b> Message.

### 5.12.5.1 CommandRequestQueueEntry

**Table 5-133: CommandRequestQueueEntry Message**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID	ID	See Command/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
RelatedCommands ?	NMTOKENS	See Command/@RelatedCommands.
Time ?	dateTime	See Message/@Time.
TransactionID ?	NMTOKEN	See Command/@TransactionID.
RequestQueueEntryParams	element	Defines the specifics for the requested Job.

#### 5.12.5.1.1 Element: RequestQueueEntryParams

#### 5.12.5.2 Element: RequestQueueEntryParams

**Table 5-134: RequestQueueEntryParams Element (Sheet 1 of 2)**

Name	Data Type	Description
Activation ? <u>New in JDF 1.5</u>	enumeration	Specifies the Activation of the requested QueueEntry. <b>Allowed values are from:</b> @Activation in Table 3-4, "JDF XJDF Node" on page 52.
JobID ?	stringN-MTOKEN	@JobID of the requested QueueEntry.
JobPartID ?	stringN-MTOKEN	@JobPartID of the requested QueueEntry.
QueueURL	URL	URL of the Queue Controller that is requesting the QueueEntry and will accept Queue manipulation Messages. If URL specifies a File, this is the hot folder for XJDF submission.

**Table 5-134: RequestQueueEntryParams Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>SubmitPolicy</i> ? <small>New in JDF 1.3</small>	enumeration	<p>Defines the requested policy for submitting the Node.</p> <p>If not specified, the submission policy is dependent on the Controller implementation. <i>@SubmitPolicy</i> allows a Device to request a Node that would otherwise not be submitted by the Controller due to missing Resources.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Standard</i> – All linked Resources SHALL have a <b>Resource@StatusNodeInfo/@NodeStatus</b> as defined by <b>ResourceLink Resource/@MinStatus</b>.</li> <li><i>Late</i> – All linked Resources SHALL have a <b>Resource@StatusNodeInfo/@NodeStatus</b> as defined by <b>ResourceLink Resource/@MinLateStatus</b>.</li> <li><i>Force</i> – The Node SHALL be submitted regardless of the values of linked <b>Resource@StatusNodeInfo/@NodeStatus</b>.</li> </ul>
<i>Part</i> * <i>Part</i> *	element	Partition parts of the requested QueueEntry.
<i>Queue</i> ?	element	Representation of the current status of the Device's Queue.

### 5.12.5.3 ResponseRequestQueueEntry

The response to this message contains no element that is special for this message.

**Table 5-135: ResponseRequestQueueEntry Message**

Name	Data Type	Description
<i>AgentName</i> ?	string	See Message/@AgentName.
<i>AgentVersion</i> ?	string	See Message/@AgentVersion.
<i>Author</i> ?	string	See Message/@Author.
<i>DeviceID</i> ?	NMTOKEN	See Message/@DeviceID.
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ICSVersions.
<i>ID</i> ?	ID	See Response/@ID.
<i>PersonalID</i> ?	NMTOKEN	See Message/@PersonalID.
<i>refID</i> ?	NMTOKEN	See Response/@refID.
<i>ReturnCode</i> ?	integer	See Response/@ReturnCode.
<i>Time</i> ?	dateTime	See Message/@Time.
<i>Notification</i> ?	element	See Response/Notification.

### 5.12.6 ResubmitQueueEntry

A **Job QueueEntry** is resubmitted to a queue using the **ResubmitQueueEntry** Message. This allows late changes to be made to a **Job QueueEntry** without affecting queue parameters and without exporting the internal structure of a queue. Resubmission overwrites modifies the **Job QueueEntry** with XJDF information specified in **ResubmissionParams**/**ResubmissionParams/@URL**. If **QueueEntry/@Status** is neither "Waiting" nor "Held", resubmitting a queue entry MAY fail because a Device NEED NOT implement **ResubmitQueueEntry** for running queue entries. See also **ModifyQueueEntry** command for modifications of the queue s without modifying the underlying XJDF.Job resubmission. Resubmission does not affect other queue parameters as specified. For

example, resubmission does not affect queue ordering. For details, see Table 5-121, “Status Transitions for QueueEntry Handling Messages” on page 303.

**Table 5-136: ResubmitQueueEntry Message**

Object type	Element Name	Description
CommandTypeObj <a href="#">Modified in JDF 1.2</a>	QueueFilter ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	Defines a filter for the returned Queue Element in the ResubmitQueueEntry Message.
	ResubmissionParams	Defines the Job resubmission.
ResponseTypeObj <a href="#">Modified in JDF 1.5</a>	Queue <a href="#">Deprecated in JDF 1.5</a>	Describes the state of the queue after the command has been executed.

### 5.12.6.1 CommandResubmitQueueEntry

**Table 5-137: CommandResubmitQueueEntry Message**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID	ID	See Command/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
RelatedCommands ?	NMTOKENS	See Command/@RelatedCommands.
Time ?	dateTime	See Message/@Time.
TransactionID ?	NMTOKEN	See Command/@TransactionID.
ResubmissionParams	element	Defines the Job resubmission.

#### 5.12.6.1.1 Element: ResubmissionParams

#### 5.12.6.2 Element: ResubmissionParams

ResubmissionParams provides details of the QueueEntry resubmission. The value of ResubmissionParams/@UpdateMethod determines how the QueueEntry modification SHALL be applied.

Devices NEED NOT support @UpdateMethod = "Incremental" with variable XJDF/@JobPartID. This feature allows MIS to provide complex workflows to production workflow systems that are capable of managing multiple devices.

#### 5.12.6.2.1 Referencing values for incremental update

The following section describes how to reference data when ResubmissionParams/@UpdateMethod="Incremental" or ResubmissionParams/@UpdateMethod="Remove". The algorithms shown here are illustrated assuming an internal XJDF model but this is purely for illustration and no assumption is made about the actual implementation.

As a general rule, Elements and attributes within XJDF SHALL be addressed by searching Elements and Attributes with matching XPath results. Attributes with a data type of ID or IDREF SHALL be ignored when calculating XPaths because IDs MAY be regenerated dynamically and are only valid within the scope of a single XML document.

**5.12.6.2.1.1 Finding the correct XJDF node to update**

An XJDF node SHALL match if the values of XJDF/@JobID and XJDF/@JobPartID are both identical.

**5.12.6.2.1.2 Finding the correct Resource to update**

A ResourceSet SHALL match if the values of ResourceSet/@Name, ResourceSet/@ProcessUsage, ResourceSet/@Usage, are all identical.

Once a matching ResourceSet has been found, a child Resource SHALL match if all Resource/Part elements match. A Part matches if all attribute values are identical. The ordering of the Resource/Part is not significant.

**5.12.6.2.2 Updating values**

If ResubmissionParams/@UpdateMethod="Incremental" then all attribute values and element text SHALL be replaced with the attribute values defined in the XJDF that is referenced by @URL. If the ancestors of a given attribute do not exist, they SHALL be appropriately created.

**5.12.6.2.3 Removing values**

If ResubmissionParams/@UpdateMethod="Remove" then all leaf elements, i.e. elements that have no child elements, that are defined in the XJDF that is referenced by @URL SHALL be removed.

**Table 5-138: ResubmissionParams Element**

Name	Data Type	Description
QueueEntryID	stringNMTO-KEN	ID of the queue entry to be replaced.
UpdateMethod = "Complete" <small>New in JDF 1.3 Modified in JDF 1.4</small>	enumeration	<p>Method of how the QueueEntry SHALL be updated.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Complete</i> – The QueueEntry SHALL be completely replaced by the XJDF that is referenced by @URL.</li> <li><i>Incremental</i> – The QueueEntry SHALL be incrementally updated by the values of the XJDF that is referenced by @URL. If XJDF/@JobPartID of the referenced XJDF is identical to XJDF/@JobPartID of the originally submitted XJDF or an XJDF that has been resubmitted with ResubmissionParams/@UpdateMethod = "Incremental", then the process step that is identified by XJDF/@JobID and XJDF/@JobPartID SHALL be modified. Otherwise a new process step SHALL be submitted to the Device.</li> <li><i>Remove</i> – The QueueEntry SHALL be incrementally updated by removing all elements that are specified in the XJDF that is referenced by @URL. XJDF/@JobPartID of the referenced XJDF SHALL be identical to XJDF/@JobPartID of the originally submitted XJDF or an XJDF that has been resubmitted with ResubmissionParams/@UpdateMethod = "Incremental".</li> </ul>
URL	URL	Location of the JDF XJDF to be submitted. It MAY be a URL with a "cid" scheme in the case of MIME Multipart/Related. XJDF/@JobID SHALL be identical to XJDF/@JobID of the originally submitted XJDF.

**5.12.6.3 ResponseResubmitQueueEntry****Table 5-139: ResponseResubmitQueueEntry Message (Sheet 1 of 2)**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.

**Table 5-139: ResponseResubmitQueueEntry Message (Sheet 2 of 2)**

Name	Data Type	Description
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID ?	ID	See Response/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
refID ?	NMTOKEN	See Response/@refID.
ReturnCode ?	integer	See Response/@ReturnCode.
Time ?	dateTime	See Message/@Time.
Notification ?	element	See Response/Notification.

### 5.12.7 ResumeQueueEntry

The hold status of the queue entries specified by ResumeQueueEntryParams/QueueFilter/QueueEntryDef is removed. A QueueEntry with *@Status = "Held"* gets a *@Status* of *"Waiting"*. A QueueEntry with *@Status = "Suspended"* gets a *@Status* of *"Running"*. If QueueEntry/@GangPolicy is other than *"NoGang"*, a resumed QueueEntry joins its respective gang. For details, see Table 5-121, “Status Transitions for QueueEntry Handling Messages” on page 303.

**Table 5-140: ResumeQueueEntry Message**

Object Type	Element Name	Description
CommandTypeObj <a href="#">Modified in JDF 1.5</a>	QueueEntryDef <a href="#">Deprecated in JDF 1.5</a>	Defines the queue entry. <b>Deprecation note:</b> starting with JDF 1.5, this QueueEntryDef SHOULD be located in ResumeQueueEntryParams/QueueFilter.
	QueueFilter ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	Defines a filter for the returned Queue Element in the ResumeQueueEntry Message.
	ResumeQueueEntryParams ? <a href="#">New in JDF 1.5</a>	
ResponseTypeObj <a href="#">Modified in JDF 1.5</a>	Queue <a href="#">Deprecated in JDF 1.5</a>	Describes the state of the queue after the command has been executed.

#### 5.12.7.1 Element: ResumeQueueEntryParams

[New in JDF 1.5](#)

**Table 5-141: ResumeQueueEntryParams Element**

Name	Data Type	Description
QueueFilter ?	element	This QueueFilter selects the QueueEntry elements to apply the ResumeQueueEntry Message to.

### 5.12.8 ReturnQueueEntry

[New in JDF 1.2](#)

The ReturnQueueEntry Message returns a Job that had been submitted with a SubmitQueueEntry to the queue that represents the Controller that originally submitted the Job. The ReturnQueueEntryParams Element provides the parameters. Note that this command is emitted from the Device that is represented by the queue to a Controller or dispatcher and not to the queue, sent from the Device to a Controller and not from Controller to Device as is the case with most other queue handling commands.

If the XJDF has been enhanced by submitting additional process XJDFs with different XJDF/@JobPartID using the ResubmitQueueEntry Command, then only the primary XJDF SHALL be returned. The Audit elements of the process XJDFs SHALL be copied into XJDF/AuditPool of the primary XJDF. Each such Audit element SHALL contain a copy of XJDF/@JobPartID.

**Table 5-142: ReturnQueueEntry Message**

Object Type	Element Name	Description
CommandTypeObj	ReturnQueueEntryParams	Defines the Job being returned from Device to Controller after processing is completed or aborted.
ResponseTypeObj	-	

#### 5.12.8.1 CommandReturnQueueEntry

**Table 5-143: CommandReturnQueueEntry Message**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID	ID	See Command/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
RelatedCommands ?	NMTOKENS	See Command/@RelatedCommands.
Time ?	dateTime	See Message/@Time.
TransactionID ?	NMTOKEN	See Command/@TransactionID.
ReturnQueueEntryParams	element	Defines the Job being returned from Device to Controller after processing is completed or aborted.

##### 5.12.8.1.1 Element: ReturnQueueEntryParams

##### 5.12.8.2 Element: ReturnQueueEntryParams

The URL Attribute specifies the location where the **JDF XJDF** file to be submitted can be retrieved by the Controller. The scheme of the URL Attribute (such as "file", "http" or "cid") defines the retrieval method to be used to retrieve the **JDF XJDF**.

**Table 5-144: ReturnQueueEntryParams Element**

Name	Data Type	Description
Aborted ?	NMTOKENS	ID of the JDF Nodes that have been executed and aborted or failed test running. If <i>@Aborted</i> and <i>@Completed</i> are empty, no executable Node was found. Note that the data type of this Attribute was erroneously specified as IDFREFS in JDF 1.2. and JDF 1.3.
Completed ?	NMTOKENS	ID of the JDF Nodes that have been executed and completed or succeeded in test run. Note that the data type of this Attribute was erroneously specified as IDFREFS in JDF 1.2. and JDF 1.3.
Priority ?	integer	The priority of the QueueEntry when it was executed on the Device. The Controller receiving this Message MAY prioritize this Job for continued processing based on this value.
QueueEntryID	string	QueueEntry/@QueueEntryID of the returned queue entry. Note that this Attribute was erroneously omitted in JDF 1.2. and JDF 1.3.
URL	URL	Location of the JDF XJDF that represents the final state of the QueueEntry to be returned. URL SHALL NOT reference a directory. Note that the @URL SHOULD be queried with a SubmissionMethods Query Message to determine whether MIME Multipart/Related is supported

### 5.12.8.3 ResponseReturnQueueEntry

**Table 5-145: ResponseReturnQueueEntry Message**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID ?	ID	See Response/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
refID ?	NMTOKEN	See Response/@refID.
ReturnCode ?	integer	See Response/@ReturnCode.
Time ?	dateTime	See Message/@Time.
Notification ?	element	See Response/Notification.

### 5.12.9 SetQueueEntryPosition

The position of the queue entry is modified. The QueueEntryPosParams Element provides the parameters. The position of a queue entry SHALL NOT be modified unless *@Status* = "Waiting" or *@Status* = "Hold". For details, see Table 5-121, "Status Transitions for QueueEntry Handling Messages" on page 303.

**Table 5-146: SetQueueEntryPosition Message**

Object Type	Element Name	Description
CommandTypeObj <a href="#">Modified in JDF 1.2</a>	QueueEntryPosParams	Defines the queue entry.
	QueueFilter ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	Defines a filter for the returned Queue Element in the SetQueueEntryPosition Message.
ResponseTypeObj <a href="#">Modified in JDF 1.5</a>	Queue <a href="#">Deprecated in JDF 1.5</a>	Describes the state of the queue after the command has been executed.

**5.12.9.1 Element: QueueEntryPosParams**

*@QueueEntryID* specifies the queue entry to be moved. Jobs can either be set to a specific position within the queue or positioned next to an existing queue entry. The priority of the entry matches the priority of the entry that precedes it, after it has been repositioned.

**Table 5-147: QueueEntryPosParams Element**

Name	Data Type	Description
<i>NextQueueEntryID</i> ?	string	ID of the queue entry that is to be positioned directly behind the entry. Exactly one of <i>@NextQueueEntryID</i> , <i>@PrevQueueEntryID</i> or <i>@Position</i> SHALL be specified.
<i>PrevQueueEntryID</i> ?	string	ID of the queue entry that is to be positioned directly in front of the entry. Exactly one of <i>@NextQueueEntryID</i> , <i>@PrevQueueEntryID</i> or <i>@Position</i> SHALL be specified.
<i>Position</i> ?	integer	Position in the queue. "0" = pole position. Note that the position is based on the queue before modification. Thus if a queue entry is moved back in the queue, its final position is one lower than specified in <i>@Position</i> . Exactly one of <i>@NextQueueEntryID</i> , <i>@PrevQueueEntryID</i> or <i>@Position</i> SHALL be specified.
<i>QueueEntryID</i>	string	ID of a queue entry.

**5.12.10 SetQueueEntryPriority**

The priority of the queue entry is modified. The QueueEntryPriParams Element provides the parameters. For details, see Table 5-121, “Status Transitions for QueueEntry Handling Messages” on page 303.

**Table 5-148: SetQueueEntryPriority Message**

Object Type	Element Name	Description
CommandTypeObj <a href="#">Modified in JDF 1.5</a>	QueueEntryPriParams	Defines the queue entry.
	QueueFilter ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	Defines a filter for the returned Queue Element in the SetQueueEntryPriority Message.
ResponseTypeObj <a href="#">Modified in JDF 1.5</a>	Queue <a href="#">Deprecated in JDF 1.5</a>	Describes the state of the queue after the command has been executed.

**5.12.10.1 Element: QueueEntryPriParams**

*@QueueEntryID*, described in the table below, specifies the queue entry that has its priority modified.

**Table 5-149: QueueEntryPriParams Element**

Name	Data Type	Description
Priority	integer	Number from 0 to 100, where "0" = lowest priority and "100" = maximum priority. The priority from QueueSubmissionParams/@Priority and QueueEntryPriParams/@Priority takes precedence over NodeInfo/@JobPriority.
QueueEntryID <i>Deprecated in JDF 1.5</i>	string	ID of a queue entry.
QueueFilter ? <i>New in JDF 1.5</i>	element	This QueueFilter selects the QueueEntry elements to apply the SetQueueEntryPriority Message to.

### 5.12.11 SubmitQueueEntry

SubmitQueueEntry initially submits a Job to a queue of a Device or Controller QueueEntry to a Device. Modifications to a QueueEntry can be applied by using the ResubmitQueueEntry or ModifyQueueEntry command. QueueSubmissionParams provides the parameters of the submission.

ResponseSubmitQueueEntry/QueueEntry/@QueueEntryID SHALL be unique within the Device. A new @QueueEntryID SHALL be generated for each SubmitQueueEntry.

**Table 5-150: SubmitQueueEntry Message**

Object Type	Element Name	Description
CommandTypeObj <i>Modified in JDF 1.5</i>	QueueFilter ? <i>New in JDF 1.2</i> <i>Deprecated in JDF 1.5</i>	Defines a filter for the returned Queue Element in the SubmitQueueEntry Message.
	QueueSubmissionParams	Defines the Job submission.
ResponseTypeObj <i>Modified in JDF 1.5</i>	Queue <i>Deprecated in JDF 1.5</i>	Describes the state of the queue after the command has been executed.
	QueueEntry ? <i>Modified in JDF 1.2</i>	Provides the queue entry of the submitted Job. QueueEntry SHALL be specified if the submission was successful and SHALL be omitted in case the submission was rejected.
Definition of the QueueEntry Elements, see Section 5.14, "Elements for Queues".		

### 5.12.11.1 CommandSubmitQueueEntry

**Table 5-151: CommandSubmitQueueEntry Message (Sheet 1 of 2)**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID	ID	See Command/@ID.

**Table 5-151: CommandSubmitQueueEntry Message (Sheet 2 of 2)**

Name	Data Type	Description
PersonalID ?	NMTOKEN	See Message/@PersonalID.
RelatedCommands ?	NMTOKENS	See Command/@RelatedCommands.
Time ?	dateTime	See Message/@Time.
TransactionID ?	NMTOKEN	See Command/@TransactionID.
QueueSubmissionParams	element	Defines the Job submission.

### 5.12.11.1.1 Element: QueueSubmissionParams

### 5.12.11.2 Element: QueueSubmissionParams

The Job submission can contain queue-ordering Attributes equivalent to those used by the SetQueueEntryPriority and SetQueueEntryPosition "Move" @Operation of the ModifyQueueEntry Messages. The @URL Attribute specifies the location where the JDF file to be submitted can be retrieved by the queue Controller. The location type in the @URL Attribute (such as "file", "http" or "cid") defines the submission method. @ReturnURL or @ReturnJMF MAY specify the location where the modified JDF XJDF is to be sent after the Job is completed or aborted.

The @URL Attribute specifies the location where the queue Controller can retrieve the JDF XJDF file to be submitted.

**Table 5-152: QueueSubmissionParams Element (Sheet 1 of 3)**

Name	Data Type	Description
Activation ?	enumeration	<p>Activation of the submitted QueueEntryJDF.</p> <p><b>Allowed values are from:</b> QueueEntry/@Activation in Table 5-175, “QueueEntry Element” on page 335Table 3-4, “JDF XJDF Node” on page 52.</p> <p><b>Note:</b> @Activation SHALL NOT be set to "Removed" or "PendingReturn".</p>
GangName ? <u>New in JDF 1.3</u>	NMTOKEN	<p>Name of the Gang for the Job. If @GangName is specified, the QueueEntry SHOULD be executed together with other QueueEntry Elements that share a common value of @GangName. If @GangName is not known, the receiving Device MAY either return an error 131 or create the gang with @GangName on the fly.</p>
GangPolicy ? <u>New in JDF 1.3</u>	enumeration	<p>Ganging policy for the QueueEntry.</p> <p><b>Allowed values are:</b></p> <p><i>Gang</i> – The Job SHALL be ganged in the gang that is specified by @GangName or SHALL be calculated from other properties of the submitted Job. A gang Job that MAY contain this submitted QueueEntry MAY be queued.</p> <p><i>GangAndForce</i> – The Job SHALL be ganged in the gang that is specified by @GangName or SHALL be calculated from other properties of the submitted Job. A gang Job that SHALL contain this submitted QueueEntry SHALL be queued.</p> <p><i>NoGang</i> – The Job SHALL NOT be ganged and @GangName SHALL be ignored. The Job SHALL be queued individually.</p>

Table 5-152: QueueSubmissionParams Element (Sheet 2 of 3)

Name	Data Type	Description
<i>Hold ?= "false"</i>	boolean	If "true", the entry is submitted as with QueueEntry/ @Status="Hold". If a QueueEntry is submitted with @Hold = "true" and @GangPolicy is other than "NoGang", the QueueEntry retains its respective gang data but does not influence execution of other Jobs that are in the gang.
<i>NextQueueEntryID?</i>	<i>stringNMTO-KEN</i>	ID of the queue entry that is to be positioned directly behind the entry. At most one of @NextQueueEntryID, @PrevQueueEntryID or @Priority SHALL be specified.
<i>PrevQueueEntryID?</i>	<i>stringNMTO-KEN</i>	ID of the queue entry that is to be positioned directly in front of the entry. At most one of @NextQueueEntryID, @PrevQueueEntryID or @Priority SHALL be specified.
<i>Priority ?= "1"</i>	integer	Number from 0 to 100, where "0" = lowest priority and "100" = maximum priority. Exactly one of @NextQueueEntryID, @PrevQueueEntryID or @Priority SHALL be specified. Note that <i>QueueSubmissionParams</i> / <i>QueueSubmissionParams</i> / @Priority is not the same as <i>NodeInfo</i> /@Priority. <i>QueueSubmissionParams</i> / <i>QueueSubmissionParams</i> /@Priority specifies the priority in the context of the Device queue whereas <i>NodeInfo</i> /@Priority specifies the priority of the task in general. <i>QueueSubmissionParams</i> / <i>QueueSubmissionParams</i> /@Priority MAY be modified due to additional scheduling information (e.g., <i>NodeInfo</i> /@FirstStart). The priority from <i>QueueSubmissionParams</i> / <i>QueueSubmissionParams</i> /@Priority and <i>QueueEntryPriParams</i> <i>ModifyQueueEntryParams</i> @Priority takes precedence over <i>NodeInfo</i> /@JobPriority.
<i>refID?</i> <i>New in JDF 1.2</i>	NMTOKEN	Copy of the @ID Attribute of the initiating RequestQueueEntry Message.
<i>ReturnJMF?</i> <i>New in JDF 1.2</i>	URL	Address of a JMF queue where a ReturnQueueEntry Message is to Command SHALL be sent when the QueueEntry is completed or aborted. Note that the @ReturnJMF queue SHOULD be queried with a SubmissionMethods Query Message to determine whether MIME Multipart/Related is supported by the return queue. @ReturnJMF SHALL NOT be specified if @ReturnURL is present.
<i>ReturnURL?</i> <i>Modified in JDF 1.2</i>	URL	URL where the <b>JDF XJDF</b> file is to be written when the QueueEntry is completed or aborted. A Controller SHALL write only a <b>JDF</b> an <b>XJDF</b> document to the URL and SHALL NOT write a MIME Multipart package to the URL. If @ReturnURL is specified with the "file" scheme, @ReturnURL SHALL specify an individual file. @ReturnURL SHALL take precedence when <i>NodeInfo</i> / @TargetRoute is specified in the submitted <b>JDF XJDF</b> . Note: A Controller SHALL NOT return a <b>JDF</b> an <b>XJDF</b> file or MIME Multipart/ Related file by performing a SubmitQueueEntry or ReturnQueueEntry to the @ReturnURL URL. The Controller specified by @ReturnURL SHALL NOT accept JMF Messages. See instead @ReturnJMF. @ReturnURL SHALL NOT be specified if @ReturnJMF is present.

**Table 5-152: QueueSubmissionParams Element (Sheet 3 of 3)**

Name	Data Type	Description
<u>URL</u>  <u>Modified in JDF 1.2</u>	URL	Location of the <b>JDF XJDF</b> to be submitted or resubmitted. In the case of MIME Multipart/Related, the URL MAY have a " <i>cid</i> " scheme. If @URL refers to a directory, then all files with an extension of .xjdf that reside directly in the directory SHALL be processes in lexical order. The first XJDF is referred to as the primary XJDF. See 12.4.1 Referencing Multiple XJDF in a directory.  <b>Note:</b> a referenced directory MAY be inside a ZIP package. See details for zip packaging at <a href="https://www.pkware.com/support/zip-app-note/">https://www.pkware.com/support/zip-app-note/</a> .
<u>WatchURL ?</u>  <u>Modified in JDF 1.2</u> <u>Deprecated in JDF 1.5</u>	URL	URL of the Controller that is to be notified when the status of the QueueEntry or the underlying Job changes.
<u>Disposition ?</u>  <u>New in JDF 1.2</u>	element	Definition how long the QueueEntry SHOULD be retained in the queue. If not specified, the QueueEntry MAY be removed from the queue immediately after Process completion of the QueueEntry.

**URL with “file” Scheme**

If the URL has a “*file*” scheme, the Device retrieves the file at the location specified in the @URL Attribute. The following example declares a file on the network:

**Example 5-33: SubmitQueueEntry Command with “file” Scheme**

```
<Command ID="M1" Type="SubmitQueueEntry" xsi:type="CommandSubmitQueueEntry">
  <QueueSubmissionParams URL="File:///MyNetworkShare/AnyDirectory/job1.jdf"/>
</Command>
```

**URL with “http” Scheme**

In this example, the queue Controller retrieves the file with a standard HTTP **get** command from a host that MAY be remote. The Job delivered as a response to the HTTP **get** command MAY be a MIME Multipart/Related entity. The HTTP server MAY retrieve a file or it MAY generate the response dynamically with a CGI script or other such tool.

**Example 5-34: SubmitQueueEntry Command with “http” Scheme**

TBD 2.x Example.

```
<Command ID="M2" Type="SubmitQueueEntry" xsi:type="CommandSubmitQueueEntry" >
  <QueueSubmissionParams URL="http://JobServer.JDF.COM?job1"/>
</Command>
```

**JDF Package Submission**

If a Controller is capable of decoding MIME, it is legal to submit a MIME Multipart/Related Message. See Section 11.6, “JDF XJDF Packaging” on page 1102 for details of MIME Multipart/Related packaging.

**5.12.11.3 ResponseSubmitQueueEntry****Table 5-153: ResponseSubmitQueueEntry Message (Sheet 1 of 2)**

Name	Data Type	Description
<i>AgentName</i> ?	string	See Message/@AgentName.
<i>AgentVersion</i> ?	string	See Message/@AgentVersion.
<i>Author</i> ?	string	See Message/@Author.
<i>DeviceID</i> ?	NMTOKEN	See Message/@DeviceID.

**Table 5-153: ResponseSubmitQueueEntry Message (Sheet 2 of 2)**

Name	Data Type	Description
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ <i>ICSVersions</i> .
<i>ID</i> ?	ID	See Response/@ <i>ID</i> .
<i>PersonalID</i> ?	NMTOKEN	See Message/@ <i>PersonalID</i> .
<i>refID</i> ?	NMTOKEN	See Response/@ <i>refID</i> .
<i>ReturnCode</i> ?	integer	See Response/@ <i>ReturnCode</i> .
<i>Time</i> ?	dateTime	See Message/@ <i>Time</i> .
<i>Notification</i> ?	element	See Response/ <i>Notification</i> .
QueueEntry ?	element	Provides the queue entry of the submitted Job. QueueEntry SHALL be specified if the submission was successful and SHALL be omitted in case the submission was rejected.

### 5.12.12 SuspendQueueEntry

New in JDF 1.2

The entry specified by QueueEntryDef is suspended if its @*Status* is "Running". Its @*Status* is set to "Suspended". Whether other queue entries can be run while the queue entry remains suspended depends on implementation. The SuspendQueueEntry Command Message has no effect on Jobs with a @*Status* other than "Running". For details, see Table 5-121, "Status Transitions for QueueEntry Handling Messages" on page 303.

**Table 5-154: SuspendQueueEntry Message**

Object Type	Element Name	Description
CommandTypeObj <a href="#">Modified in JDF 1.5</a>	QueueEntryDef <a href="#">Deprecated in JDF 1.5</a>	Defines the queue entry.
	QueueFilter ? <a href="#">Deprecated in JDF 1.5</a>	Defines a filter for the returned Queue Element in the SuspendQueueEntry Message.
	SuspendQueueEntryParams ? <a href="#">New in JDF 1.5</a>	
ResponseTypeObj <a href="#">Modified in JDF 1.5</a>	Queue <a href="#">Deprecated in JDF 1.5</a>	Describes the state of the queue after the command has been executed. See Section 5.14, "Elements for Queues" on page 333 for the definition of the Elements listed above. The entry specified by QueueEntryDef remains in the queue but moved into the "Suspended" state.

#### 5.12.12.1 Element: SuspendQueueEntryParams

New in JDF 1.5

**Table 5-155: SuspendQueueEntryParams Element**

Name	Data Type	Description
QueueFilter ?	element	This QueueFilter selects the QueueEntry elements to apply to

## 5.13 Messages for Global Handling of Queues

Whereas the commands in the preceding section change the state of an individual queue entry, the commands in this section modify the state of an entire queue. Note that entries that are executing in a Device are not affected by the global queue-handling commands and SHALL be accessed individually. An individual queue can be selected by specifying the target Device in the `@DeviceID` Attribute of the JMF Root. If no `@DeviceID` is specified, the commands or queries are applied to all queues that are controlled by the Controller that received the Message. The following individual Messages are defined:

**Table 5-156: Messages for global handling of queues**

Message type	Family	Description
FlushQueue	CQRS	All entries in the queue are removed.
QueueStatus	QRS	Returns the Queue Element that describes a queue.
SubmissionMethods	QR	Queries a list of supported submission methods to the queue.
CloseQueue	CR	The queue is closed. No Jobs are to be accepted by the queue.
FlushQueue	CQRS	All entries in the queue are removed.
HoldQueue	CR	The queue is held. No Jobs within the queue are to be executed.
OpenQueue	CR	The queue is opened. Jobs are to be accepted.
QueueEntryStatus	QRS	Returns a QueueEntry Element.
<u>Deprecated in JDF 1.2</u>		
QueueStatus	QRS	Returns the Queue Element that describes a queue.
ResumeQueue	CR	The queue is activated and queue entries are to be executed.
SubmissionMethods	QR	Queries a list of supported submission methods to the queue.

**Table 5-157: Messages for global handling of queues**

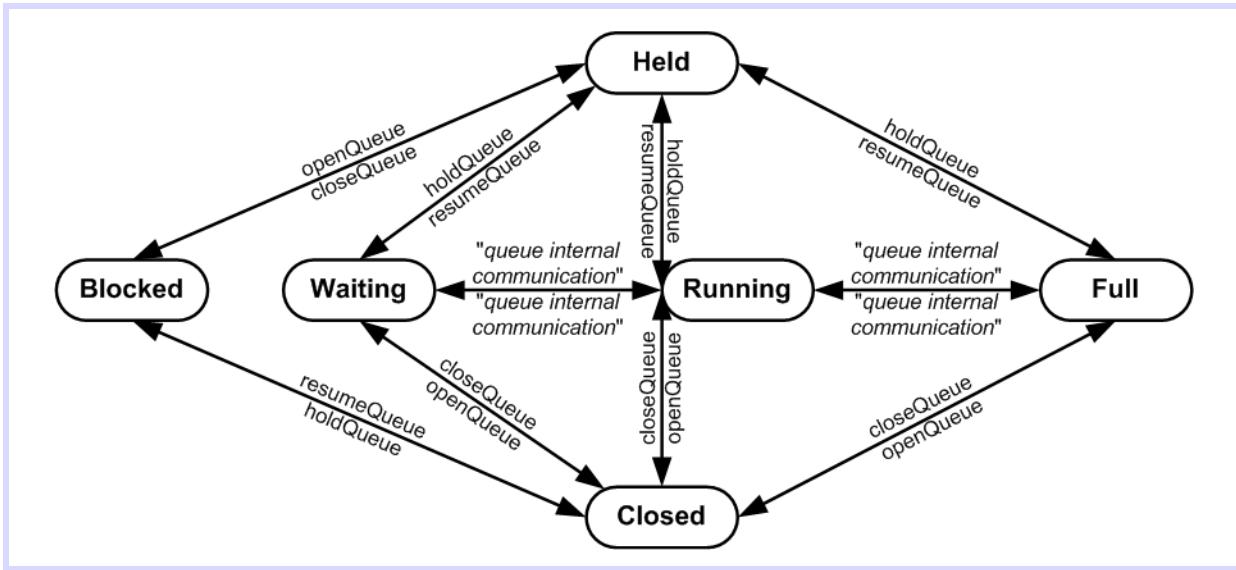
Messages	Description
QueryQueueStatus	Returns the Queue Element that describes a queue.
ResponseQueueStatus	
SignalQueueStatus	

The following table shows the resulting status of a Queue in dependence on global queue commands `CloseQueue`/`OpenQueue` "`CloseQueue`"/"`OpenQueue`" and `HoldQueue/ResumeQueue` "`HoldQueue`"/"`ResumeQueue`" as well as the load of queue and its processor. The first command pair determines the logical state of the first column "Closed" and the second of the column "Held". The Queue is held if the Queue manager doesn't send existing entries to the Queue's processor.

**Table 5-158: Definition of the Queue Status Attribute Values**

Closed	Held	Queue Full	Processor Full	Status
Yes	Yes	Any	Any	"Blocked"
Yes	No	Any	Any	"Closed"
No	Yes	Any	Any	"Held"
No	No	Any	No	"Waiting"
No	No	No	Yes	"Running"
No	No	Yes	Yes	"Full"

Figure 5-11: Effects of the global queue Messages on the queue Status



### 5.13.1 CloseQueue

The queue is closed. No further queue entries are accepted by the queue. The status of entries that are already in the queue remains unchanged and entries that are already in the Queue MAY be executed.

Table 5-159: CloseQueue Message

Object Type	Element Name	Description
CommandTypeObj <a href="#">Modified in JDF 1.5</a>	QueueFilter ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	Defines a filter for the returned Queue Element in the CloseQueue Message.
ResponseTypeObj <a href="#">Modified in JDF 1.5</a>	Queue <a href="#">Deprecated in JDF 1.5</a>	Describes the state of the queue after the command has been executed.

### 5.13.2 FlushQueue

#### 5.13.2.1 FlushQueue Command

FlushQueue Command is used to remove QueueEntry Elements from the Queue. Note: A QueueEntry is not automatically deleted when executed or aborted, but rather it remains in the Queue and its `@Status` is changed to `"Completed"` or `"Aborted"` accordingly. FlushQueueParams allows the specification of which QueueEntry Elements to remove. The QueueFilter in the FlushQueue Message is applied to the Queue returned after the command is executed. The QueueFilter contained within the FlushQueueParams is used to specify which QueueEntry Elements to remove.

**Table 5-160: FlushQueue Command Message**

<b>Object Type</b>	<b>Element Name</b>	<b>Description</b>
CommandTypeObj <a href="#">Modified in JDF 1.5</a>	FlushQueueParams ? <a href="#">New in JDF 1.2</a>	Defines the QueueEntry Elements to be removed. If not specified, then only pending (i.e., <code>@Status = "Waiting"</code> and <code>@Status = "Held"</code> ) queue entries are removed).
	QueueFilter ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	Defines a filter for the returned Queue Element in the FlushQueue Message.
CommandTypeObj	FlushQueueParams ?	Defines the QueueEntry Elements to be removed. If not specified then only pending (i.e., <code>@Status = "Waiting"</code> and <code>@Status = "Held"</code> ) queue entries are removed).
ResponseTypeObj <a href="#">Modified in JDF 1.5</a>	FlushQueueInfo ? <a href="#">New in JDF 1.2</a>	Defines the QueueEntry Elements that were removed.
	Queue <a href="#">Deprecated in JDF 1.5</a>	Describes the state of the queue after the command has been executed.
ResponseTypeObj	FlushQueueInfo ?	Defines the QueueEntry Elements that were removed.

**5.13.2.1.1 Element: [FlushQueueParams](#)**[New in JDF 1.2](#)**Table 5-161: FlushQueueParams Element**

<b>Name</b>	<b>Data Type</b>	<b>Description</b>
QueueFilter ?	element	Defines a QueueFilter that specifies the QueueEntry Elements to be removed. If not specified, the Queue is completely flushed.

**5.13.2.2 [FlushQueue Query](#)**

When used as a Signal or Query, [FlushQueue Query](#) allows a Controller to monitor queue flushing that is initiated by the Device (e.g., due to Resource constraints). The QueueFilter in the [FlushQueue Message](#) is applied to the Queue returned after the command is executed. The QueueFilter contained within the [FlushQueueInfo](#) is used to specify which QueueEntry Elements were removed.

**Table 5-162: FlushQueue Query Message**

<b>Object Type</b>	<b>Element Name</b>	<b>Description</b>
QueryTypeObj <a href="#">Modified in JDF 1.5</a>	FlushQueueParams <a href="#">New in JDF 1.5</a>	Defines a QueueFilter that specifies the QueueEntry Elements to be removed. If not specified, the Queue is completely flushed.
	QueueFilter ? <a href="#">Deprecated in JDF 1.5</a>	Defines a filter for the returned Queue Element in the FlushQueue Message.
QueryTypeObj	FlushQueueParams	Defines a filter for the returned Queue Element in the FlushQueue Message.
ResponseTypeObj <a href="#">Modified in JDF 1.5</a>	FlushQueueInfo ? <a href="#">New in JDF 1.2</a>	Defines the QueueEntry Elements that were removed.
	Queue <a href="#">Deprecated in JDF 1.5</a>	Describes the state of the queue after the Elements have been flushed.
ResponseTypeObj	FlushQueueInfo ?	Defines the QueueEntry Elements that were removed.

### 5.13.2.2.1 Element: **FlushQueueInfo**

[New in JDF 1.2](#)

The QueueFilter in FlushQueueParams defines the QueueEntry Elements to be removed by FlushQueue. Those QueueEntry Elements meeting the criteria set in the QueueFilter will be removed.

**Table 5-163: FlushQueueInfo Element**

Name	Data Type	Description
QueueEntry *	element	Lists the QueueEntry elements that were flushed.
QueueFilter	element	Defines a QueueFilter that specifies the QueueEntry Elements that were removed. Typically QueueFilter contains a set of QueueEntryDef elements that specify the QueueEntry elements that were removed.

### 5.13.3 HoldQueue

The queue is held. No entries will start execution. Note that the status of a held entry prior to HoldQueue is retained so that held Jobs remain held after a ResumeQueue. New entries can still be submitted to a held queue. HoldQueue only has effect on Jobs that have not commenced processing. Queue entries that are already running SHALL be suspended individually using the SuspendQueueEntry Command Message.

**Table 5-164: HoldQueue Message**

Object Type	Element Name	Description
CommandTypeObj <a href="#">Modified in JDF 1.5</a>	QueueFilter ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	Defines a filter for the returned Queue Element in the HoldQueue Message.
ResponseTypeObj <a href="#">Modified in JDF 1.5</a>	Queue <a href="#">Deprecated in JDF 1.5</a>	Describes the state of the queue after the command has been executed.

### 5.13.4 OpenQueue

The queue is opened and new queue entries can be accepted by the queue. A held queue remains held. The OpenQueue Command Message is the opposite of a CloseQueue Command Message.

**Table 5-165: OpenQueue Message**

Object Type	Element Name	Description
CommandTypeObj <a href="#">Modified in JDF 1.5</a>	QueueFilter ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	Defines a filter for the returned Queue Element in the OpenQueue Message.
ResponseTypeObj <a href="#">Modified in JDF 1.5</a>	Queue <a href="#">Deprecated in JDF 1.5</a>	Describes the state of the queue after the command has been executed.

### 5.13.5 QueueEntryStatus

[Deprecated in JDF 1.2](#)

**Deprecation note:** starting with JDF 1.2, use QueueStatus with an appropriate QueueFilter instead of QueueEntryStatus. See Section P.3.9, “QueueEntryStatus” for details of this deprecated JMF Element.

### 5.13.6 QueueStatus

Returns a queue description.

**Table 5-166: QueueStatus Message**

Object Type	Element Name	Description
QueryTypeObj <a href="#">Modified in JDF 1.2</a>	QueueFilter ? <a href="#">New in JDF 1.2</a>	Defines a filter for the QueueStatus Message.
ResponseTypeObj	Queue	Describes the status of the queue.
For the definition of the Queue Element, see Section 5.14, “Elements for Queues”.		

### 5.13.6.1 **QueryQueueStatus**

**Table 5-167: QueryQueueStatus Message**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID	ID	See Query/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
Time ?	dateTime	See Message/@Time.
QueueStatusParams	element	QueueStatusParams defines a filter for the QueueStatus Message.
Subscription ?	element	See Query/Subscription.

#### 5.13.6.1.1 Element: **QueueStatusParams**

**Table 5-168: QueueStatusParams Element (Sheet 1 of 2)**

Name	Data Type	Description
PreviewUsages ?	enumerations	<p>Specifies the particular kind (or kinds) of <b>Preview</b> Resources to return in <b>QueueEntry/Preview</b>. If @PreviewUsages is empty or not supplied, the <b>QueueEntry</b> Element SHALL NOT contain any <b>Preview</b> Resources.</p> <p>The <b>Preview</b> Resources returned in a <b>QueueEntry</b> are a subset of those in the actual <b>QueueEntry</b> defined by:</p> <p><b>QueueEntry/Preview</b> [contains (QueueFilter/ @PreviewUsages, @PreviewUsage)]</p> <p><b>Allowed values are from:</b> <b>Preview/@PreviewUsages</b> (Table 8-245, “Preview Resource” on page 846).</p>

**Table 5-168: QueueStatusParams Element (Sheet 2 of 2)**

Name	Data Type	Description
UpdateGranularity ?	enumeration	<p>Specifies whether all or only the updated QueueEntry Elements should be included in the Queue.</p> <p><b>Allowed values are:</b></p> <p><i>All</i> – The Queue Element describes all QueueEntry Elements.</p> <p><i>ChangesOnly</i> – The Queue Element describes only those QueueEntry Elements that have new information since the last Queue Element was sent. When used in conjunction with a Signal, the Queue Element describes all Jobs on the first instance of the Signal being sent.</p>
QueueFilter ?	element	Filter that filters the QueueEntry elements that SHALL be returned in the responses Queue.

### 5.13.6.2 ResponseQueueStatus

**Table 5-169: ResponseQueueStatus Message**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID ?	ID	See Response/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
refID ?	NMTOKEN	See Response/@refID.
ReturnCode ?	integer	See Response/@ReturnCode.
Time ?	dateTime	See Message/@Time.
Notification ?	element	See Response/Notification.
Queue ?	element	Describes the status of the queue.

### 5.13.6.3 SignalQueueStatus

**Table 5-170: SignalQueueStatus Message (Sheet 1 of 2)**

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
ChannelMode ?= "FireAndForget" <small>New in JDF 1.4</small>	enumeration	See Signal/@ChannelMode.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.

**Table 5-170: SignalQueueStatus Message (Sheet 2 of 2)**

Name	Data Type	Description
ID	ID	See Signal/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
refID ?	NMTOKEN	See Signal/@refID.
Time ?	dateTime	See Message/@Time.
Queue	element	Describes the status of the queue.

### 5.13.7 ResumeQueue

The queue is activated and queue entries can be executed. The ResumeQueue Command Message is the opposite of a HoldQueue Command Message.

**Table 5-171: ResumeQueue Message**

Object Type	Element Name	Description
CommandTypeObj <a href="#">Modified in JDF 1.5</a>	QueueFilter ? <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	Defines a filter for the ResumeQueue Message.
ResponseTypeObj <a href="#">Modified in JDF 1.5</a>	Queue <a href="#">Deprecated in JDF 1.5</a>	Describes the state of the queue after the command has been executed.

### 5.13.8 SubmissionMethods

The SubmissionMethods Message returns information about the QueueEntry submission and return formats that are supported by a Device or Controller. Thus, it can be used to determine the details of how a SubmitQueueEntry Message can be sent to a Device, or the details of a ReturnQueueEntry Message that will be returned by the Device.

**Table 5-172: SubmissionMethods Message**

Object Type	Element Name	Description
QueryTypeObj	—	—
ResponseTypeObj	SubmissionMethods ?	Describes the submission methods supported by the queue.

#### 5.13.8.1 Element: SubmissionMethods

The Response Message Element MAY contain multiple Attributes, as defined below. If an Attribute is not specified, the corresponding submission method is not supported.

**Table 5-173: SubmissionMethods Element (Sheet 1 of 2)**

Name	Data Type	Description
File ? <a href="#">Deprecated in JDF 1.2</a>	boolean	Can retrieve a JDF from a File specified in the URL In JDF 1.2 and beyond, include "file" in @URLSchemes.
HotFolder ? <a href="#">Deprecated in JDF 1.4</a>	URL	URL specification of a hot folder location. <b>Deprecation note:</b> starting with JDF 1.4, use the KnownDevices Response: /JMF/Response/DeviceInfo/Device/@JDFInputURL
HttpGet ? <a href="#">Deprecated in JDF 1.2</a>	boolean	Can retrieve a JDF via HTTP get commands. In JDF 1.2 and beyond, include "http" in @URLSchemes.

**Table 5-173: SubmissionMethods Element (Sheet 2 of 2)**

Name	Data Type	Description
<u>MIME ?</u> <u>Deprecated in JDF 1.2</u>	boolean	Accepts MIME Multipart/Related submission Messages via a Message post. In JDF 1.2 and beyond, use <code>@Packaging = "MIME"</code> .
<u>Packaging ?</u> <u>New in JDF 1.2</u> <u>Modified in JDF 1.4</u>	enumerations	<p>List of packaging methods supported.</p> <p><b>Default behavior:</b> the Controller does not support receiving packaged Messages and SHALL retrieve JDF files using a URL with a scheme other than "<code>cid</code>".</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><code>MIME</code> – Accepts MIME Multipart/Related packaging of <b>JMF XJMF</b>, <b>JDF XJDF</b> and digital assets.</li> <li><code>None</code> – no form of packaging is supported. <u>New in JDF 1.4</u></li> </ul>
<u>URLSchemes ?</u> <u>New in JDF 1.2</u>	NMTOKENS	<p>List of schemes supported in for retrieving <b>JDF XJDF</b> files. If not specified, the Controller does not support retrieving <b>JDF XJDF</b> files from remote URLs.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><code>file</code> – The file scheme according to [RFC1738] and [RFC3986].</li> <li><code>ftp</code> – FTP (File Transfer Protocol)</li> <li><code>http</code> – HTTP (Hypertext Transport Protocol)</li> <li><code>https</code> – HTTPS (Hypertext Transport Protocol — Secure)</li> </ul>

**Example 5-35: SubmissionMethods Response**

The following is an example of a Response Message to a SubmissionMethods Query Message:

```
<Response ID="M1" Type="SubmissionMethods"
  xsi:type="ResponseSubmissionMethods" refID="Q1">
  <SubmissionMethods HotFolder="file:///MyDevice/HotFolder" Packaging="MIME"
    URLSchemes="http file ftp"/>
</Response>
```

## 5.14 Elements for Queues

In this section Elements used by queue-handling commands are defined.

### 5.14.1 Queue

The Attributes in the following table are defined for Queue Message Elements. Queue Elements represent the queue of a Device including QueueEntry Elements that represent both pending and running queue entries.

**Table 5-174: Queue Element (Sheet 1 of 2)**

Name	Data Type	Description
<code>DeviceID</code>	<code>stringN-MTOKEN</code>	Identifies the Device that is represented by the queue.
<u>MaxQueueSize ?</u> <u>New in JDF 1.6</u>	integer	The maximum number of QueueEntry Elements excluding QueueEntry[@Status = "Completed" or QueueEntry[@Status = "Aborted"] Elements that can be contained in the Queue.
<u>QueueSize ?</u> <u>New in JDF 1.2</u> <u>Modified in JDF 1.6</u>	integer	The total number of QueueEntry Elements that are in the Queue.

**Table 5-174: Queue Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Status</i>	enumeration	<p>Status of the queue.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Blocked</i> – Queue is completely inactive. Entries SHALL NOT be added and no entries are executed. The queue is closed and held. The queue requires an interaction like <code>OpenQueue</code> or <code>ResumeQueue</code> to reactivate it.</li> <li><i>Closed</i> – Queue entries that are in the queue are executed, but new entries SHALL NOT be submitted. The lock SHALL be removed explicitly by the <code>OpenQueue</code> Command Message.</li> <li><i>Full</i> – Queue entries that are in the queue are executed but new entries SHALL NOT be submitted. The lock is removed by the queue Controller as soon as it is able to do so.</li> <li><i>Running</i> – A Process is executing. Entries can be submitted and will be executed when they reach their turn in the queue.</li> <li><i>Waiting</i> – Queue accepts new entries and has free Resources to immediately commence processing.</li> <li><i>Held</i> – Entries can be submitted but will not be executed until the queue is resumed by the <code>ResumeQueue</code> Command Message.</li> </ul>
<b>Device *</b>	element	The Devices that execute entries in this queue. Only <code>Device/@DeviceID</code> SHOULD be specified in these <b>Device</b> Elements.
<b>QueueEntry *</b> <small>Modified in JDF 1.2 Modified in JDF 1.6</small>	element	<p><b>QueueEntry</b> Elements (see Table 5-175, “QueueEntry Element” on page 335, below). Each queue entry that was selected by <code>QueueFilter</code> SHALL be provided as an individual <code>QueueEntry</code> element. The entries SHALL be ordered in the sequence they have been or will be executed, beginning with the running entries, followed by the waiting entries, highest <code>QueueEntry/@Priority</code> first, which are then followed by the completed entries, sorted beginning with the youngest <code>QueueEntry/@EndTime</code>. The Queue contains a list of all <code>QueueEntry</code> Elements that are still accessible on the Device using the queue entry handling Messages that are defined in Table 5-175, “QueueEntry Element” on page 335.</p> <p>A <code>QueueEntry</code> is not automatically deleted when executed or aborted, but rather it remains in the <code>Queue</code> and its <code>@Status</code> is changed to “Completed” or “Aborted” accordingly. <code>QueueEntry[@Status = "Completed" or @Status = "Aborted"]</code> Elements SHALL NOT count towards determining <code>Queue/@Status</code> based on the number of <code>QueueEntry</code> Elements versus the <code>@MaxQueueSize</code>.</p>

**Example 5-36: Queue Element**

Example of a Queue Element:

**TBD 2.x Example.**

```
<Queue DeviceID="Q12345" Status="Running">
  <QueueEntry JobID="111" JobPartID="1" Priority="1" QueueEntryID="111-1"
    Status="Running"/>
  <QueueEntry JobID="111" JobPartID="2" Priority="1" QueueEntryID="111-2"
    Status="Waiting"/>
  <QueueEntry JobID="112" JobPartID="1" Priority="55" QueueEntryID="112-1"
    Status="Held"/>
  <QueueEntry JobID="111" JobPartID="0" Priority="1" QueueEntryID="111-0"
```

```

    Status="Completed"/>
</Queue>

```

## 5.14.2 QueueEntry

Table 5-175: QueueEntry Element (Sheet 1 of 3)

Name	Data Type	Description
<i>Activation ?</i> <a href="#">New in JDF 1.5</a>	enumeration	<p>Specifies the Activation of the requested QueueEntry.</p> <p><b>Allowed values are from:</b> @Activation in Table 3-4, “JDF XJDF Node” on page 52.</p> <p>The values are ordered from least to most active.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Informative</i> – The QueueEntry is for information only. If a QueueEntry is “<i>Informative</i>”, it SHALL NOT be processed. Queue entries with @Activation = “<i>Informative</i>” will generally be sent to an operator console for preview but are still completely under the control of an external Controller.</li> <li><i>Held</i> – The QueueEntry has been held and SHALL NOT be processed until its @Activation is changed to “<i>Active</i>”. The transition to Active MAY be triggered with a CommandModifyQueueEntry/@Action = “<i>Resume</i>”.</li> <li><i>Active</i> – The QueueEntry is active and SHALL be processed regularly.</li> <li><i>PendingReturn</i> – Indicates that the QueueEntry has been processed but the has not yet been successfully returned to the respective Controller.</li> <li><i>Removed</i> – The QueueEntry has been removed. This @Activation SHALL NOT be provided unless QueueStatusParams/@UpdateGranularity = “<i>ChangesOnly</i>”.</li> </ul>
<i>DeviceID ?</i> <a href="#">New in JDF 1.2</a>	stringN-MTOKEN	Identification of the Device that the QueueEntry will be or was executed on. If not specified, it defaults to the default Device of the queue.
<i>EndTime ?</i> <a href="#">New in JDF 1.2</a>	dateTime	Time when the Job has been ended.
<i>GangName ?</i> <a href="#">New in JDF 1.3</a>	NMTOKEN	Name of the gang that this QueueEntry belongs to. @GangName SHALL be specified, if the QueueEntry is a candidate member of a gang Job.
<i>GangPolicy ?</i> <a href="#">New in JDF 1.3</a>	enumeration	Ganging policy for the QueueEntry.
<b>Allowed values are from:</b> QueueSubmissionParamsQueueSubmissionParams/@GangPolicy (Table 5-152, “QueueSubmissionParams Element” on page 322).		
<i>JobID ?</i> <a href="#">Modified in JDF 1.1</a>	stringN-MTOKEN	The @JobID of the <b>JDF XJDF</b> Process.
<i>JobPartID ?</i>	stringN-MTOKEN	The @JobPartID of the <b>JDF XJDF</b> Process.
<i>Priority ?= "1"</i>	integer	Priority of the QueueEntry. Values are 0-100. “0” is the lowest priority, while “100” is the highest priority.

**Table 5-175: QueueEntry Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>QueueEntryID</i>	string NMTOKEN	ID of a QueueEntry. This ID SHALL be generated by the queue owner.
<i>StartTime</i> ? <i>New in JDF 1.1</i>	dateTime	Time when the Job has been started.
<i>Status</i> <i>Modified in JDF 1.3</i>	enumeration	<p><b>Status of the individual entry.</b></p> <p>Specifies the Status of the requested QueueEntry. <i>@Status</i> SHALL be identical to the <b>NodeInfo/@NodeStatus</b> of the underlying XJDF.</p> <p><b>Allowed values are from:</b> Table 8-203, “NodeStatus Attribute Values” on page 808.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Running</i> – The queue entry is running on the Device. A QueueEntry is "Running" when JDF/@Status.of any node associated to the QueueEntry is one of "Setup", "InProgress" or "Cleanup".</li> <li><i>Waiting</i> – The queue entry is waiting and will be executed when Resources are available.</li> <li><i>Held</i> – The queue entry is held and SHALL NOT execute until resumed. A held QueueEntry with @GangPolicy other than "NoGang" does not interact with its respective gang.</li> <li><i>Removed</i> – The queue entry has been removed. This status can only be sent when a persistent channel watches a queue and the queue entry is removed.</li> <li><i>Suspended</i> – The queue entry was running and has been held. It will not continue to execute until resumed. A QueueEntry is "Suspended" when the QueueEntry has been suspended using the SuspendQueueEntry/@Operation="Suspend" UI equivalent on the device. <i>New in JDF 1.2</i></li> <li><i>PendingReturn</i> – Indicates that the QueueEntry has been executed correctly, and is finished, but that the corresponding JDF XJDF has not yet been successfully returned to the respective Controller. <i>New in JDF 1.3</i></li> <li><i>Completed</i> – Indicates that the Node or queue entry has been executed correctly, and is finished. For QueueEntry.<i>New in JDF 1.2</i></li> <li><i>Aborted</i> – Indicates that the Process executing the Node has been aborted, which means that execution will not be resumed again. For QueueEntry.<i>New in JDF 1.2</i></li> </ul>

**Table 5-175: QueueEntry Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>StatusDetails</i> ? <a href="#">New in JDF 1.5</a>	string	<p><i>@StatusDetails</i> provides additional details on the status of the QueueEntry.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>HeldForResourcePullPipe</i> – When <i>@Status</i> is "PendingReturn", Job is not returned on purpose, commands <a href="#">ResourcePull</a>, <a href="#">RemoveQueueEntry</a> or <a href="#">AbortQueueEntry</a> <a href="#">PipeControl</a> or <a href="#">ModifyQueueEntry</a> are possible</li> <li><i>JobUserInputRequired</i> – When <i>@Status</i> is "Waiting" or "Running", Job is not producible and waits for user input required to process further (e.g., missing parameters, decisions, etc.)</li> <li><i>JobMissResources</i> – When <i>@Status</i> is "Waiting" or "Running", Job waits for resources to become available to process further</li> <li><i>JobReadyForStart</i> – When <i>@Status</i> is "Waiting" or "Running", Job is ready and waits for (manual) start event to process further</li> <li><i>QueuedToRun</i> – When <i>@Status</i> is "Waiting" or "Running", Job is queued to run and waits for device to become available (idle) to process further</li> <li><i>PendingReturn</i> – When <i>@Status</i> is "PendingReturn", Job is currently returning (explicit "PendingReturn" to distinguish from devices/controllers that do not support <i>@StatusDetails</i>)</li> <li><i>Running</i> – When <i>@Status</i> is "Running", Job is processing (explicit Running to distinguish from devices/controllers that do not support <i>@StatusDetails</i>)</li> </ul>
<i>SubmissionTime</i> ?	dateTime	Time when the entry was submitted to the queue.
<i>JobPhase</i> * <a href="#">New in JDF 1.2</a>	element	Description of the current status of the Job that is associated with the QueueEntry. Note that in JDF 1.3 and above, one QueueEntry MAY have multiple active JobPhase Elements.
<i>Part</i> * <i>Part</i> * <a href="#">New in JDF 1.2</a>	element	Describes which parts of a Job were submitted to the queue. The Part Elements are copies of AncestorPool/Part of the JDF Node that is executed by the Device. This is a copy of the partitioning structure of the NodeInfo element of the attached XJDF.
<i>Preview</i> * <a href="#">New in JDF 1.2</a>	element	Any number of Preview Elements MAY be associated with a QueueEntry and used for display purposes. <i>Preview</i> / <i>@PreviewUsage</i> SHOULD be "Thumbnail" or "Viewable".

### 5.14.3 QueueEntryDef

The Element specifies a queue entry and is used to refer to a certain queue entry.

**Table 5-176: QueueEntryDef Element**

Name	Data Type	Description
<i>QueueEntryID</i>	string	ID of the queue entry. The ID is generated by the queue owner.

#### 5.14.4 QueueFilter

[New in JDF 1.2](#)

The QueueFilter Element defines a filter **that selects QueueEntry elements in a Queue for all Messages that return a queue**. The supplied Elements of the QueueFilter define a matching criteria that is a logical “and”. Only QueueEntry Elements that match all restrictions specified by the QueueFilter **SHALL be selected**, are included in the Queue Element that is returned by the queue-handling Message. The QueueFilter Element is also used to specify the QueueEntry Elements to be removed by the FlushQueue Message.

**Table 5-177: QueueFilter Element (Sheet 1 of 2)**

Name	Data Type	Description
<a href="#">Activation ?</a> <a href="#">New in JDF 1.5</a>	enumeration	The activation state of the QueueEntry elements to be returned. If not specified, there is no filtering on QueueEntry/@Activation. <b>Allowed values are from:</b> @Activation in Table 3-4, “JDF XJDF Node” on page 52.
<a href="#">FirstEntry ?</a> <a href="#">New in JDF 1.6</a>	stringNMTO-KEN	@QueueEntryID of the first QueueEntry that this QueueFilter applies to. Only QueueEntry elements that are behind this (including this) QueueEntry in the current queue sorting SHALL be selected
<a href="#">GangNames ?</a> <a href="#">New in JDF 1.3</a>	NMTOKENS	Gang names of the QueueEntry Elements to be returned. If not specified, there is no filtering on QueueEntry/@GangName.
<a href="#">JobID ?</a> <a href="#">New in JDF 1.4</a>	stringNMTO-KEN	Return only QueueEntry Elements with specified @JobID. If not specified, there is no filtering on QueueEntry/@JobId.
<a href="#">JobPartID ?</a> <a href="#">New in JDF 1.4</a>	stringNMTO-KEN	Return only QueueEntry Elements with specified @JobPartID. If not specified, there is no filtering on QueueEntry/@JobPartID.
<a href="#">LastEntry ?</a> <a href="#">New in JDF 1.6</a>	stringNMTO-KEN	@QueueEntryID of the last QueueEntry that this QueueFilter applies to. Only QueueEntry elements that are in front of this (including this) QueueEntry in the current queue sorting SHALL be selected
<a href="#">MaxEntries ?</a>	integer	Maximum number of QueueEntry Elements to provide in the Queue Element. If not specified, fill in all matching QueueEntry Elements.
<a href="#">NewerThan ?</a>	dateTime	Only QueueEntry Elements with a @SubmissionTime newer than or equal to this dateTime are provided in the Queue Element <b>or removed by the FlushQueue Message</b> . If not specified, there is no dateTime upper bound on candidates.
<a href="#">OlderThan ?</a>	dateTime	Only QueueEntry Elements with a @SubmissionTime older than or equal to this dateTime are provided in the Queue Element <b>or removed by the FlushQueue Message</b> . If not specified, there is no dateTime lower bound on candidates.
<a href="#">PreviewUsages ?</a> <a href="#">New in JDF 1.4</a>	enumerations	Specifies the particular kind (or kinds) of Preview Resources to return in QueueEntry/Preview. If @PreviewUsages is empty or not supplied, the QueueEntry Element SHALL NOT contain any Preview Resources.  The Preview Resources returned in a QueueEntry are a subset of those in the actual QueueEntry defined by: QueueEntry/Preview [contains (QueueFilter/@PreviewUsages, @PreviewUsage)] <b>Allowed values are from:</b> Preview/@PreviewUsages (Table 8-245, “Preview Resource” on page 846).

**Table 5-177: QueueFilter Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>QueueEntryDetails</i> ?= "Brief" <u>Modified in JDF 1.4</u>	enumeration	<p>Refines the level of provided information about the Queue.</p> <p><b>Allowed values are:</b></p> <p><i>None</i> – Do not fill in the QueueEntry Elements into the Queue.</p> <p><i>Brief</i> – Provide all available QueueEntry information except for the associated JobPhase Element. JobPhase/@URL MAY be returned when @QueueEntryDetails = "JobPhase".</p> <p><i>JobPhase</i> – Provide all available QueueEntry information including the associated JobPhase Elements. JobPhase/@URL MAY be returned when @QueueEntryDetails = "JobPhase".</p> <p><i>JDF</i> – Provide all available QueueEntry information including the associated JobPhase Element and the associated JDF Element in the JobPhase Element. <u>Deprecated in JDF 1.4</u></p> <p><b>Deprecation note:</b> starting with JDF 1.4, use the Status Query to retrieve status information including information about the current JDF.</p>
<i>QueueEntryIDs</i>	NMTOKENS	Defines an explicit list of queue entries. If not specified, all entries in the Queue are considered.
<i>StatusList</i> ?	enumerations	<p>Only QueueEntry Elements with a @Status matching one of the entries in @StatusList SHALL be returned. considered. If not specified, there is no filtering on QueueEntry/@Status.</p> <p><b>Allowed values are from:</b> QueueEntry/@Status (Table 5-175, “QueueEntry Element” on page 335).</p>
<i>UpdateGranularity</i> ? <u>New in JDF 1.4</u>	enumeration	<p>Specifies whether all or only the updated QueueEntry Elements should be included in the Queue.</p> <p><b>Allowed values are:</b></p> <p><i>All</i> – The Queue Element describes all QueueEntry Elements.</p> <p><i>ChangesOnly</i> – The Queue Element describes only those QueueEntry Elements that have new information since the last Queue Element was sent. When used in conjunction with a Signal, the Queue Element describes all Jobs on the first instance of the Signal being sent.</p>
<b>Device</b> *	element	Only QueueEntries that match the Attribute Values specified in one of these <b>Device</b> Resources SHALL be included. QueueEntries match the criteria if the Attribute Values specified in one of these <b>Device</b> Resource match the equivalent Attribute Values of the <b>Devices</b> that are processing the QueueEntry. Unspecified Attributes always match. If <b>Device</b> is not specified, all QueueEntry elements are returned. As this is a filter, only information that can be used to identify a Device SHALL be specified. This precludes use of DeviceCap and IconList in this <b>Device</b> .
<b>Part</b> * <b>Part</b> * <u>New in JDF 1.4</u>	element	Return only QueueEntry Elements with all specified <b>Part</b> Elements. If not specified, there is no filtering on QueueEntry/ <b>Part</b> .
<i>QueueEntryDef</i> *	element	Defines an explicit list of queue entries. If not specified, all entries in the Queue are considered.

## 5.15 Gang Jobs

[New in JDF 1.3](#)

JMF XJMF provides a mechanism to specify groups of QueueEntry Elements within a queue that are processed together in a gang. A Job is submitted to a gang by specifying [QueueSubmissionParams](#)/[QueueSubmissionParams](#)/[@GangPolicy](#). The details of how individual job parts are ganged are device specific. For a description of planned job ganging, see also Section 6.4.37, “SheetOptimizing” on page 386.

**Table 5-178: Messages for Gang Jobs**

Message type	Family	Description
ForceGang <a href="#">New in JDF 1.3</a>	CR	A gang is forced to execute.
GangStatus <a href="#">New in JDF 1.3</a>	CR	The status of a gang is queried.

**Table 5-179: Messages for Gang Jobs**

Messages	Description
CommandForceGang ResponseForceGang	A gang is forced to execute.
CommandGangStatus ResponseGangStatus	The status of a gang is queried.

### 5.15.1 ForceGang

[New in JDF 1.3](#)

The ForceGang Message forces all QueueEntry [[@Status = "Waiting"](#)] Elements that belong to a gang (as specified below) to be executed, even though the Device dependent queue entry collecting algorithm might not be completed. A QueueEntry belongs to a gang if QueueEntry/[@GangName](#) is included in the list of [GangCmdFilter](#)/[GangCmdFilter](#)/[@GangNames](#).

**Table 5-180: Contents of the ForceGang Command Message**

Object type	Element Name	Description
CommandTypeObj	GangCmdFilter	Defines the gang(s) to be force executed.
ResponseTypeObj	—	

#### 5.15.1.1 CommandForceGang

**Table 5-181: CommandForceGang Message (Sheet 1 of 2)**

Name	Data Type	Description
AgentName ?	string	See Message/ <a href="#">@AgentName</a> .
AgentVersion ?	string	See Message/ <a href="#">@AgentVersion</a> .
Author ?	string	See Message/ <a href="#">@Author</a> .
DeviceID ?	NMTOKEN	See Message/ <a href="#">@DeviceID</a> .
ICSVersions ?	NMTOKENS	See Message/ <a href="#">@ICSVersions</a> .
ID	ID	See Command/ <a href="#">@ID</a> .
PersonalID ?	NMTOKEN	See Message/ <a href="#">@PersonalID</a> .

**Table 5-181: CommandForceGang Message (Sheet 2 of 2)**

Name	Data Type	Description
<i>RelatedCommands</i> ?	NMTOKENS	See Command/@ <i>RelatedCommands</i> .
<i>Time</i> ?	dateTime	See Message/@ <i>Time</i> .
<i>TransactionID</i> ?	NMTOKEN	See Command/@ <i>TransactionID</i> .
GangCmdFilter	element	Defines the gang(s) to be force executed.

#### 5.15.1.1.1 Element: GangCmdFilter

#### 5.15.1.2 Element: GangCmdFilter

**Table 5-182: GangCmdFilter Element**

Object Type	Element Name	Description
<i>GangNames</i> ?	NMTOKENS	@ <i>GangName</i> of the gang(s) being queried.

#### 5.15.1.3 ResponseForceGang

**Table 5-183: ResponseForceGang Message**

Name	Data Type	Description
<i>AgentName</i> ?	string	See Message/@ <i>AgentName</i> .
<i>AgentVersion</i> ?	string	See Message/@ <i>AgentVersion</i> .
<i>Author</i> ?	string	See Message/@ <i>Author</i> .
<i>DeviceID</i> ?	NMTOKEN	See Message/@ <i>DeviceID</i> .
<i>ICSVersions</i> ?	NMTOKENS	See Message/@ <i>ICSVersions</i> .
<i>ID</i> ?	ID	See Response/@ <i>ID</i> .
<i>PersonalID</i> ?	NMTOKEN	See Message/@ <i>PersonalID</i> .
<i>refID</i> ?	NMTOKEN	See Response/@ <i>refID</i> .
<i>ReturnCode</i> ?	integer	See Response/@ <i>ReturnCode</i> .
<i>Time</i> ?	dateTime	See Message/@ <i>Time</i> .
Notification ?	element	See Response/Notification.

#### 5.15.2 GangStatus

New in JDF 1.3

GangStatus returns a description of the gang(s). Details are specified in GangInfo GangInfo Element.

**Table 5-184: GangStatus Message**

Object Type	Element Name	Description
QueryTypeObj	GangQuFilter ?	Defines a filter for the gang(s) that are queried. If GangQuFilter is not supplied, all gangs are queried.
ResponseTypeObj	GangInfo *	Describes the status of the gang(s).

### 5.15.2.1 CommandGangStatus

Table 5-185: CommandGangStatus Message

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID	ID	See Command/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
RelatedCommands ?	NMTOKENS	See Command/@RelatedCommands.
Time ?	dateTime	See Message/@Time.
TransactionID ?	NMTOKENv	See Command/@TransactionID.
GangQuFilter ?	element	Defines a filter for the gang(s) that are queried. If GangQuFilter is not supplied, all gangs are queried.

#### 5.15.2.1.1 Element: GangQuFilter

### 5.15.2.2 Element: GangQuFilter

Table 5-186: GangQuFilter Element

Name	Data Type	Description
GangNames ?	NMTOKENS	@GangName of the gang(s) being queried.

### 5.15.2.3 ResponseGangStatus

Table 5-187: ResponseGangStatus Message

Name	Data Type	Description
AgentName ?	string	See Message/@AgentName.
AgentVersion ?	string	See Message/@AgentVersion.
Author ?	string	See Message/@Author.
DeviceID ?	NMTOKEN	See Message/@DeviceID.
ICSVersions ?	NMTOKENS	See Message/@ICSVersions.
ID ?	ID	See Response/@ID.
PersonalID ?	NMTOKEN	See Message/@PersonalID.
refID ?	NMTOKEN	See Response/@refID.
ReturnCode ?	integer	See Response/@ReturnCode.
Time ?	dateTime	See Message/@Time.
GangInfo *	element	Describes the status of the gang(s).
Notification ?	element	See Response/Notification.

### 5.15.2.3.1 Element: GangInfo

#### 5.15.2.4 Element: GangInfo

Details of the gang are specified in GangInfo. GangInfo is a placeholder for future gang related information that only returns the gang names in JDF 1.3.

**Table 5-188: GangInfo Element**

Name	Data Type	Description
GangName	NMTOKEN	Name of the gang.

## 5.16 Extending Messages

This specification defines a set of predefined Messages for general usage. Extensions to existing Messages and additional Message types can be defined using the standard extension rules described in Section 3.18, “JDF Extensibility”. Note, the generic content of Section 3.2, “Generic Contents of All Elements” is also valid for JMF Elements. It is not allowed to define Message extensions which duplicate the functionality of messaging types, messaging Elements or Message Attributes that are already defined in this specification.

For example the content of the `@Type` Attribute MAY be specified with a prefix that identifies the organization that defined the extension. The prefix and name SHOULD be separated by a single colon (‘:’). Any additional Attributes and Elements are allowed, and internal Elements MAY be declared with explicit namespaces. The official namespace of JMF Elements is `@xmlns = "http://www.CIP4.org/JDFSchema_1_1"`. This namespace is identical to that defined for JDF in Section 3.18, “JDF Extensibility”. An example is provided:

#### Example 5-37: Custom Query

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="Circus"
     TimeStamp="2005-07-25T12:32:48+02:00"
      MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xmlns:Circus="Circus Schema URI">
  <Query ID="Q1" Type="Circus:IsClownHappy" xsi:type="QueryIsClownHappy">
    <Circus:ClownParams Gender="male"/>
  </Query>
</JMF>
```

#### Example 5-38: Custom Response

The Response Message will also have the “Circus:” namespace identifier. All Circus Elements are explicitly declared.

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="Circus 2"
     TimeStamp="2005-07-25T12:32:48+02:00"
      MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xmlns:Circus="Circus Schema URI">
  <Response ID="M1" Type="Circus:IsClownHappy" xsi:type="ResponseIsClownHappy"
            refID="Q1">
    <Circus:Clown happy="true" name="Joe"/>
    <Circus:Clown happy="false" name="John"/>
  </Response>
</JMF>
```

### 5.16.1 IfraTrack Support

The extending mechanism can be used to implement compatibility with other XML-based messaging standards, for example version 3.0 of IfraTrack. The `@Type` Attribute is set to the appropriate namespace, and the foreign Message is included, as demonstrated in the following example:

Note that the application is free to select the appropriate response types in order to fulfill its local (IfraTrack) protocol requirements if it uses its own namespace. In the examples below, the default namespace associated with the JMF Query Message and Response Elements has been overwritten by the Ifra namespace.



### More on IfraTrack

IfraTrack is a specification for the interchange of status and management information between local and global production management systems in newspaper production. For more information on IfraTrack, including a case study paper, please see [http://www.ifra.com/WebSite/news.nsf/\(StructuredSearchAll\)?OpenAgent&IFRATRACK](http://www.ifra.com/WebSite/news.nsf/(StructuredSearchAll)?OpenAgent&IFRATRACK)

#### Example 5-39: Custom Query for IfraTrack

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="IFRA"
     TimeStamp="2003-07-25T12:32:48+02:00"
      MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xmlns:IFRA="IfraTrack URI">
  <Query ID="Q1" Type="IFRA:IMF" xsi:type="QueryIMF">
    <ifm:IMF xmlns:ifm="IfraTrack URI">
      Whatever you want (might be multiple top level Elements)
    </ifm:IMF>
  </Query>
</JMF>
```

#### Example 5-40: Custom Response for IfraTrack

The legal Response Message would be:

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="IFRA"
     TimeStamp="2003-07-25T12:32:48+02:00"
      MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xmlns:IFRA="IfraTrack URI">
  <Response ID="M1" Type="IFRA:IMF" xsi:type="ResponseIMF" refID="Q1">
    <ifm:IMF xmlns:ifm="IfraTrack URI">
      The appropriate IFRA response(s)
    </ifm:IMF>
  </Response>
</JMF>
```

# Chapter 6 Processes

The following chapter describes the Processes that are defined in detail for **JDF XJDF**.

## 6.1 Combining Individual Process Steps

The Processes described in Chapter 6, “Processes” on page 345 define individual workflow steps that are assumed to be executed by a single-purpose Device. Many Devices, however, are able to combine the functionality of multiple single-purpose Devices and execute more than one Process. For example, a digital printer might be able to execute the **Interpreting**, **Rendering** and **DigitalPrinting** Processes. To accommodate such Devices, XJDF allows Processes to be grouped within one XJDF Node. Each XJDF Node SHALL contain a **@Types** Attribute, which in turn contains an ordered list of values of each of Processes that the Node specifies. The ordering of the Process names in the **@Types** Attribute specifies the ordering in which the Processes SHOULD be executed. If the final product result would be indistinguishable, the Device MAY change the execution order of the Processes from that given in the **@Types** Attribute.

### 6.1.1 Nodes with Multiple Processes of the Same Type

A Node MAY contain multiple instances of the same Process type (e.g., **@Types** = "*Cutting* *Folding* *Cutting*"). In this case, the ordering and mapping of Assets to Processes is significant — the parameters of the first **Cutting** Process are most likely to be different from those of the second **Cutting** Process. If multiple Processes that consume identical Resources are specified in **@Types**, the ordering of the respective ResourceSet Elements maps to the ordering in the **@Types** list, e.g. the first ResourceSet[@Name="Cutting"] applies to the first Cutting process in the list and the second ResourceSet[@Name="Cutting"] applies to the second Cutting process in the list.

## 6.2 Process Template

Processes are defined by their input and Output Resources, therefore, the requirements for the individual processes are provided in the tables below. Table 6-2 provides a list of resources that are valid for any process.

Note: each entry provides the requirements in the format

- Name: The ResourceSet/@Name of the resource, e.g: **Media** or **RunList**;
- (**ProcessUsage**): If present, the ResourceSet/@ProcessUsage of the resource, e.g Document or Marks in case of a **RunList**.
- \* Cardinality. The cardinality of the resource \*, ?, + or empty. See Table 1-3, “Cardinality Symbols”: for details. all relevant Resource information is provided in tables for each Process. Furthermore, although they are not listed for each Process, additional, OPTIONAL Input Resources as defined in the following table for all Processes defined in this chapter

**Note:** about the Templates for tables for Input Resources and Output Resources

- the *italicized* text describes the actual text that would be in its place in an actual Process definition
- *Cardinality* in the Name column refers to a cardinality symbol, which is either empty or consists of a symbol, such as “?”. Examples described by the Name column include: “**Media**\*” and “**Component** (*Proof*) ?”. For further details, see Section 1.5.4, “Specification of Cardinality”.
- The text following a “**Note:**” in a table field gives further information about the specified table row.
- Each of the first two rows of each table represents zero or more of what it describes. Each of the remaining rows in the Input Resource Template describes an Input Resource that is OPTIONAL for any Process, even though it doesn’t appear in the Process’s Input Resources table.



### The JDF Cookbook

Chapter 6 and following are “the list of ingredients” in the JDF “cookbook.” The following Processes and Elements are fairly exhaustive. You can choose to use only what fits your workflow.

**Table 6-1: Template for Input Resources**

Name	Description
<i>Resource-Name</i> <i>Cardinality</i>	<i>Information about the Input Resource.</i> <b>Note:</b> the Resource represents any Input Resource. If an OPTIONAL Resource is not specified in a JDF an XJDF instance, the JDF XJDF Consumer MAY make its own assumption regarding Attributes and Subelements of the Resource. Specification-defined Attribute defaults cannot be guaranteed.
<i>Resource-Name (someValue)</i> <i>Cardinality</i>	<i>Information about the Input Resource</i> <b>Note:</b> @ProcessUsage Attribute of the specified Resource SHALL match the "someValue" value specified in the parentheses. When a Process potentially contains multiple Input Resources of the same type, the value of @ProcessUsage distinguishes the Resources.
<b>ApprovalSuccess</b> *	Any number of <b>ApprovalSuccess</b> Resources MAY be appended to Processes in order to model proofing and verification requirements. This is implied and not specified explicitly in the tables in the following section. For more information on the <b>Approval</b> Process, see Section 6.3.1, “Approval”.
<b>CustomerInfo</b> ?  <a href="#">New in JDF 1.3</a> <a href="#">Deprecated in JDF 1.6</a>	Specifies information about the Customer. Prior to JDF 1.3 <b>CustomerInfo</b> was not a Resource, but rather a direct child Element of the JDF Node.
<b>Employee</b> *	<b>Employee</b> that is associated with processing this Node.
<b>Device</b> *	<b>Device</b> that is associated with processing this Node.
<b>MiscConsumable</b> *  <a href="#">New in JDF 1.3</a>	Generic consumable resources that are associated with processing this Node.
<b>NodeInfo</b> ?  <a href="#">New in JDF 1.3</a>	Specifies information about the Node. Prior to JDF 1.3 <b>NodeInfo</b> was not a Resource, but rather a direct child Element of the JDF Node.
<b>PreflightReport</b> *  <a href="#">New in JDF 1.2</a>	Any number of <b>PreflightReport</b> Resources MAY be appended to Processes in order to convey the results of previous preflighting steps. This is implied and not specified explicitly in the tables in the following section. For more information on the <b>Preflight</b> Process, see Section 6.4.27, “Preflight”.
<b>Preview</b> *  <a href="#">New in JDF 1.1A</a> <a href="#">Deprecated in JDF 1.4</a>	Any number of previews MAY be associated with a Process and used for display purposes. <b>Preview</b> /@PreviewUsage SHOULD be "Thumbnail" or "Viewable". <b>Deprecation note:</b> starting with JDF 1.4, a <b>Preview</b> MAY be a member of any Element. See Table 3-1, “Any Element (generic content)” on page 48.
<b>Tool</b> *  <a href="#">New in JDF 1.4</a>	Miscellaneous reusable tool required for a Process.
<b>UsageCounter</b> *  <a href="#">New in JDF 1.3</a>	Devices MAY use counters, called “usage counters”, to track equipment utilization or work performed, such as impressions produced or documents generated.

**Table 6-2: Generic Input Resources**

Name	Description
<b>ApprovalDetails</b> *	Any number of <b>ApprovalDetails</b> Resources MAY be appended to Processes in order to model proofing and verification requirements. This is implied and not specified explicitly in the tables in the following section. For more information on the <b>Approval</b> Process, see Section 6.3.1, “Approval”.
<b>Color</b> ?	<b>Color</b> Identifies all colors that are used in the Job. <b>Color</b> may include separations that represent die lines or other auxiliary colors.
<b>Contact</b> *	Employee that is associated with processing this Node.
<b>CustomerInfo</b> ?	<b>CustomerInfo</b> specifies information about the direct customer.
<b>CustomerInfo</b> (EndCustomer) ?	<b>CustomerInfo</b> (EndCustomer) specifies information about the end customers in a subcontracting situation where the direct customer is not the end customer.
<b>Device</b> *	<b>Device</b> that is associated with processing this Node.
<b>MiscConsumable</b> *	Generic consumable resources that are associated with processing this Node.
<b>NodeInfo</b> ?	<b>NodeInfo</b> specifies scheduling information about the explicit process described by this XJDF.
<b>NodeInfo</b> (EndCustomer) ?	<b>NodeInfo</b> specifies scheduling information from the end customers in a subcontracting situation where the direct customer is not the end customer.
<b>Preview</b> *	Any number of previews MAY be associated with a Process and used for display purposes. <b>Preview</b> /@ <b>PreviewUsage</b> SHOULD be "ThumbNail" or "Viewable".
<b>Tool</b> *	Miscellaneous reusable tool required for a Process.
<b>TransferCurve</b> ?	<b>TransferCurve</b> specifies area coverage correction and coordinate transformations.
<b>UsageCounter</b> *	Devices MAY use counters, called “usage counters”, to track equipment utilization or work performed, such as impressions produced or documents generated.

**Table 6-3: Template for Output Resources**

Name	Description
<i>Resource-Name</i> <i>Cardinality</i>	<i>Information about the Output Resource.</i>
<i>Resource-Name</i> ( <i>someValue</i> ) <i>Cardinality</i>	<i>Information about the Output Resource</i> <b>Note:</b> @ <b>ProcessUsage</b> Attribute of the specified Resource SHALL match the " <i>someValue</i> " value specified in the parentheses. When a Process potentially contains multiple Output Resources of the same type, the value of @ <b>ProcessUsage</b> distinguishes the Resources.

## 6.3 General Processes

### 6.3.1 Approval

The **Approval** Process can take place at various steps in a workflow. For example, a Resource (e.g., a printed Sheet or a finished book) is used as the input to be approved, and an **ApprovalSuccess****ApprovalDetails** (given, for example, by a customer or foreman) is produced. Combining the **Approval** Process with any other Process can be

used to represent a request for a receipt. The Process that follows the **Approval** Process in the workflow chain will most often require the **ApprovalSuccessApprovalDetails** as Input.

Resources typically have a `@Status = "Draft"` before the **Approval**. After a successful **Approval**, Resources have a `@Status = "Available"` and after an unsuccessful **Approval**, they have a `@Status = "Rejected"`.

**Table 6-4: Approval – Input Resources**

Name	Description
<b>ApprovalParams ?</b>	Details of the approval Process.
<b>Resource *Resource *</b>	The Resources to be approved. The input will most often be a Resource of Class <code>"Handling"</code> or <code>"Quantity"</code> . When the Input Resource of an <b>Approval</b> Process is a <b>ByteMap</b> <b>ByteMap</b> , it is assumed that it will be displayed on a viewing Device.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-5: Approval – Output Resources**

Name	Description
<b>ApprovalSuccessApprovalDetails ?</b>	Result of any proofing Process given, for example, by a customer or foreman. Note that <b>ApprovalSuccess</b> Resources are only available on success.
<b>Resource (Accepted) *Resource (Accepted) *</b>	Represents the Input Resources that have been accepted for further processing by the <b>Approval</b> Process as Output Resources. This is typically used to transfer the Resource <code>@Status</code> of <code>"Draft"</code> to <code>"Available"</code> (see also Section 4.3.5.2, “Formal Iterative Processing”).
<b>Resource (Rejected) *Resource (Rejected) *</b>	Represents the Input Resources that have been rejected for further processing by the <b>Approval</b> Process as Output Resources. This can be used to define additional processing for rejected Resources. <b>Resource Resource</b> / <code>@Status</code> SHOULD be set to <code>"Rejected"</code> .

### 6.3.2 Buffer

New in JDF 1.1

The **Buffer** Process is used to buffer a **ResourceResource** for a certain time period. This can be buffering of a complete Resource or of a partial **ResourceResource** (e.g., in a pipe). The `@Amount` of the input and output of Resources SHALL be equal. Waiting for printed material to dry before finishing is an example of the **Buffer** Process.

**Table 6-6: Buffer – Input Resources**

Name	Description
<b>BufferParams ?</b>	The parameters (e.g., times and locations of the <b>Buffer</b> Process).
<b>ResourceResource</b>	The <b>ResourceResource</b> Element to be buffered. These MAY be any <b>Resource</b> Element.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-7: Buffer – Output Resources**

Name	Description
<b>ResourceResource</b>	The same <b>ResourceResource</b> after buffering. The Resource SHALL be a <b>Resource</b> .

### 6.3.3 Combine

The **Combine** Process is used to combine multiple PhysicalResources or logical Resources (e.g., **RunList** Resources of the same content to form one Resource). The sum of *@Amount* of the input and output of Resources SHALL be equal. The ordering of the input ResourceLink Elements SHALL be honored.

**Table 6-8: Combine – Input Resources**

Name	Description
Resource +	The Resources to be combined.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-9: Combine – Output Resources**

Name	Description
Resource	Result of combining. The Resource formed as a result of the <b>Combine</b> Process.

### 6.3.4 Delivery

This Process can be used to describe the delivery of an end Product, a PhysicalResources Resource to or from a location. This delivery can be internal – meaning within the company – or to an external company or customer. The **CustomerInfo** Element of the JDFNode can also be used if the delivery to is to be made to only one customer. Note that a delivery receipt can be requested by combining the **Delivery** Process with an **Approval** Process. Delivery of data over the network is specified in the **Delivery** Process.

If only the Delivery Address of the final Customer is required and no specific details of the Delivery are known, then the Delivery process need not be specifically parametrized and the Delivery address SHOULD be specified in **Contact**[@ContactTypes includes("Delivery")]/Address.

Delivery to multiple destinations or in multiple steps SHOULD be specified in **DeliveryParams** that are partitioned by *@DropID*. Common delivery of multiple products to the same address SHALL be specified by providing multiple **DeliveryParams/DropItem** elements.

**Table 6-10: Delivery – Input Resources**

Name	Description
<b>DeliveryParams</b> ?	Necessary information about the physical item or items to be delivered is stored here.
Resource ? <i>Deprecated in JDF 1.2</i>	Any Resource delivered to a location. This can be a PhysicalResource or a Parameter Resource that is delivered electronically. <b>Modification Note:</b> In JDF 1.2 and beyond the delivered Resources are defined as refelements in Elements of <b>DeliveryParams/Drop/DropItem</b> .
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-11: Delivery – Output Resources**

Name	Description
Resource + <i>ResourceSet</i> + <i>Modified in JDF 1.2</i>	Any Resources delivered from a location. These SHALL be PhysicalResources Resource Elements.

### 6.3.5 ManualLabor

*New in JDF 1.1*

This Process can be used to describe any Process where Resources Assets are handled manually. The **ManualLabor** Process is designed to monitor any type of non-automated labor from an MIS system.

**Table 6-12: ManualLabor – Input Resources**

Name	Description
<b>ManualLaborParams</b> ?	Details on the <b>ManualLabor</b> Process.
<b>Resource *ResourceSet *</b>	Resources that are used to create the Output Resource.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-13: ManualLabor – Output Resources**

Name	Description
<b>Resource *</b> <b>ResourceSet *</b> <a href="#">Modified in JDF 1.4</a>	The Resources that were created by manual work. In general these will be <b>Component</b> Resources, but <b>Handling Resources Resource Elements</b> MAY also be processed manually. If no Output <b>Resource</b> is specified, the <b>ManualLabor</b> Process describes incidental work. <b>Modification note:</b> starting with JDF 1.4, multiple Resources are allowed.

### 6.3.6 Ordering

[Deprecated in JDF 1.5](#)

See Section P.4.4, “Ordering” on page 1325 for details of this deprecated Process.

### 6.3.7 Packing

[Deprecated in JDF 1.1](#)

See Section P.4.5, “Packing” on page 1325 for details of this deprecated Process.

### 6.3.8 QualityControl

[New in JDF 1.2](#)

This Process defines the setup and frequency of quality controls for a Process. **QualityControl** is generally performed on **Component** Resources produced as intermediate or final output of a Process.

**Table 6-14: QualityControl – Input Resources**

Name	Description
<b>QualityControlParams</b>	Detailed definition of the <b>QualityControl</b> Process.
<b>ResourceResource</b>	The Resource to be quality controlled. In general this will be a <b>Component</b> Resource.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-15: QualityControl – Output Resources**

Name	Description
<b>QualityControlResult</b> ?	Results of the Process (e.g., measurement statistics).
<b>ResourceResource</b>	This Resource describes the Resource after <b>QualityControl</b> has been applied. Note that this Resource will generally be Partitioned by <b>@Condition</b> to track the amount of accepted and rejected Resources. This Resource SHOULD reference the <b>QualityControlResult</b> Output Resource.

### 6.3.9 ResourceDefinition

This Process can be used to describe the interactive or automated Process of defining Resources such as set-up information. This Process creates Output Resources or modifies Input Resources of the same type as the Output Resources. The **ResourceDefinition** Process is designed to monitor interactive work such as creating imposition templates. It can also be used to model a hot folder Process that accepts Resources from outside of a JDF based workflow.

**Table 6-16: ResourceDefinition – Input Resources**

Name	Description
Resource *	Any type of Resource. Generally these will be templates.
Modified in JDF 1.1	
ResourceDefinitionParams ?	Details on how to handle defaults.

**Table 6-17: ResourceDefinition – Output Resources**

Name	Description
Resource +	The same type of Resource as one of the Input Resources.
Modified in JDF 1.1	

### 6.3.10 Split

This Process is used for splitting one physical or logical Resource into multiple physical or logical Resources containing the same content as the original. The sum of *@Amount* of the input and output of Resources SHALL be equal.

**Table 6-18: Split – Input Resources**

Name	Description
Resource	The Resource to be split.

**Table 6-19: Split – Output Resources**

Name	Description
Resource +	The Resources formed as a result of splitting.

### 6.3.11 Verification

The **Verification** process is used to confirm that a process has been completely executed. In the case of variable data printing in which every document is unique and validated individually, database access is required. Verification in this situation can involve scanning the physical sheet and interpreting a bar code or alphanumeric characters. The decoded data can then be either recorded in a database to be later cross referenced with a verification list, or cross referenced and validated immediately in real time. **The actual database connection is implementation specific.**

Verification differs from **QualityControl** in that **Verification** verifies the existence of a given set of Resources, whereas **QualityControl** verifies that the existing Resources fulfill certain quality criteria.

**Table 6-20: Verification – Input Resources (Sheet 1 of 2)**

Name	Description
DBSchema ? Deprecated in JDF 1.5	Schema description of the cross-reference database.
DBSelection ? Deprecated in JDF 1.5	Database link that defines the database that contains cross-reference data.

**Table 6-20: Verification – Input Resources (Sheet 2 of 2)**

Name	Description
<b>FileSpec</b> (Verification) ? <a href="#">New in JDF 1.5</a>	Reference to a file that contains implementation specific descriptions of the Resources to be verified.
<b>IdentificationField</b> * <a href="#">Deprecated in JDF 1.5</a>	Identifies the position and type of data for an automated, OCR-based verification Process.  <b>Deprecation note:</b> starting with JDF 1.5, use <b>Component/IdentificationField</b> .
<b>Resource</b> ? <a href="#">Resource</a> ? <a href="#">New in JDF 1.2</a>	The Resource to be verified. The input will most often be a <b>Resource</b> with <b>@Class = "Quantity"</b> <b>Resource</b> (e.g., <b>Component</b> ) or <b>@Class = "Parameter"</b> (e.g., <b>RunList</b> ).
<b>VerificationParams</b> ?	Controls the verification requirements.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-21: Verification – Output Resources**

Name	Description
<b>ApprovalSuccess</b> <a href="#">?ApprovalDetails</a> ?	Signature file that defines verification success.
<b>DBSelection</b> ? <a href="#">Deprecated in JDF 1.5</a>	Database link where the verification data is to be recorded.
<b>FileSpec</b> (Accepted) ? <a href="#">New in JDF 1.5</a>	Reference to a file that contains implementation specific descriptions of the Resources that were correctly verified.
<b>FileSpec</b> (Rejected) ? <a href="#">New in JDF 1.5</a>	Reference to a file that contains implementation specific descriptions of the Resources that were NOT correctly verified.
<b>FileSpec</b> (Unknown) ? <a href="#">New in JDF 1.5</a>	Reference to a file that contains implementation specific descriptions of the Resources that were scanned but NOT in the explicit or implied list of known Resources.
<b>Resource</b> ? <a href="#">Resource</a> ? <a href="#">New in JDF 1.2</a>	The Resource after verification. Most often the <b>Resource</b> <b>Resource</b> will not be modified by <b>Verification</b> . It has been added here to allow modeling of <b>Verification</b> in a Combined Processes.

## 6.4 Prepress Processes

### 6.4.1 AssetListCreation

[New in JDF 1.2](#)

The purpose of this Process is to provide a listing of all assets and their dependent assets that are required in order to use the input assets. This Process analyzes the input **RunList** to find dependent assets to provides a complete listing of files in the output **RunList**. **AssetListCreation** does not package, encode or compress the list of files.

**Table 6-22: AssetListCreation – Input Resources**

Name	Description
<b>AssetListCreationParams</b> ?	Parameters of the <b>AssetListCreation</b> Process
<b>RunList</b> ?	List of assets used to create a listing of dependent assets.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-23: AssetListCreation – Output Resources**

Name	Description
RunList ?	A listing of all assets that the assets listed in the input RunList are dependent on including the input assets. The dependent assets are to be inserted into the output RunList as RunList/LayoutElement/Dependencies/ LayoutElement@DependencieRefs. @DependencieRefs refers to RunList elements that represent the dependent assets.

## 6.4.2 Bending

[New in JDF 1.3](#)

The **Bending** Device consumes a printing plate and bends and/or punches it. In contrast to commercial printing, for newspaper printing this Process is not integrated into the **ImageSetting** Process. [In JDF 1.3 and above](#) **ImageSetting** does not imply **Bending**. An inline plate puncher SHOULD be modelled as a Combined Process consisting of **ImageSetting** and **Bending** Processes.

**Table 6-24: Bending – Input Resources**

Name	Description
BendingParams ?	List of assets used to create a listing of dependent assets.
ExposedMedia ?	The ExposedMedia Resource to be bent/punched. <a href="#">Dummy Forms are also described as ExposedMedia even though they NEED NOT be imaged.</a>
Media ?	In a newspaper environment, Dummy forms might be needed. In this case, a Media with @MediaType = "Plate" serves as an Input Resource.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-25: Bending – Output Resources**

Name	Description
ExposedMedia ?	The bent/punched ExposedMedia Resource.

## 6.4.3 ColorCorrection

**ColorCorrection** is the Process of modifying the specification of colors in documents to achieve some desired visual result. The Process might be performed to ensure consistent colors across multiple files of a Job or to achieve a specific design intent (e.g., “brighten the image up a little”).

**ColorCorrection** is distinct from **ColorSpaceConversion**, which is the process of changing how the colors specified in the Job will be produced on paper. Rather, **ColorCorrection** is the process of modifying the desired result, whatever the specified color space might be.

The **ColorCorrection** Process MAY be part of a Combined Process with the **ColorSpaceConversion** Process, in which case the source and destination profiles used by the **ColorSpaceConversion** Process would be supplied from **ColorSpaceConversionParams**. Either the direct @Adjustment Attribute or the ICC profile Attribute **ColorCorrectionOp/FileSpec** with @ResourceUsage = "AbstractProfile" can be used in this scenario to apply color corrections in the Device independent ICC Profile Connection Space interpreted from the ICC source profile before the ICC destination profile is applied.

Alternatively, a **ColorCorrection** Process MAY occur after a **ColorSpaceConversion** Process. In this scenario only the **ColorCorrectionOp/FileSpec** with @ResourceUsage = "DeviceLinkProfile" supplied in **ColorCorrectionOp** is used.

**Table 6-26: ColorCorrection – Input Resources**

Name	Description
<b>ColorantControl</b> ? <a href="#">Modified in JDF 1.1A</a>	Identifies the assumed color model for the Job.
<b>ColorCorrectionParams</b> ? <a href="#">New in JDF 1.1</a>	Parameters of the <b>ColorCorrection</b> Process
<b>RunList</b> ?	List of content elements that are to be operated on.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-27: ColorCorrection – Output Resources**

Name	Description
<b>RunList</b> ?	List of color-corrected content elements.

#### 6.4.4 ColorSpaceConversion

**ColorSpaceConversion**, as the name implies, is the process of converting all colors used in the Job to a known color space. There are two ways in which a Controller can use this Process to accomplish the color conversion. It can simply order the colors to be converted by the Device assigned to the task, or it can request that the Process simply tag the input data for eventual conversion. Additionally, the Process can remove all tags from the content.

The parameters of this Resource provide the ability to selectively control the conversion or tagging of raster data or graphical objects based on object class and/or incoming color space.

Like all other color manipulation supported in **JDF XJDF**, the color conversion controls are based on the use of ICC profiles. While the assumed characterization of input data can take many forms, each can internally be represented as an ICC profile. In order to perform the transformations, input profiles SHALL be paired with the identified final target Device profile to create the transformation.

In order to avoid the loss of black color fidelity resulting from the transformation from a four-component CMYK to a three-component interchange space, the **Agent Controller** MAY select a **DeviceLink**<sup>1</sup> transform as the transform to be applied when converting from a specific source colorspace to the final target device colorspace specified for the **ColorSpaceConversion** operation being applied. In these instances, the final target profile is ignored. Since there is no algorithmic way to determine that the output characterization in a Device link profile is equivalent to another profile, some of the responsibility to select a sensible combination falls on the Agent or end user.

**Table 6-28: ColorSpaceConversion – Input Resources (Sheet 1 of 2)**

Name	Description
<b>ColorantControl</b> ? <a href="#">Modified in JDF 1.1A</a>	Identifies the assumed color model for the Job. The <b>ColorantControl</b> Resource MAY modified by a <b>ColorSpaceConversion</b> Process.
<b>ColorSpaceConversionParams</b> ?	Parameters that define how color spaces will be converted in the file.
<b>RunList</b> ?	List of pages, Sheets or byte maps on which to perform the selected operation.

1. A **DeviceLink** transform is a transform that is defined in an ICC profile file [ICC.1] that maps directly from one specific source color space to a specific destination device color space. An example of this is a transform that maps directly from PDL source objects defined using sRGB directly to SWOP CMYK

**Table 6-28: ColorSpaceConversion – Input Resources (Sheet 2 of 2)**

Name	Description
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-29: ColorSpaceConversion – Output Resources**

Name	Description
ColorantControl ?	Identifies the assumed color model for the Job. The <b>ColorantControl</b> Resource MAY be modified by a <b>ColorSpaceConversion</b> Process.
RunList ?	List of pages, Sheets or byte maps on which the selected operation has been performed.

#### 6.4.5 ContactCopying

New in JDF 1.1

**ContactCopying** is the Process of making an analog copy of a film onto another film or plate. It includes **FilmToPlateCopying** as defined in JDF 1.0 and deprecated in JDF 1.1.

**Table 6-30: ContactCopying – Input Resources**

Name	Description
ContactCopyParams ?	The settings of the contact copying task.
DevelopingParams ?	Controls the physical and chemical specifics of the media development process.
ExposedMedia +?	The film or films to be copied onto the film or plate.
Media ?	The unexposed film or plate.
TransferCurvePool ?TransferCurve *	Area coverage correction and coordinate transformations of the device.

**Table 6-31: ContactCopying – Output Resources**

Name	Description
ExposedMedia ?	The resulting exposed contact copy.

#### 6.4.6 ContoneCalibration

This Process specifies the process of contone calibration. It consumes contone raster data such as that output from an **Interpreting** and **Rendering** Process. It produces contone raster data which has been calibrated to a press using a well defined screening Process.

**Table 6-32: ContoneCalibration – Input Resources (Sheet 1 of 2)**

Name	Description
RunList ?	Ordered list of rasterized byte maps representing pages or surfaces.
ScreeningParams ? Modified in JDF 1.1	Parameters specifying which halftoning mechanism is to be applied and with what specific controls.
TransferFunctionControl ? Modified in JDF 1.1	Specifies which calibration to apply.

**Table 6-32: ContoneCalibration – Input Resources (Sheet 2 of 2)**

Name	Description
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-33: ContoneCalibration – Output Resources**

Name	Description
RunList ?	Ordered list of rasterized byte maps representing calibrated pages or surfaces.

### 6.4.7 CylinderLayoutPreparation

New in JDF 1.3

**CylinderLayoutPreparation** specifies where to mount a single form in a newspaper-Web Press. This information might be needed by printers as human-readable text on the surface of the form. Usually, the information is shown in the non-printable area of it.

The REQUIRED color information for each plate layout is addressed from **Layout/ContentObject/@Ord**. The Attribute points to **RunList (Document)**. **RunList/@PageListIndex** points to detailed PageData, including individual color information.

**Table 6-34: CylinderLayoutPreparation – Input Resources**

Name	Description
<b>CylinderLayoutPreparationParams</b> ?	Set of parameters for <b>CylinderLayoutPreparation</b> .
<b>Layout</b>	Definition of the <b>Layout</b> of the individual plates. The resulting <b>CylinderLayout</b> references plate layouts.
<b>RunList</b>	The document <b>RunList</b> .

**Table 6-35: CylinderLayoutPreparation – Output Resources**

Name	Description
<b>CylinderLayout</b>	<b>CylinderLayout</b> specifies where to mount a single form in a newspaper-Web Press. If requested by the printer, this information can be indicated as human-readable text on the surface of the physical plate.

### 6.4.8 DBDocTemplateLayout

Deprecated in JDF 1.5

See Section P.4.1, “DBDocTemplateLayout” on page 1324 for details of this deprecated Process.

**Deprecation note:** starting with JDF 1.5, use **LayoutElementProduction** instead.

### 6.4.9 DBTemplateMerging

Deprecated in JDF 1.5

See Section P.4.2, “DBTemplateMerging” on page 1324 for details of this deprecated Process.

**Deprecation note:** starting with JDF 1.5, use **LayoutElementProduction** instead.

## 6.4.10 DieDesign

[New in JDF 1.4](#)

This Process describes the design of a die tool set **with one or more stations** starting from a **DieLayout**.

**Table 6-36: DieDesign – Input Resources**

Name	Description
<b>DieLayout</b> ?	A Resource describing the die cutter layout. <b>This layout is already imposed for a specific sheet size and MAY describe multiple stations.</b>
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-37: DieDesign – Output Resources**

Name	Description
<b>DieLayout + DieLayout</b> *	A set of Resources describing the die cutter tool set.

## 6.4.11 DieLayoutProduction

[New in JDF 1.4](#)

This process describes the layout of one or more structural designs for a given **Media**. The output of this process is a **DieLayout** Resource, describing a tool set for the die cutter machine. The **DieLayoutProduction** Process can be performed by a human operator using a CAD application. In some cases it can be an automated Process. The Process can be run in estimation mode in which case multiple solutions are returned that can then be used as input of a cost estimation module to determine the optimal layout. The **DieDesign** Process is the packaging equivalent of a **Stripping** Process in conventional Printing. The output **DieLayout** of **DieLayoutProduction** is typically the input of a subsequent **DieDesign** Process.

**Table 6-38: DieLayoutProduction – Input Resources**

Name	Description
<b>DieLayoutProductionParams</b> ?	The parameters for the <b>DieLayoutProduction</b> .
<b>ShapeDef</b> +	<b>ShapeDef</b> Resources describing the different 1-up structural designs to be stepped and repeated on the <b>Media</b> .
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-39: DieLayoutProduction – Output Resources**

Name	Description
<b>DieLayout + DieLayout</b> *	A Resource describing the die cutter tool set. When the process is run in estimation mode, multiple alternative <b>DieLayout</b> Elements are returned, otherwise a single <b>DieLayout</b> is generated.

### Example 6-1: DieLayoutProduction: Single Shape and Two Sheet Sizes

Example of **DieLayoutProduction** of a single shape on 2 stock sheet sizes

**TBD 2.x Example:**

```
<!-- DieLayoutProduction Sample
    Date: Sept 2007 Version: 1.00
    Single Shape is repeated on a range of alternative sheet sizes.
-->
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="n001"
```

```

    Type="DieLayoutProduction" Status"Waiting" JobPartID="ID234"
    DescriptiveName"Single shape versus a set of sheet sizes"
    Version="1.4">
<ResourcePool>
    <ShapeDef Class="Parameter" ID="Shape1Up" Status="Available">
        <FileSpec URL="file://myserver/myshare/olive.dd3"/>
    </ShapeDef>
    <!-- Layout can chose from 2 stock sheet sizes. Nesting with 2nd row
        rotated and secondary gutters. Rotate against grain/flute
        is not allowed.
    -->
    <DieLayoutProductionParams Class="Parameter" ID="LayParam"
        Status="Available">
        <ConvertingConfig SheetWidth="2834.64 ~ 2834.64"
            SheetHeight="2267.72 ~ 2267.72"/>
        <ConvertingConfig SheetWidth="3401.57 ~ 3401.57"
            SheetHeight="2834.64 ~ 2834.64"/>
        <RepeatDesc GutterY="0.0" GutterY2="14.17" AllowedRotate="None"
            LayoutStyle="Reverse2ndRow"/>
    </DieLayoutProductionParams>
    <!-- The layout with minimum waste will be returned as the final result. -->
    <DieLayout Class="Parameter" ID="DieLay" Status="Unavailable"/>
</ResourcePool>
<ResourceLinkPool>
    <ShapeDefLink rRef="Shape1Up" Usage="Input"/>
    <DieLayoutProductionParamsLink rRef="LayParam" Usage="Input"/>
    <DieLayoutLink rRef="DieLay" Usage="Output"/>
</ResourceLinkPool>
</JDF>

```

### Example 6-2: DieLayoutProduction: Single Shape and Range of Sheet Sizes

Example of **DieLayoutProduction** of a single shape on a range of sheet sizes. The sheet sizes have defined minimum and maximum width and height. The layout is optimized for a particular order quantity

#### TBD 2.x Example:

```

<!-- DieLayoutProduction Sample
    Date:Sept 2007 Version: 1.00
    Single Shape is repeated on a continuous range of sheet sizes. -->
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="n001"
    Type="DieLayoutProduction" Status="Waiting"
    DescriptiveName"Single shape versus a set of sheet sizes"
    JobPartID="ID400" Version="1.4">
<ResourcePool>
    <ShapeDef Class="Parameter" ID="Shape1Up" Status="Available">
        <FileSpec URL="file://myserver/myshare/olive.dd3"/>
    </ShapeDef>
    <!-- Layout can choose sheet sizes between 1200mm-1000mm wide and
        1000mm-800mm high. The layout will be optimized for order quantities
        of 1 million boxes. Gutters are 5mm and cross flute/grain rotation
        is not allowed.
    -->
    <DieLayoutProductionParams Class="Parameter" ID="LayParam"
        Status="Available">
        <ConvertingConfig SheetWidth="3401.57 ~ 2834.64"
            SheetHeight="2834.64 ~ 2267.72"/>
        <RepeatDesc OrderQuantity="1000000" GutterX="14.17" GutterY="14.17"
            AllowedRotate="None"/>
    </DieLayoutProductionParams>
</ResourcePool>

```

```

</DieLayoutProductionParams>
<!-- The layout with minimum waste will be returned as the
    final result. -->
<DieLayout Class="Parameter" ID="DieLay" Status="Unavailable"/>
</ResourcePool>
<ResourceLinkPool>
    <ShapeDefLink rRef="Shape1Up" Usage="Input"/>
    <DieLayoutProductionParamsLink rRef="LayParam" Usage="Input"/>
    <DieLayoutLink rRef="DieLay" Usage="Output"/>
</ResourceLinkPool>
</JDF>

```

### Example 6-3: DieLayoutProduction: Two Shapes and Range of Sheet Sizes

Example of **DieLayoutProduction** of 2 shapes on a range of sheet sizes. The sheet sizes have defined minimum and maximum width and height. The layout is optimized for a particular order quantity of 2 boxes.

#### TBD 2.x Example.

```

<!-- DieLayoutProduction Sample
    Date:Sept 2007 Version: 1.00
    2 Shapes is repeated on a continuous range of sheet sizes.
-->
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="n001"
    Type="DieLayoutProduction"
    Status="Waiting"
    DescriptiveName="Single shape versus a set of sheet sizes"
    Version="1.4">
<ResourcePool>
    <ShapeDef Class="Parameter" ID="Shape1Up" Status="Available">
        <FileSpec URL="file:///myserver/myshare/beef.dd3"/>
    </ShapeDef>
    <ShapeDef Class="Parameter" ID="Shape1Up2" Status="Available">
        <FileSpec URL="file:///myserver/myshare/chicken.dd3"/>
    </ShapeDef>
    <!-- Layout can chose sheetsizes between 1200mm-1000mm wide and
        1000mm-800mm high. Layout is optimized for an order
        quantity of 300k boxes for beef and 700k boxes for chicken.
        Gutters are 5mm and cross flute/grain rotation is not allowed.
-->
    <DieLayoutProductionParams Class="Parameter" ID="LayParam"
        Status="Available">
        <ConvertingConfig SheetWidth="3401.57 ~ 2834.64"
            SheetHeight="2834.64 ~ 2267.72"/>
        <RepeatDesc OrderQuantity="300000" GutterX="14.17" GutterY="14.17"
            AllowedRotate="None"/>
        <RepeatDesc OrderQuantity="700000" GutterX="14.17" GutterY="14.17"
            AllowedRotate="None"/>
    </DieLayoutProductionParams>
    <!-- The layout with minimum waste will be returned as the final
        result. -->
    <DieLayout Class="Parameter" ID="DieLay" Status="Unavailable"/>
</ResourcePool>
<ResourceLinkPool>
    <ShapeDefLink rRef="Shape1Up" Usage="Input"/>
    <ShapeDefLink rRef="Shape1Up2" Usage="Input"/>
    <DieLayoutProductionParamsLink rRef="LayParam" Usage="Input"/>
    <DieLayoutLink rRef="DieLay" Usage="Output"/>
</ResourceLinkPool>

```

&lt;/JDF&gt;

### 6.4.12 DigitalDelivery

New in JDF 1.2

This Process specifies the delivery of digital assets in any stage of the flow. It could be images, documents, layout, text files, ready to print raster files or any other file type. When **ArtDeliveryIntent/ArtDelivery/@ArtDeliveryType** is "DigitalNetwork" or "DigitalFile" the corresponding Process will be **DigitalDelivery** unless **ArtDeliveryIntent/@Method** = "local".

It is not necessary to use the **DigitalDelivery** Process to describe informal delivery of files during the workflow although **DigitalDelivery** can be used for asset collection purposes (i.e., defining how an input **RunList** will be collected in the output **RunList** describing the packing containers of compression or encoding). See example in Appendix O, "Examples" on page 1261.

**Table 6-40: DigitalDelivery – Input Resources**

Name	Description
DigitalDeliveryParams ?	Parameter specifying the artwork files delivery characteristics.
RunList *	The list of digital files to be delivered.
Modified in JDF 1.3	

**Table 6-41: DigitalDelivery – Output Resources**

Name	Description
RunList +	The list of digital files which were actually delivered to the destination.
RunList *Modified in JDF 1.3	

### 6.4.13 FilmToPlateCopying

Deprecated in JDF 1.1

**FilmToPlateCopying** has been replaced by the more generic **ContactCopying**. See Section P.4.6, "FilmToPlateCopying" on page 1326 for details of this deprecated Process.

### 6.4.14 FormatConversion

New in JDF 1.1Deprecated in JDF 1.5

**Deprecation note:** starting with JDF 1.5, use a Combined Process of **RasterReading** and **Rendering**.

For details see Section P.4.3, "FormatConversion".

### 6.4.15 ImageEnhancement

New in JDF 1.5

The **ImageEnhancement** Process describes generic image data processing.

**Note:** the source MAY be any image, but also text or vector graphics.

**Table 6-42: ImageEnhancement – Input Resources (Sheet 1 of 2)**

Name	Description
ImageEnhancementParams ?	Describes the controls selected for the manipulation of images.
RunList ?	List of content data elements on which to perform the selected operations.

**Table 6-42: ImageEnhancement – Input Resources (Sheet 2 of 2)**

Name	Description
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-43: ImageEnhancement – Output Resources**

Name	Description
RunList?	List of page contents with images that have been manipulated as indicated by the <b>ImageEnhancementParams</b> Resource.

#### 6.4.16 ImageReplacement

This Process provides a mechanism for manipulating documents that contain referenced image data. It allows for the “fattening” of files that simply contain a reference to external data or contain a low resolution proxy. Additionally, the Resource can be specified so that this Process generates proxy images from referenced data. **ImageReplacement** is intentionally neutral of the conventions used to identify the externally referenced image data.

**Table 6-44: ImageReplacement – Input Resources**

Name	Description
<b>ImageCompressionParams</b> ? <a href="#">New in JDF 1.1</a>	This Resource provides a set of controls that determines how images will be compressed in the resulting “fat” PDL pages.
<b>ImageReplacementParams</b> ?	Describes the controls selected for the manipulation of images.
RunList ?	List of page contents on which to perform the selected operation.

**Table 6-45: ImageReplacement – Output Resources**

Name	Description
RunList	List of page contents with images that have been manipulated as indicated by the <b>ImageReplacementParams</b> Resource.

#### 6.4.17 ImageSetting

The **ImageSetting** Process is executed by an imagesetter or platesetter that images a bitmap onto the film or plate media. The **ImageSetting** Process can also be used to describe hard copy proofing (see Section 6.3.1, “Approval” on page 347).

**Table 6-46: ImageSetting – Input Resources (Sheet 1 of 2)**

Name	Description
<b>ColorantControl</b> ? <a href="#">New in JDF 1.2</a>	The <b>ColorantControl</b> Resources that define the ordering and usage of inks during marking on the imagesetter.
<b>DevelopingParams</b> ? <a href="#">New in JDF 1.1</a>	Controls the physical and chemical specifics of the media development process.
<b>ExposedMedia</b> ? <a href="#">New in JDF 1.3</a>	When imaging to reusable media, <b>ExposedMedia</b> MAY also be used as input to <b>ImageSetting</b> . <b>Constraint:</b> exactly one of <b>Media</b> or <b>ExposedMedia</b> SHALL be specified.
<b>ImageSetterParams</b> ? <a href="#">Modified in JDF 1.1</a>	Controls the Device specific features of the imagesetter.

**Table 6-46: ImageSetting – Input Resources (Sheet 2 of 2)**

Name	Description
<b>Media</b> ?	The unexposed media. <b>Constraint:</b> exactly one of <b>Media</b> or <b>ExposedMedia</b> SHALL be specified.
<b>RunList</b> ?	Identifies the set of bitmaps to image. MAY contain bytemaps or images.
<b>TransferCurvePool</b> ?  <u>New in JDF 1.1</u>	Area coverage correction and coordinate transformations of the Device.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-47: ImageSetting – Output Resources**

Name	Description
<b>ExposedMedia</b>	The exposed media Resource. <b>In case of plate setting, this is the exposed set of plates.</b> In case of film setting, this is the exposed set of films.

### 6.4.18 Imposition

Modified in JDF 1.4

**Modification note:** starting with JDF 1.4, automated imposition is added.

The **Imposition** Process is responsible for combining pages of input graphical content onto surfaces whose dimensions are reflective of the physical output media. Static or dynamic printer's marks can be added to the surface in order to facilitate various aspects of the production process. Among other things, these marks are used for press alignment, color calibration, job identification and as guides for cutting and folding.

Note that the **Imposition** Process specifies the task of combining pages and marks on sheets. The task of setting up the parameters needed for **Imposition** (e.g., creating the **Layout** Resource) is defined either by **LayoutPreparation**, **Stripping** or by the generic **ResourceDefinition** Process.

**Table 6-48: Imposition – Input Resources**

Name	Description
<b>Layout</b> ?	A <b>Layout</b> Resource that indicates how the content pages from the Document <b>RunList</b> and marks from the Marks <b>RunList</b> (see below) are combined onto imposed surfaces.
<b>RunList (Document)</b> ?	Structured list of incoming page contents which is transformed to produce the imposed surface images.
<b>RunList (Marks)</b> ?	Structured list of incoming marks. These are typically printer's marks such as fold marks, cut marks, punch marks or color bars.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-49: Imposition – Output Resources**

Name	Description
<b>RunList</b> ?	Structured list of imposed surfaces. The @ElementType of the <b>LayoutElement RunList</b> Resource SHALL be "Surface". Typically the output <b>RunList</b> will be Partitioned by @PartIDKeys = "SheetName Side Separation". If the <b>Imposition</b> Process is executed before <b>RIPing RIPing</b> ### this will generally be consumed by an <b>Interpreting</b> Process. In the case of post-RIP <b>Imposition</b> , it will be consumed by <b>DigitalPrinting</b> or <b>ImageSetting</b> .

There are two mechanisms provided for controlling the flow of page images onto sheet surfaces:

The default mechanism is for non-automated (e.g., fully-specified) **Imposition**, which originally derived from **Layout** in PJTF. Fully-specified imposition explicitly identifies all page content for each sheet imaged and references these pages by means of the order in which they are defined in the input **RunList (Document)** Resource. Static printer's marks are referenced in a similar fashion from the input **RunList (Marks)** Resource.

Setting the **@Automated** attribute of the **Layout** Resource to "true" activates a template approach to imposition and relies upon the full hierarchy structure of the document (as specified by the **RunList (Document)** and referenced **Structured PDL** data) to specify the page content to be imposed.

In **JDF XJDF**, there is a single **Layout** Resource definition. Its structure is broad enough to encompass the needs of both fully specified and template-driven imposition. When described fully (**@Automated = "false"**), the **Layout** Resource Partition structure defines the imposition to take place. The highest level of each Partition defines a signature. The children of each of the signatures in turn specifies an array of sheets, and each sheet MAY have up to two surfaces (Front and/or Back), on which the page images and any printer's marks are to be placed using **PlacedObject** **PlacedObject** Elements. A sheet that specifies no surface content SHALL be interpreted as blank. Pages that are to be printed SHALL be placed onto surfaces using **ContentObject** Subelements which explicitly identify the page (Typically done using the **ContentObject/@Ord** Attribute which specifies an index into the document **RunList**). Thus, the **Layout** Partition hierarchy SHALL explicitly specify which pages are to be imaged onto each surface.

For JDF 1.3, automated imposition was originally defined such that **Layout** Resource Partitions specified a single signature of sheet(s) upon which page content was to be imposed. The sequence of pages to be imaged via automated imposition was defined by the Document **RunList**. The pages were pulled from this sequence as needed in order to satisfy the **ContentObject** Elements defined for each sheet surface in the signature of the **Layout** Resource. The signature was repeated as necessary until all pages available in the Document **RunList** had been used.

Note that the XML order in which the Partitions of the **Layout** Resource are defined is significant for both automated and non-automated imposition and defines the order in which the imposition engine processes the **RunList (Document)**.

#### 6.4.18.1 Glossary for Automated Imposition

This table below introduces terms and concepts necessary for understanding automated imposition processing.

**Table 6-50: Glossary for Automated Imposition (Sheet 1 of 4)**

Term	Definition
<b>Base Index</b>	When processing an <b>Imposition Template</b> , the imposition engine maintains an internal <b>Base Index</b> into the <b>Page Pool</b> being processed. That <b>Base Index</b> is added to the <b>ContentObject/@Ord</b> value, resulting in an index into the <b>Page Pool</b> for referencing the page to be placed, and is updated for each <b>Imposition Template</b> iteration. Both positive and negative base indices are maintained for use when <b>ContentObject/@Ord</b> has either a negative or positive value. For an example, see Example O-31, "Algorithm for Processing an Imposition Template" on page 1298.
<b>Base Ord</b>	Same as <b>Base Index</b> .
<b>Collect</b>	Set of sheets that are collected together prior to gathering.
<b>Document Major Processing Order</b>	<p><b>Document Major Processing Order</b> refers to the scenario wherein all instances of a given document class (across all sets to be processed) SHALL be produced before starting processing for the next document class.</p> <p>For instance, the production requirements may state that all brochures SHALL be produced for each set, followed by all cover letters and then all postcards. This processing order is an example of Document Major.</p>

**Table 6-50: Glossary for Automated Imposition (Sheet 2 of 4)**

Term	Definition
<b>Imposed Sheet Set</b>	Describes a single set of sheet definitions generated by the imposition engine containing imposed content. Note that this may represent a precut set of sheets in a cut-and-stack workflow (where the maximum number of sheets in the <b>Imposed Sheet Set</b> is defined by <b>Layout/LogicalStackParams/@MaxStackDepth</b> ), or a collect when no <b>Logical Stacks</b> are defined.
<b>Imposition Template</b>	A first-level branch of a Partitioned <b>Layout</b> Resource having <b>@Automated = "true"</b> that describes a single set of sheets with a common imposition layout that accommodates very specific production characteristics. A single <b>Layout</b> Resource defines a collection of one or more <b>Imposition Templates</b> .
<b>Instance Document</b>	The imposition engine treats each immediate child Node of a set in a <b>Structured PDL</b> as an <b>Instance Document</b> . This is used as the basis for generating <b>@EndOfDocument</b> breaks in the resulting <b>RunList (Surface)</b> , and for processing <b>RunList/@DocCopies</b> Attributes (see Section 8.134, “RunList” on page 871). If a set has only pages as its children, then a single <b>Instance Document</b> is assumed to exist.
<b>Logical Sheet</b>	One or more pages placed onto a sheet definition within a <b>Logical Stack</b> (i.e., a sheet definition within a <b>Logical Stack</b> ).
<b>Logical Stack</b>	When <b>Layout/LogicalStackParams/@MaxStackDepth</b> is specified in the root of the <b>Layout</b> Resource, then the imposition engine is configured for imposition onto multiple <b>Logical Stacks</b> . These stacks are described through the use of adding <b>Layout/PlacedObjectPlacedObject/@LogicalStackOrd</b> to stack-specific descriptions for each placed object. For more information, see Section 6.4.18.4.1, “Using Logical Stacks” on page 371. For example usage, see Example O-34, “Booklet Using Automated Imposition” on page 1302.
<b>Logical Stack Set</b>	The set of <b>Logical Stacks</b> described by an <b>Imposed Sheet Set</b> .
<b>Page Pool</b>	<p>A <b>Page Pool</b> refers to a delimited sequence of pages defined within the <b>RunList (Document)</b> input to the <b>Imposition</b> Process. A <b>Page Pool</b> MAY encompass all pages of the <b>RunList (Document)</b> as in the case of <b>Unstructured PDLs</b>. In the case of <b>Structured PDLs</b>, a <b>Page Pool</b> is defined to be that set of pages represented by a leaf node of the document structure. For example, a brochure which has a sub-structure of Cover and Body has two leaf nodes, Cover and Body, respectively. If Body were further divided into Chapter sections, then the leaf nodes of the Brochure would be the Cover and each Body Chapter. <b>LayoutElementRunList/@ElementType</b> may be used to demote an already <b>Structured PDL</b> to be treated as an <b>Unstructured PDL</b>. Examples of <b>Structured PDL</b> formats include PPML, PPML/VDX, and ISO 16612-2 PDF/VT.</p> <p><b>Imposition Templates</b> select <b>Page Pools</b> to be processed based on their Partition Keys whose values are derived from metadata present in the PDL data (e.g., <b>Layout</b> Partitioned by <b>@DocTags = "Letter"</b> would process all <b>Page Pools</b> of the current Set whose metadata derived Partition Key <b>@DocTags</b> matches <b>"Letter"</b>). See below for more detail.</p> <p>It is important to note that the pages in a <b>Page Pool</b> SHALL be presented to the imposition engine in a well defined order known to the <b>Layout</b> Resource creator (typically reader order) in order for them to be processed correctly.</p>

**Table 6-50: Glossary for Automated Imposition (Sheet 3 of 4)**

Term	Definition
<b>Page Pool List</b>	<p>A <b>Page Pool List</b> refers to a sequence of one or more <b>Page Pools</b> (contiguous or disjoint in the <b>RunList (Document)</b>) aggregated together and treated as a single <b>Page Pool</b> for processing by a selected <b>Imposition Template</b>. For example, if a <b>Page Pool List</b> is constructed from the <b>Page Pools</b>: Chapter1, Chapter2, and Chapter4 as defined in an input <b>RunList (Document)</b>, then the aggregate result is a single pool of pages consisting of the pages from Chapter1, Chapter2 and Chapter4. The order of the pages of the <b>Page Pool List</b> SHALL be processed in the order in which the <b>Page Pools</b> are defined in the <b>RunList (Document)</b>. The boundaries between <b>Page Pools</b> in a <b>Page Pool List</b> are implicitly maintained for use by the imposition processor for making page level sheet surface mapping decisions during processing (e.g., specifying a right side facing pages start at the beginning of each chapter). <b>Page Pools</b> are aggregated into <b>Page Pool Lists</b> through the use of the <b>Layout/@BaseOrdReset</b> Attribute. If <b>@BaseOrdReset = "PagePoolList"</b> then all <b>Page Pools</b> processed by the <b>Imposition Template</b> are aggregated. If <b>@BaseOrdReset = "PagePool"</b>, then each <b>Page Pool</b> is processed separately.</p> <p>It is important to note that the pages in a <b>Page Pool List</b> SHALL be presented to the imposition engine in a well defined order known to the <b>Layout</b> Resource creator (typically reader order) in order for them to be processed correctly.</p>
<b>PDL Metadata</b>	<p>Various PDL formats provide for the definition of key/value pairs within the PDL that MAY be treated as metadata for the purpose of Process parameterization. For example, the metadata key/value pairs specified in the PDL data may identify the type of finished document using <b>@DocumentType = "PostCard" or "Booklet"</b>, which would then affect the selection of which <b>Imposition Template</b> is to be applied.</p> <p>The <b>Imposition</b> Process makes use of metadata to make decisions as to which <b>Page Pools</b> should be processed through an <b>Imposition Template</b>. These decisions are performed by comparing the explicit Partition Key settings for each <b>Imposition Template</b> to the Partition Key/value settings mapped from the PDL for each <b>Page Pool</b> in the current set, and each matching <b>Page Pool</b> is processed through the corresponding <b>Imposition Template(s)</b>.</p> <p>Within an <b>Imposition Template</b>, metadata associated with individual pages MAY also be used to parameterize dynamic mark and slug-line content generation (see example below). Refer to the <b>RunList/MetadataMap</b> Element definition for information on how to specify the mapping of PDL specified metadata values for use by <b>JDF XJDF</b> (e.g., using Partition Keys or GeneralID keys).</p> <p>The <b>PDL Processor</b> SHALL make use of the <b>RunList/MetadataMap</b> to generate Partition Keys, GeneralID and other values during the course of imposition processing. These values SHALL be regenerated as necessary, as the metadata key/value pairs in the PDL change based on which portion of the PDL is being processed.</p>
<b>PDL Processor</b>	A PDL interface that hides details of a particular PDL and syntax, etc. from the imposition engine itself. Its role is to present the structure of the PDL and pools of pages within the PDL structure to the imposition engine in a PDL independent way.
<b>Recipient Set</b>	Set of finished pages produced for a single recipient.
<b>Set Major Processing Order</b>	<b>Set Major Processing Order</b> refers to the scenario when all documents of a set instance are produced before starting on the next set instance; this is the typical processing order for most VDP applications.
<b>Sheet Definition</b>	A branch of an <b>Imposition Template</b> that describes the imposition to be performed for a sheet. <b>Sheet Definitions</b> for automated imposition SHALL be partitioned by <b>@SheetName</b> and <b>@Side</b> .

**Table 6-50: Glossary for Automated Imposition (Sheet 4 of 4)**

Term	Definition
<b>Structured PDL</b>	<p>A <b>Structured PDL</b> defines sequences of groupings of pages. These groupings may be as simple as specifying the set of pages belonging to a chapter or cover of a booklet where such a group is a <b>Page Pool</b>. In the case of Variable Document Printing (VDP) <b>Structured PDLs</b>, there are often multiple sets of content where typically a set instance comprises the content to be delivered to a single recipient. Each set has one or more documents, and documents may be further subdivided into subdocuments in hierarchical fashion. The imposition engine processes each set individually in the sequence specified in the interpretation specified by the <b>RunList</b> that references the <b>Structured PDL</b> data file.</p> <p>The general structure of a <b>Structured PDL</b> is identified by the PDL (PDL specification or PDL instance) itself or the value of the <b>LayoutElementRunList/@ElementType</b> Attribute.</p>
<b>Structured PDL – MultiDocument</b>	<p>For MultiDocument PDL files, the PDL processor supplies the context to the imposition processor that represents the PDL's document structure. This context is defined as</p> <p><b>Set</b> – represents a single set containing all of the documents in the PDL file, therefore the value of <b>@SetIndex</b> SHALL always be 0.</p> <p><b>Document</b> – is always the first hierarchical level in the file.</p> <p><b>SubDoc0 to SubDoc9</b> – represent consecutive levels of the hierarchy below the <b>Document</b> level in the file not including the level representing individual pages. If any level of the hierarchy is not defined, the value of the corresponding <b>@SubDocIndexn</b> is undefined.</p> <p><b>Pages</b> – represent individual pages in the PDL.</p>
<b>Structured PDL – MultiSet</b>	<p>For MultiSet PDL files, the PDL processor supplies the context to the imposition processor that represents the PDL's set and document structure. This context is defined as</p> <p><b>Set</b> – represents a set of related documents.</p> <p><b>Document</b> – is always the first hierarchical level below the <b>Set</b> level. If a MultiSet file contains only Sets with no document or sub-document breaks (no levels are defined below the Set level), all of the pages of the set are considered to be included in a single document therefore the <b>@DocIndex</b> is always 0.</p> <p><b>SubDoc0 to SubDoc9</b> – represent consecutive levels of the hierarchy below the <b>Document</b> level in the file not including the level representing individual pages. If any level of the hierarchy is not defined, the value of the corresponding <b>@SubDocIndexn</b> is undefined.</p> <p><b>Pages</b> – represent individual pages in the PDL.</p> <p><b>Note:</b> the lowest level of the <b>JDF XJDF</b> hierarchy (<b>Set, Document, SubDocn</b>) mapped by the PDL processor represents a <b>Page Pool</b> context.</p>
<b>Unstructured PDL</b>	An <b>Unstructured PDL</b> is a content file consisting of a single set of one or more pages. Typically such a PDL file is considered to be a single document and a single <b>Layout Imposition Template</b> would be applied to the entire set of pages. When a <b>JDF</b> an <b>XJDF</b> imposes structure on such a file either using direct <b>@Page</b> indices or a Partitioned <b>RunList</b> pointing to different page ranges of the file using <b>@EndOfSet, @EndOfDocument</b> Attributes, then the imposition engine will treat the input <b>RunList</b> Resource as a <b>Structured PDL</b> .

#### 6.4.18.2 Variables for Automated Imposition

The imposition engine maintains a set of locally scoped variables that may be referenced during imposition processing. The values of these variables reflect the current context of processing during execution of the Imposition

process. These variables include those described in Section I, “Generating strings with Format and Template” on page 1171, as well as those described in bulleted items below. All variables below are integer variables.

**Table 6-51: Variables for Automated Imposition (Sheet 1 of 2)**

Name	Data Type	Description
<i>CollectIndex</i> ?	integer	Represents a zero based index of the current collect of sheets being generated by an automated <b>Imposition Template</b> from the current <b>Page Pool</b> or <b>Page Pool List</b> being processed. May be greater than zero if <b>Layout/@MaxCollect</b> is specified and is greater than 1.
<i>CollectSheetIndex</i> ?	integer	Is a zero-based index of the current physical or <b>Logical Sheet</b> of the current collect generated by an automated <b>Imposition Template</b> from the current <b>Page Pool</b> or <b>Page Pool List</b> being processed. <b>Logical Sheets</b> are used when <b>Logical Stacks</b> are defined.
<i>ImposedSheetSetIndex</i> ?	integer	Is the 0-based <b>Imposed Sheet Set</b> index.
<i>PoolSheetIndex</i> ?	integer	Is a zero-based index of the current physical or logical sheet generated from the current <b>Page Pool</b> or <b>Page Pool List</b> within an automated <b>Imposition Template</b> . <b>Logical Sheets</b> are used when <b>Logical Stacks</b> are defined. The value of this variable is independent of the number of collects generated by the same automated <b>Imposition Template</b> .
<i>SheetCount</i> ?	integer	Is the current number of physical or logical sheets generated during the processing of the automated <b>Layout Resource</b> . <b>Logical Sheets</b> are used when <b>Logical Stacks</b> are defined. At the beginning of processing of the <b>Layout Resource</b> , the value of this variable is set to zero. The value of this variable may be reset to zero in later <b>Layout Partitions</b> using the <b>Layout/@SheetCountReset</b> Attribute. <b>@SheetCount</b> is always reset to zero at the beginning of processing of a set regardless of the value of <b>Layout/@SheetCountReset</b> .
<i>SubDocIndexn</i> ?	integer	Where <i>n</i> represents any hierarchical structure levels below the level of the current document present in the <b>Structured PDL</b> data to be processed. For example, <b>@SubDocIndex0</b> might represent a collection of chapters in a brochure where its containing parent is at the document level ( <b>@DocIndex</b> is used to indicate the position (index) of the document in its containing Set).
<i>TotalCollects</i> ?	integer	Is the total number of collects generated by an automated <b>Imposition Template</b> from the current <b>Page Pool</b> or <b>Page Pool List</b> being processed.
<i>TotalImposedSheetSets</i> ?	integer	Is the total number of <b>Imposed Sheet Sets</b> defined for the job.
<i>TotalSets</i> ?	integer	Is the total number of recipient sets generated for the Job. Note that in cases where it is used before the end of content imposition, it is necessary for the imposition processor to count the number of sets in the PDL content.

**Table 6-51: Variables for Automated Imposition (Sheet 2 of 2)**

Name	Data Type	Description
<i>TotalSheetCount</i> ?	integer	Is the total number of physical or Logical Sheets generated during the processing of the automated <b>Layout</b> Resource. Logical Sheets are used when Logical Stacks are defined. The value of this variable may be recalculated in later <b>Layout</b> Partitions using the <b>Layout/@SheetCountReset</b> Attribute. <i>@TotalSheetCount</i> is always reset to zero at the beginning of processing of a set regardless of the value of <b>Layout/@SheetCountReset</b> .
<i>TotalSheetsInCollect</i> ?	integer	Is the total number of physical or Logical Sheets that make up the current collect generated by an automated <b>Imposition Template</b> from the current <b>Page Pool</b> or <b>Page Pool List</b> being processed. Logical Sheets are used when Logical Stacks are defined.
<i>TotalSheetsInPool</i> ?	integer	Is the total number of physical or Logical Sheets generated from the current page pool or page pool list within an automated <b>Imposition Template</b> . Logical Sheets are used when Logical Stacks are defined.

The above variables MAY be used for controlling the activation of printer's marks (See **Layout/MarkObject/MarkActivation**). For example:

#### **Example 6-4: Automated Imposition: MarkObject**

This example causes a slug line to be imaged on the bottom center of the first sheet of the set of sheets comprising a signature instance. Here are the details. For **MarkActivation/@Context**, its value of "*CollectIndex*" specifies that the value of **@CollectIndex** is the index used with **MarkActivation/@Index**. For **MarkActivation/@Index**, its value of 0 specifies that the sheet receive the specified slug line if the value of **@CollectIndex** is 0 (i.e., if it is first sheet of the signature instance). **Note:** if **@Index** were "1 4 6", then the slug line would go on the second, fifth and seventh sheets.

TBD 2.x Example.

```
<MarkObject Anchor="BottomCenter" CTM="1 0 0 1 0 0">
  <DeviceMark FontSize="8" Font="MySlugLineFont"/>
  <!--Result: Gender=maile -->
  <JobField JobFormat="Gender=%s" JobTemplate="GeneralID:Gender"/>
  <RefAnchor Anchor="BottomCenter" AnchorType="Sibling" rRef="1000006"/>
  <MarkActivation Context="CollectIndex" Index="0"/>
</MarkObject>
```

#### **6.4.18.3 Execution Model for Automated Imposition**

The **Imposition** Process transforms the sequences of pages contained within a **Page Pool** or **Page Pool List** to a specific sequence of imposed sheet surfaces. The **Imposition Templates** and the order of the **Imposition Templates** defined by the **Layout** Resource explicitly define the page to sheet surface mapping transformation applied by the imposition engine.

The pseudo-code below describes the processing performed by the imposition engine at a high level:

```
For each Set in the order specified in the input RunList (Document)
  For each Imposition Template
    For each Page Pool in the Set
      If the Partition Key conditions for the Imposition Template are satisfied
        then process the Page Pool through the Imposition Template.
```

Thus, each **Layout** Resource Imposition Template is processed in the XML structure order specified. Every Page Pool belonging to the current set is then evaluated against the Partition Keys specified for that Imposition Template to determine if it is to be processed by that Imposition Template.

Since each Page Pool is evaluated for each Imposition Template, it is possible to reuse the same Page Pool with multiple Imposition Templates. For an example algorithm for processing Page Pools through an Imposition Template, see Example O-31, “Algorithm for Processing an Imposition Template” on page 1298.

The **RunList** Resource output from the **Imposition** Process represents a sequence of imposed sheet surfaces where each surface may be represented either by pointing to PDL content where all the input pages are imposed onto single PDL pages, or, when used with a Combined Process may refer to the page set along with imposition instructions to the interpreter using an exchange Resource. The structure of the **Layout** Resource affects the Partition Keys conserved by its output **RunList** (and its referenced content), by conserving all Partition Keys specified in the **Layout** along with generating all of the appropriate Partition Keys, such as **@SetIndex**, **@DocIndex**, **@SheetIndex**. The output **RunList** can be viewed conceptually as a collection of sheet surface pairings (front and back) that conserves information about which **Layout** Imposition Template and Page Pool metadata that was in scope at the time the sheets were generated.

**Note:** **@DocIndex** is always generated even if every set contains only a single document; a set that contains only pages is treated as a set with a single document.

**Note:** **MarkObject/@Ord** works in the same way for automated imposition as for non-automated imposition. In other words, the **@Ord** value corresponds to the page entry described by that absolute **@Ord** position in the **RunList** (Marks).

### Example 6-5: Imposition Template: Layout

Thus, if the **Imposition Template (Layout)** in this example is applied, then the resulting **RunList** Resource conceptually conserves the following Partition Keys: **@SetIndex**, **@SheetIndex**, **@DocTags**, **@DocIndex**, **@SheetName** and **@Side** along with any other in-scope Partition Keys.

Note that in this example, **@SetIndex** and **@DocIndex** are conserved by setting **@EndOfSet** and **@EndOfDocument** respectively in the output **RunList** (**Surface**). In a **Layout** that defines Logical Stacks containing multiple documents or sets within Imposed Sheet Sets, **@SetIndex** and **@DocIndex** would need to be conserved by explicitly setting the value of the **@SetIndex** and **@DocIndex** Partition Keys. The **RunList** is expected to be partitioned by **@Run**, where each **@Run** represents one or more Sheets, each having at least one surface either implied by **RunList/@SheetSides**, or explicitly Partitioned by **@Side**.

TBD 2.x Example.

```
<Layout Class="Parameter" ID="L1" Status="Available"
      PartIDKeys="DocTags SheetName Side" Automated="true">
  <Layout DocTags="CoverLetter">
    <Layout SheetName="CoverLetterSheets">
      <Layout Side="Front">
        <ContentObject Ord="0" CTM="1 0 0 1 0 0"/>
      </Layout>
    </Layout>
  </Layout>
  <Layout DocTags="Booklet">
    <Layout SheetName="BookletSheets">
      <Layout Side="Front">
        <ContentObject Ord="0" CTM="1 0 0 1 0 0"/>
        <ContentObject Ord="-1" CTM="1 0 0 1 0 0"/>
      </Layout>
      <Layout Side="Back">
        <ContentObject Ord="1" CTM="1 0 0 1 0 0"/>
        <ContentObject Ord="-2" CTM="1 0 0 1 0 0"/>
      </Layout>
    </Layout>
  </Layout>
</Layout>
```

```
</Layout>
</Layout>
```

### Example 6-6: Output RunList (Surface)

TBD 2.x Example.

```
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="n_000000"
      JobID="JobID" JobPartID="n_000000" Status="Waiting" Type="Combined"
      Types="Interpreting Rendering DigitalPrinting Stitching" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="Combined">
  <AuditPool>
    <Created ID="a_000001"TimeStamp="2008-10-23T11:14:03+02:00"/>
  </AuditPool>
  <!--Generated by the CIP4 Java open source JDF Library version :
      CIP4 JDF Writer Java 1.3 BLD 52
  -->
  <ResourcePool>
    <Component Class="Quantity" ID="r_000002" Status="Unavailable"
               ComponentType="Sheet" />
    <DigitalPrintingParams Class="Parameter" ID="r_000003" Status="Available"/>
    <InterpretingParams Class="Parameter" ID="I_000001" Status="Available"/>
    <StitchingParams Class="Parameter" ID="SP_000001" Status="Available"/>
    <Media Class="Consumable" ID="r_000004" Status="Available"/>
    <RunList Class="Parameter" ID="r_000005" PartIDKeys="Run" Status="Unavailable">
      <RunList EndOfSet="true" NPage="1" Pages="0" Run="1" SheetSides="Front">
        <LayoutElement Class="Parameter" ContentDataRefs="l_000007">
          <ContentListRef rRef="r_000006"/>
        </LayoutElement>
      </RunList>
      <RunList EndOfSet="true" NPage="4" Pages="1 ~ 4" Run="2"
              SheetSides="FrontBack">
        <LayoutElement Class="Parameter" ContentDataRefs="l_000008">
          <ContentListRef rRef="r_000006"/>
        </LayoutElement>
      </RunList>
      <RunList EndOfSet="true" NPage="1" Pages="5" Run="3" SheetSides="Front">
        <LayoutElement Class="Parameter" ContentDataRefs="l_000007"/>
      </RunList>
      <RunList EndOfSet="true" NPage="4" Pages="6 ~ 9" Run="4"
              SheetSides="FrontBack">
        <LayoutElement Class="Parameter" ContentDataRefs="l_000008">
          <ContentListRef rRef="r_000006"/>
        </LayoutElement>
      </RunList>
    </RunList>
    <ContentList Class="Parameter" ID="r_000006" Status="Unavailable">
      <ContentData ID="l_000007">
        <ContentMetaData>
          <Part DocTags="CoverLetter" SheetName="CoverLetterSheet"/>
        </ContentMetaData>
      </ContentData>
      <ContentData ID="l_000008">
        <ContentMetaData>
          <Part DocTags="BrochureSheets" SheetName="BrochureSheet"/>
        </ContentMetaData>
      </ContentData>
    </ContentList>
  </ResourcePool>
</JDF>
```

```

</ResourcePool>
<ResourceLinkPool>
  <ComponentLink CombinedProcessIndex="3" Usage="Output" rRef="r_000002"/>
  <DigitalPrintingParamsLink CombinedProcessIndex="2" Usage="Input"
    rRef="r_000003"/>
  <MediaLink CombinedProcessIndex="1 2" Usage="Input" rRef="r_000004"/>
  <RunListLink CombinedProcessIndex="0 2" Usage="Input" rRef="r_000005"/>
  <InterpretingParamsLink Usage="Input" rRef="I_000001"/>
  <StitchingParamsLink Usage="Input" rRef="SP_000001"/>
</ResourceLinkPool>
</JDF>

```

## 6.4.18.4 Configuration for Various Automated Impositions

### 6.4.18.4.1 Using Logical Stacks

An Imposed Sheet Set output by the imposition engine can describe multiple **Logical Stacks**. Each of these **Logical Stacks** is placed onto a well-defined section of the sheet definitions, and after printing will typically be cut in a post-press finishing operation, generating the representative physical stacks.

**Logical Stacks** are configured through the use of two mechanisms:

- The **Layout**/**LogicalStackParams** Element specifies the control for each **Logical Stack** including how **Logical Sheets** are sequenced onto a **Logical Stack**, and restrictions on how **Logical Sheets** of **Recipient Sets** can span **Logical Stacks** and **Imposed Sheet Sets**.
- The **abstract PlacedObject PlacedObject**/**@LogicalStackOrd** is used to assign individual placed object definitions to a **Logical Stack**. Each **PlacedObject PlacedObject** defines the CTM for placing that object onto the **Logical Stack**. Each of the **PlacedObject PlacedObject** Elements will have the same **@Ord** value across the **Logical Stacks**.

To define a **Logical Stack**, the **Layout**/**LogicalStackParams** Element SHALL be present in the root of the **Layout** Resource. This Element configures the imposition engine to place **Logical Sheets** within **Logical Stacks**. The maximum number of sheets that can make up an **Imposed Sheet Set** is specified by **LogicalStackParams**/**@MaxStackDepth**. Stacks are identified through the use of **LogicalStackParams/Stack**/**@LogicalStackOrd**; the first **Logical Stack** is **@LogicalStackOrd = "0"**, the 2nd is **"1"**, etc.

All **Logical Stacks** defined by **Layout**/**LogicalStackParams** SHALL be used in all **Imposition Templates**, with the exception of an optional sheet (see **Layout**/**SheetCondition** in Section 8.87.10, “**SheetCondition**” on page 726) having a **@Condition** of **"LogicalStackSetBegin"** or **"LogicalStackSetEnd"** – these optional **Logical Sheets** are placed into a specific **Logical Stack** as specified by the **PlacedObject PlacedObject**/**@LogicalStackOrd** in the optional sheet.

The imposition works by traversing each **Logical Stack** (in the sequence specified by **LogicalStackParams/Stack**/**@LogicalStackSequence**). Each **Imposition Template** is processed where **PlacedObject PlacedObject** Elements are evaluated for one of two cases:

- 1 The **PlacedObject PlacedObject** has no **@LogicalStackOrd**. In this case, the **PlacedObject PlacedObject** is considered to be a physical sheet-level object, and is placed once at the start of processing for a physical sheet. Note that only information relevant to a physical sheet (such as **@SheetIndex**) is in scope for use in generating dynamic marks. An example of a physical sheet-level mark is a cut mark for where to cut the stacks.
- 2 The **PlacedObject PlacedObject** has a **@LogicalStackOrd**. In this case, only **PlacedObject PlacedObject** Elements that have a matching **@LogicalStackOrd** for the current **Logical Stack** being processed are placed. Note that information relevant to documents and pages (such as **@CollectIndex** or **@TotalSheetsInPool**) is in scope for use in generating dynamic marks.

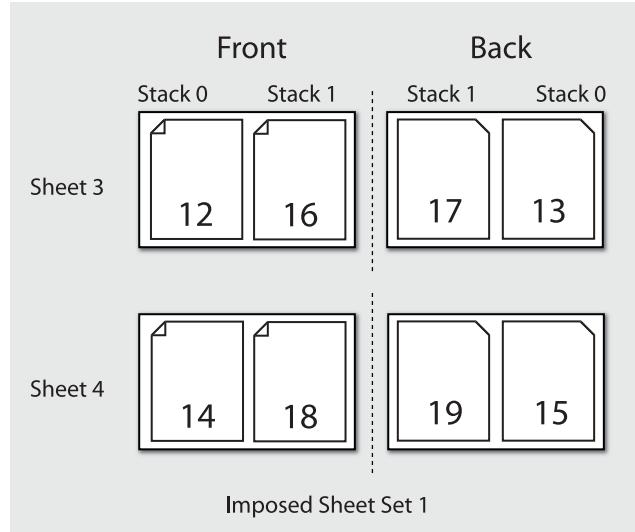
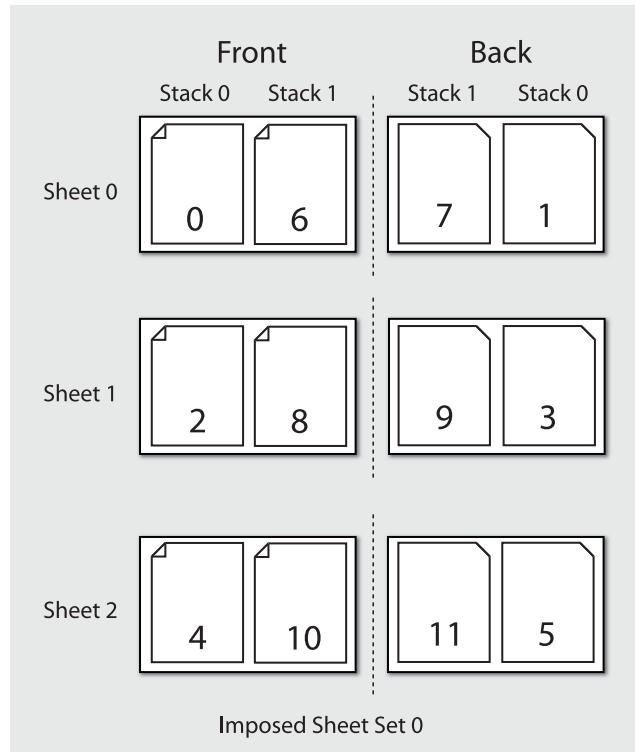
When insufficient number of pages remain to complete all **Logical Stacks** in an **Imposed Sheet Set**, the imposition engine SHALL distribute all content evenly across **Logical Stacks** in order to minimize the number of sheets in

that **Imposed Sheet Set**, while still honoring any restrictions specified in **Layout/SheetCondition**, **LogicalStackParams/@Restrictions** or **Layout/PageCondition**.

#### 6.4.18.4.1.1 Imposition for Cut and Stack

This example shows how to configure for cut and stack imposition. Cut and stack produces a sequence of **Imposed Sheet Sets**, where each **Imposed Sheet Set** is cut into separate physical stacks, then each physical stack is restacked into a larger stack. This simple example is configured for 2 **Logical Stacks** with a **@MaxStackDepth = "3"**, and is filled with 20 pages. Content on the back of the sheet is placed head-to-head with the front content.

**Note:** that the 2nd **Imposed Sheet Set** has distributed the remaining 8 pages onto 2 sheets.

**Figure 6-1: Imposition for Cut and Stack**

described by specifying negative *@Ord* values for the ContentObject Elements that are filled with pages from the back of the RunList in automated imposition. The following code illustrates how absolute *@Ord* values are assigned based on sheet iterations.

**Note:** Layout/@MaxCollect specifies the maximum number of sheets per signature (e.g., in a perfect bound book). @MaxCollect specifies the maximum number of loops prior to restarting the signature.

### Example 6-7: Automated Imposition: Ord Values

TBD 2.x Example.

```
/*
 * calculates a "real" ord value in an automated layout
 *
 * @param ord the Value of Ord in the layout
 * @param nPages the total number of pages that are consumed by the Layout, if
 *   frontOffset!=0 the pages before frontOffset are NOT counted
 * @param loop which sheet loop are we on?
 * @param maxOrdFront number of pages consumed from the front of the list
 * @param maxOrdBack positive number of pages consumed from the back of the list
 * @param frontOffset page number of the first page to be placed on ord 0 in loop 0
 * @return the pge to assign in this Ord, -1 if no page fits
 */

public static int calcOrd(int ord, int nPages, int loop, int maxOrdFront,
    int maxOrdBack, int frontOffset){
    final int maxOrd = maxOrdFront + maxOrdBack;
    if(maxOrd*loop >= nPages){
        return -1; // we are in a loop that has no remaining pages
    }
    int page;
    if(ord >= 0){ // count from front
        page = ord + loop*maxOrdFront;
    } else { // the page to put on -1
        int end = nPages + maxOrd - 1 - ((nPages +maxOrd - 1)%maxOrd);
        page = end - loop*maxOrdBack+ord;
    }
    // if a page evaluates to e.g. 10 and we only have 9 pages, ciao
    return page< nPages? page+frontOffset : -1;
}
```

#### 6.4.18.4.3 Selecting from Multiple Imposition Templates When Processing an unstructured PDL

In this case, the imposition engine optionally selects between **Imposition Templates** based on the quantity of pages present in the **Page Pool**:

**Layout/@OrdsConsumed** restricts the pages of a **Page Pool** to which a given **Imposition Template** of an automated layout is applied. It is designed for use with **Unstructured PDLS** that only allow access to pages by index. For instance, a wraparound cover might be specified as page 0 and therefore a special cover sheet with only one ContentObject can be defined whereas the body sheets might contain 2 ContentObject Elements per surface.

**@OrdsConsumed** is only used when you have one **Page Pool** and you want to restrict the number of pages to be processed for a given **Imposition Template**.

#### 6.4.18.4.4 Imposition for Start of a Chapter

The **Layout/PageCondition** Element may be used to specify where on a sheet a first page of a chapter (**Page Pool**) starts. It does this by specifying which ContentObject Elements on a sheet may not be used to place the first page of a chapter. An example may be found after Table 8-166, “PageCondition Element” on page 724.

#### 6.4.18.4.5 Imposition for Regenerating Sheet Surfaces

There are two methods to configure the imposition engine for re-imposing sheet surfaces:

- 1 **Re-imposition by sheet or sheet surface:** A specific selection of sheets or surfaces imposed by the imposition engine may be selected using the controls of the [RunListLink ParameterSet/](#) [\[@Name="RunList"\]](#) to the [RunList \(Surface\)](#) output from the **Imposition** Process.
- 2 **Re-imposition of sheets from content:** Alternatively the [RunListLink ParameterSet/](#) [\[@Name="RunList"\]](#) to the [RunList \(Document\)](#) input to the imposition engine may be Partitioned to select specific content to be re-imposed.

For example, if the [@Metadata0](#) Partition Key has been configured to represent a recipient record number in a VDP job, that Partition Keys can be used to select a specific recipient record(s) for which to re-impose sheet surfaces.

Details on how to configure [ResourceLink Resource/PartPart](#) elements for sheet re-imposition including how to correctly regenerate dynamic sheet marks may be found at [Section 3.15.7, “Linking to Resources” on page 140](#) [Section 3.12, “ResourceSet” on page 81](#) and [@IgnoreContext](#) in Table 8-273, “RunList Resource” on page 873.

#### 6.4.18.4.6 Imposition for Document-Major Processing of a VDP Structured PDL

To process a Structured PDL in Document Major Processing Order, the [RunList \(Document\)](#) input [ResourceLink ResourceSet](#) SHALL contain [PartResource/Part](#) Elements specifying the order in which documents SHALL be processed. This effects a virtual reordering of the content present in the PDL. Details on how to configure [ResourceLink Resource/PartPart](#) Elements for content reordering may be found at [Section 3.15.7, “Linking to Resources” on page 140](#) [Section 3.12, “ResourceSet” on page 81](#) and [@IgnoreContext](#) in Table 8-273, “RunList Resource” on page 873.

#### 6.4.19 InkZoneCalculation

The **InkZoneCalculation** Process takes place in order to preset the ink zones before printing. The **Preview** data are used to calculate a coverage profile that represents the ink distribution along and perpendicular to the ink zones within the printable area of the preview. The **InkZoneProfile** can be combined with additional, vendor-specific data in order to preset the ink zones and the oscillating rollers of an offset printing press.

**Table 6-52: InkZoneCalculation – Input Resources**

Name	Description
<a href="#">InkZoneCalculationParams ?</a> <a href="#">Modified in JDF 1.3</a>	Specific information about the printing press geometry (e.g., the number of zones) to calculate the <b>InkZoneProfile</b> .
<a href="#">Layout ?</a> <a href="#">New in JDF 1.1</a>	Specific information about the <b>Media</b> (including type and color) and about the Sheet (placement coordinates on the printing cylinder).
<a href="#">Preview ?</a>	A low to medium resolution bitmap file representing the content to be printed.
<a href="#">Sheet ?</a> <a href="#">Deprecated in JDF 1.1</a>	Specific information about the <b>Media</b> (including type and color) and about the Sheet (placement coordinates on the printing cylinder). Replaced by <b>Layout</b> in JDF 1.1.
<a href="#">TransferCurvePool ?</a>	Function to apply <a href="#">ContactCopying DigitalPrinting</a> and <a href="#">ConventionalPrinting</a> Process characteristics (e.g., press, climate and substrate) under certain standardized circumstances. This function can be used to generate an accurate <b>InkZoneProfile</b> .
Generic Input Resources *	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-53: InkZoneCalculation – Output Resources**

Name	Description
<a href="#">InkZoneProfile ?</a>	Contains information about ink coverage along and perpendicular to the ink zones for a specific press geometry.

### 6.4.20 Interpreting

The interpreting Device consumes page descriptions and instructions for controlling the marking Device (e.g., imagewriter, digital printers, CTP, digital printing Combined Processes, etc.). The parsing of graphical content in the page descriptions produces a canonical display list of the elements to be drawn on each page.

The interpreter SHALL act upon any Device control instructions that affect the physical functioning of the marking Device such as media selection and page delivery and implied **ColorSpaceConversion**. **Media** selection determines which type of medium is used for printing and where that medium can be obtained. Page delivery controls the location, orientation and quantity of physical output.

The interpreter is also responsible for resolving all system Resource references. This includes handling font substitutions and dealing with Resource aliases. However, the interpreter specifically does not get involved with any functions of the Device that could be considered finishing features such as stapling, duplexing and collating.

**Table 6-54: Interpreting – Input Resources**

Name	Description
<b>ColorantControl</b> ? <a href="#">Modified in JDF 1.1</a>	Identifies the color model used by the Job.
<b>FontPolicy</b> ?	Describes the behavior of the font machinery in absence of requested fonts.
<b>InterpretingParams</b> ?	Provides the parameters needed to interpret the PDL pages specified in the <b>RunList</b> Resource.
<b>PDLResourceAlias</b> *	These Resources allow a JDF to reference Resources which are defined in a Page Description Language (PDL). For example, a <b>PDLResourceAlias</b> Resource could refer to a font embedded in a PostScript file.
<b>RunList</b> ?	This Resource identifies a set of PDL pages or surfaces which will be interpreted.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-55: Interpreting – Output Resources**

Name	Description
<b>InterpretedPDLData</b> ? <a href="#">Deprecated in JDF 1.2</a>	Pipe of streamed data which represents the results of <b>Interpreting</b> the pages in the <b>RunList</b> . In JDF 1.2 and beyond, a <b>RunList</b> with <b>InterpretedPDLData</b> Subelements describes the output content data for <b>Interpreting</b> .
<b>RunList</b> ? <a href="#">New in JDF 1.2</a>	Pipe of streamed data which represents the results of <b>Interpreting</b> the pages in the <b>RunList</b> . The data is specified in <b>InterpretedPDLData</b> Subelements. The format and detail of these is implementation specific. In general, it is assumed that the <b>Interpreting</b> and <b>Rendering</b> Processes are tightly coupled and that there is no value in attempting to develop a general specification for the format of this data.

### 6.4.21 LayoutElementProduction

This Process describes the creation of page elements. It also explains how to create a layout that can put together all of the necessary page elements, including text, bitmap images, vector graphics, PDL or application files such as Adobe InDesign®, Adobe PageMaker® and Quark XPress®. The elements might be produced using any of a number of various software tools. This Process is often performed several times in a row before the final **LayoutElement RunList**, representing a final **page** layout file, is produced.

**Table 6-56: LayoutElementProduction – Input Resources (Sheet 1 of 2)**

Name	Description
<b>LayoutElement</b> *	Metadata about the PDL or application file, bitmap image file, text file, vector graphics file, etc.
<b>LayoutElementProductionParams</b> ? <a href="#">New in JDF 1.3</a>	The parameters for the <b>LayoutElementProduction</b> Process.

**Table 6-56: LayoutElementProduction – Input Resources (Sheet 2 of 2)**

Name	Description
<b>RunList</b> ?	Location or metadata about the PDL or application file, bitmap image file, text file, vector graphics file, etc.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-57: LayoutElementProduction – Output Resources**

Name	Description
<b>LayoutElement</b> ?	A URL of the PDL or application file is produced by this Process. Exactly one of <b>LayoutElement</b> or <b>RunList</b> SHALL be specified.
<b>RunList</b> ?	A <b>RunList</b> of a <b>LayoutElement</b> Resource of <i>@ElementType "Page"</i> or <i>"Document"</i> is produced if this <b>LayoutElementProduction</b> task is the last Process of type <b>LayoutElementProduction</b> . Exactly one of <b>LayoutElement</b> or <b>RunList</b> SHALL be specified.

#### 6.4.22 LayoutPreparation

[New in JDF 1.1](#)

The **LayoutPreparation** Process specifies the process of defining the **Layout** Resource for the **Imposition** Process. Note that it is possible to create a Combined Process that includes both **LayoutPreparation** and **Imposition**. In this case, the **Layout** and **RunList (Marks)** Resource would not be explicitly defined, since they are exchange Resources between the two Processes.

**Table 6-58: LayoutPreparation – Input Resources**

Name	Description
<b>LayoutPreparationParams</b>	Set of parameters needed to control the <b>LayoutPreparation</b> Process.
<b>RunList (Document)</b> ? <a href="#">Modified in JDF 1.2</a>	List of documents and/or pages that will be input into the layout. Note that this <b>RunList</b> is for information only and not modified by the <b>LayoutPreparation</b> Process.
<b>RunList (Marks)</b> ?	List of marks that will be input into the layout. These are typically printer's marks such as fold marks, cut marks, punch marks or color bars.

**Table 6-59: LayoutPreparation – Output Resources**

Name	Description
<b>Layout</b> ?	The layout of the document to be imposed.
<b>RunList (Marks)</b> ?	List of marks that is to be used as input of the following <b>Imposition</b> Process.
<b>TransferCurvePool</b> ?	Definition of the transfer curves and coordinate systems of the Devices.

#### 6.4.23 LayoutShifting

[New in JDF 1.4](#)

**LayoutShifting** specifies how to apply separation dependent shifts on a flat or objects on a press sheet.

The exact ordering of the process within the **RIPing Interpreting, Rendering** and **ImageSetting** and the Elements referenced by Input and Output **RunList** Elements are not defined by the specification since it is implementation dependent. **LayoutShifting** MAY occur on display lists, raster data or in the image setting Hardware.

**Table 6-60: LayoutShifting – Input Resources**

Name	Description
<b>LayoutShift ?</b>	Parameters for the <b>LayoutShifting</b>
<b>RunList ?</b>	References the input objects/flats to apply shifting to.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-61: LayoutShifting – Output Resources**

Name	Description
<b>RunList ?</b>	The output <b>RunList</b> references the image data that the separation dependent layout shifts applied to.

#### 6.4.24 PageAssigning

New in JDF 1.4

This Process sorts the possibly-unordered pages from one or more input **RunList** Resources into reader's order and places the result in the output **RunList**.

**Table 6-62: PageAssigning – Input Resources**

Name	Description
<b>PageAssignParams ?</b>	Container for future or proprietary extensions.
<b>RunList +RunList *</b>	One or more <b>RunList</b> Resources with potentially unsorted pages
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-63: PageAssigning – Output Resources**

Name	Description
<b>RunList ?</b>	<b>RunList</b> with pages sorted in reader's order so that it can be input to an <b>Imposition</b> Process (i.e., the sequence of pages in <b>RunList</b> corresponds to <b>Layout/ContentObject/@Ord</b> ).

#### 6.4.25 PDFToPSConversion

The **PDFToPSConversion** Process controls the generation of PostScript from a single PDF document. This Process MAY be used at any time in a host-based PDF workflow to exit to PostScript for use of tools that consume such data. Additionally, it MAY be used to actively control the physical printing of data to a Device that consumes PostScript data. The JDF model of this MAY include a **PDFToPSConversion** Process in a Combined Process Node with a **PDFToPSConversion** Process.

It is RECOMMENDED to replace **PDFToPSConversion** with the combination of **Interpreting** and **PDLCreation** Processes.

**Table 6-64: PDFToPSConversion – Input Resources**

Name	Description
<b>PDFToPSConversionParams ?</b>	Set of parameters needed to control the generation of PostScript.
<b>RunList ?</b>	List of documents and pages to be converted to PostScript.

**Table 6-65: PDFToPSConversion – Output Resources**

Name	Description
<b>RunList</b> ?	Stream or streams of resulting PostScript code. This PostScript code can end up physically stored in a file or be piped to another Process. <b>PDFToPSConversionParams/@GeneratePageStreams</b> determines whether there is a single stream generated for all pages in the <b>RunList</b> or whether each page is generated in to a separate consecutive stream.

## 6.4.26 PDLCreation

[New in JDF 1.3](#)

The **PDLCreation** Device consumes the display list of graphical elements generated by an **Interpreting**, **RasterReading** or a **ByteMap** **ByteMap** and produces a new PDL output **RunList** based on the selected Output Resource parameters.

**Table 6-66: PDLCreation – Input Resources**

Name	Description
<b>ImageCompressionParams</b> ?	This Resource provides a set of controls that determines how images will be compressed in the resulting PDL pages.
<b>PDLCreationParams</b> ?	These parameters control the operation of the Process that interprets the display list and produces the resulting PDL pages.
<b>RunList</b> ?	This Resource is a Pipe of streamed data that represents a Device independent display list structure. The <b>RunList</b> SHALL specify either an <b>InterpretedPDLData</b> or <b>ByteMap</b> a <b>ByteMap</b> Element, but not both.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-67: PDLCreation – Output Resources**

Name	Description
<b>RunList</b> ?	This Resource identifies the location of the resulting PDL file(s). If the <b>FileSpec/@MimeType</b> is specified, then the value SHALL match <b>PDLCreationParams/@MimeType</b> . If not specified, then <b>PDLCreationParams/@MimeType</b> is inserted.

## 6.4.27 Preflight

Preflighting is the process of examining the components of a print Job to ensure that the Job will print successfully and with the expected results. Preflight checks can be performed on each document or finished page identified within the associated **RunList** Resource.

Preflighting a file is generally a two-step process. First, the documents are analyzed and compared to the set of tests. Then, a preflight report is built to list the encountered issues (according to the tests).

Agents record the instructions for, and Devices record the results of, preflight operations in JDF Jobs, using two types of Resources: **PreflightParams** and **PreflightReport**.

**Table 6-68: Preflight – Input Resources (Sheet 1 of 2)**

Name	Description
<b>PreflightParams</b> ?	A specified list of tests against which documents and/or pages are to be tested.
<b>PreflightReportRulePool</b> ? <a href="#">Modified in JDF 1.4</a>	A list of rules used to build the <b>PreflightReport</b> . Those rules are attached to actions in the <b>ActionPool</b> . <b>Modification Note:</b> starting with JDF 1.4, this Resource becomes optional.

**Table 6-68: Preflight – Input Resources (Sheet 2 of 2)**

Name	Description
RunList ?	The list of documents and/or pages to be preflighted.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-69: Preflight – Output Resources**

Name	Description
PreflightReport ?	PreflightReport is a container for logging information that is generated by the Preflight Process.
RunList ?	The list of output documents that were repaired by the preflight process.

### 6.4.28 PreviewGeneration

The **PreviewGeneration** Process produces a low resolution **Preview** of each separation that will be printed. The **Preview** can be used in later Processes such as **InkZoneCalculation**. The **PreviewGeneration** Process typically takes place after **Imposition**, **Interpreting**, **Rendering** or **RIPing** **RIPing** ####

The **PreviewGeneration** can be performed in one of the following two ways: 1) the imaged printing plate is scanned by a conventional plate scanner or 2) medium to high resolution digital data are used to generate the **Preview** for the separation(s). The extent of the PDL coordinate system (as specified by the **MediaBox** Attribute, the resolution of the preview image, and width and height of the image) SHALL fulfill the following requirements:

$$\text{MediaBox-length} / 72 * \text{x-resolution} = \text{width} \pm 1$$

$$\text{MediaBox-height} / 72 * \text{y-resolution} = \text{height} \pm 1$$

A gray value of 0 represents full ink, while a value of 255 represents no ink (see the DeviceGray color model in [PS] Chapter 4.8.2).

#### Rules for the Generation of the Preview Image

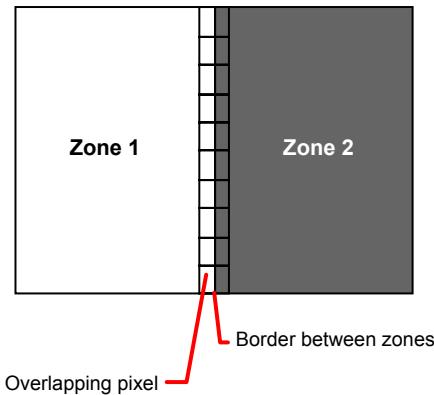
To be useful for the ink consumption calculation, the preview data SHALL be generated with an appropriate resolution. This means not only spatial resolution, but also color or tonal resolution. Spatial resolution is important for thin lines, while tonal resolution becomes important with large areas filled with a certain tonal value. The maximum error caused by limited spatial and tonal resolution SHOULD be less than 1%.

#### Spatial Resolution

Since some pixels of the preview image might fall on the border between two zones, their tonal values SHALL be split up. In a worst case scenario, the pixels fall just in the middle between a totally white and a totally black zone. In this case, the tonal value is 50%, but only 25% contributes to the black zone. With the resolution of the preview image and the zone width as variables, the maximum error can be calculated using the following equation:

$$\text{error}[\%] = \frac{100}{4 * \text{resolution}[L / mm] * \text{zone\_width}[mm]}$$

For zone width broader than 25 mm, a resolution of 2 lines per mm will always result in an error less than 0.5%. Therefore, a resolution of 2 lines per mm (equal to 50.8 dpi) is suggested.

**Figure 6-2: Worst case scenario for area coverage calculation**

### Tonal Resolution

The kind of error caused by color quantization depends on the number of shades available. If the real tonal value is rounded to the closest (lower or higher) available shade, the error can be calculated using the following equation:

$$\text{error}[\%] = \frac{100}{2 * \text{number\_of\_shades}}$$

Therefore, at least 64 shades SHOULD be used.

### Line Art Resolution

When rasterizing line art elements, the minimal line width is 1 pixel, which means 1/resolution. Therefore, the relationship between the printing resolution and the (spatial) resolution of the preview image is important for these kind of elements. In addition, a specific characteristic of PostScript RIPs adds another error: within PostScript, each pixel that is touched by a line is set. Tests with different PostScript Jobs have shown that a line art resolution of more than 300 dpi is normally sufficient for ink-consumption calculation.

### Conclusion

There are quite a few different ways to meet the requirements listed above. The following list includes several examples:

- The Job can be RIPed with 406.4 dpi monochrome.
- With anti-aliasing, the image data can be filtered down by a factor of 8 in both directions. This results in an image of 50.8 dpi with 65 color shades.
- High resolution data can also be filtered using anti-aliasing. First, the RIPed data, at 2540 dpi monochrome, are taken and filtered down by a factor of 50 in both directions. This produces an image of 50.8 dpi with 2501 color shades. Finally those shades are mapped to 256 shades, without affecting the spatial resolution.

Rasterizing a Job with 50.8 dpi and 256 shades of gray is not sufficient. The problem in this case is the rendering of thin lines (see Line Art Resolution above).

### Recommendations for Implementation

The following three guidelines are strongly RECOMMENDED:

- The resolution of RIPed line art SHOULD be at least 300 dpi.
- The spatial resolution of the preview image SHOULD be approximately 20 pixel/cm (= 50.8 dpi).
- The tonal resolution of the preview image SHOULD be at least 64 shades.

**Table 6-70: PreviewGeneration – Input Resources**

Name	Description
<b>ColorantControl</b> ? <a href="#">New in JDF 1.1</a>	The <b>ColorantControl</b> Resources that define the ordering and usage of inks in print modules. Needed for generating thumbnails.
<b>ExposedMedia</b> ?	The <b>PreviewGeneration</b> Process can use an exposed printing plate to produce a <b>Preview</b> Resource. This task is performed using an analog plate-scanner. Exactly one of <b>ExposedMedia</b> , <b>Preview</b> or <b>RunList</b> SHALL be specified in any <b>PreviewGeneration</b> Process.
<b>Preview</b> ? <a href="#">New in JDF 1.1</a>	Medium or low resolution bitmap file that can be used for calculation of overviews and thumbnails. Exactly one of <b>ExposedMedia</b> , <b>Preview</b> or <b>RunList</b> SHALL be specified in any <b>PreviewGeneration</b> Process.
<b>PreviewGenerationParams</b> ?	Parameters specifying the size and the type of the preview.
<b>RunList</b> ?	High resolution bitmap data are consumed by the <b>PreviewGeneration</b> Process. These data represent the content of a separation that is recorded on a printing plate or other such item. Exactly one of <b>ExposedMedia</b> , <b>Preview</b> or <b>RunList</b> SHALL be specified in any <b>PreviewGeneration</b> Process.
<b>TransferCurvePool</b> ? <a href="#">New in JDF 1.1</a>	Area coverage correction and coordinate transformations of the Device.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-71: PreviewGeneration – Output Resources**

Name	Description
<b>Preview</b> ?	The <b>Preview</b> data are comprised of low to medium resolution bitmap files representing, for example, the content of a separation that is recorded on a printing plate or other such item. A <b>Preview</b> can also be used to visualize Resources, such as thumbnail images.

#### 6.4.29 Proofing

[Deprecated in JDF 1.2](#)

The **Proofing** Process is deprecated in JDF/1.2. Instead, use a Combined Process to produces the hard proof (e.g., one that includes the **ImageSetting**, **ConventionalPrinting** or **DigitalPrinting** Process). Then input the hard proof to a separate **Approval** Process. See Section P.4.10, “Proofing” on page 1330 for details of this deprecated Process. In JDF 1.2 and beyond, proofing is a Combined Process.

#### 6.4.30 PSToPDFConversion

This section defines the controls needed to invoke a Device that accepts a PostScript stream and produces a set of PDF pages as output.

It is RECOMMENDED to replace **PSToPDFConversion** with the combination of **Interpreting** and **PDLCreation** Processes.

**Table 6-72: PSToPDFConversion – Input Resources (Sheet 1 of 2)**

Name	Description
<b>FontParams</b> ?	These parameters determine how the conversion Process will handle font errors encountered in the PostScript stream.
<b>ImageCompressionParams</b> ?	This Resource provides a set of controls that determines how images will be compressed in the resulting PDF pages.

**Table 6-72: PStoPDFConversion – Input Resources (Sheet 2 of 2)**

Name	Description
PStoPDFConversionParams ?	These parameters control the operation of the Process that interprets the PostScript stream and produces the resulting PDF pages.
RunList ?	This Resource specifies where the PostScript stream is to be found.

**Table 6-73: PStoPDFConversion – Output Resources**

Name	Description
RunList ?	This Resource identifies the location of the resulting PDF pages.

### 6.4.31 RasterReading

New in JDF 1.3

The **RasterReading** Device consumes raster graphic formatted files into a display list structure as the principal element to be drawn on each page. The **RasterReading** Process is not a stand-alone Process but is used in conjunction with processing and rendering Processes in a Combined Process such as **Rendering** or **PDLCreation**.

**Table 6-74: RasterReading – Input Resources**

Name	Description
RasterReadingParams ?	Additional parameters for reading raster files.
RunList ?	This Resource identifies a set of raster pages or surfaces that will be inserted into the display list. This Resource SHALL reference <b>ByteMap</b> <b>ByteMap</b> images.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-75: RasterReading – Output Resources**

Name	Description
RunList ?	Pipe of streamed data that represents the results of <b>RasterReading</b> the pages in the input RunList. The format and detail are implementation dependent. The RunList SHALL specify an <b>InterpretedPDLData</b> Element that describes the output content data for <b>RasterReading</b> .

### 6.4.32 Rendering

The **Rendering** Process consumes the display list of graphical elements generated by the **Interpreting** or **RasterReading** Process. It converts the graphical elements according to the geometric and graphic state information contained within the display list, combined with the **RenderingParams** information to produce binary rasterized data suitable for Processes which consume **ByteMap** **ByteMap** information.

**Table 6-76: Rendering – Input Resources (Sheet 1 of 2)**

Name	Description
ImageCompressionParams ? <a href="#">New in JDF 1.5</a>	Allows definition of compressed Raster Images
InterpretedPDLData ? <a href="#">Deprecated in JDF 1.2</a>	Pipe of streamed data that represents the results of <b>Interpreting</b> the pages in the RunList. In JDF 1.2 and beyond, a RunList/InterpretedPDLData Subelement describes the input content data for <b>Rendering</b> .

**Table 6-76: Rendering – Input Resources (Sheet 2 of 2)**

Name	Description
<b>Media ?</b> <a href="#">Deprecated in JDF 1.1</a>	This Resource provides a description of the physical media which will be marked. The physical characteristics of the media can affect decisions made during <b>Rendering</b> .
<b>RenderingParams ?</b>	This Resource describes the format of the byte maps to be created and other specifics of the <b>Rendering</b> Process.
<b>RunList ?</b> <a href="#">New in JDF 1.2</a>	Pipe of streamed data that represents the results of <b>Interpreting</b> or <b>RasterReading</b> the pages in the input <b>RunList</b> . The data is specified in <b>InterpretedPDLData</b> Subelements. The format and detail of these is implementation specific. In general, it is assumed that the <b>Interpreting</b> , <b>RasterReading</b> , <b>Rendering</b> and <b>PDLCreation</b> are tightly coupled and that there is no value in attempting to develop a general specification for the format of this data.  <b>Modification note:</b> starting with JDF 1.4, all text replaced by text from <b>RunList</b> in Output Resource
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-77: Rendering – Output Resources**

Name	Description
<b>RunList ?</b>	Pipe of streamed data that represents the results of <b>Rendering</b> . This <b>RunList</b> MAY be consumed by any following Process that consumes raster data, including <b>PDLCreation</b> , <b>ImageSetting</b> or <b>DigitalPrinting</b> . The data MAY be specified in <b>ByteMap</b> sub-elements. In general, it is assumed that the <b>Interpreting</b> , <b>RasterReading</b> , <b>Rendering</b> and <b>PDLCreation</b> are tightly coupled and that there is no value in attempting to develop a general specification for the format of this data.  <b>Modification note:</b> starting with JDF 1.4, first half of text is modified.

### 6.4.33 RIPing

**RIPing** is a Gray Box (see Section 3.5.2.1, “Use of the Types Attribute in Process Group Nodes – Gray Boxes” on page 66) that is a combination of at least two Processes. Most often it includes **Interpreting** and **Rendering**, but it may also include **ColorSpaceConversion**, **Trapping**, **Separation**, **Imposition** and **Screening**. Thus one typical **RIPing** Node is with JDF/@Type = “ProcessGroup” and JDF/@Category = “RIPing” as shown in the following example:

#### Example 6-8: RIPing

```
<JDF Type="ProcessGroup" Types="RIPing" Category="RIPing"
      ID="ID100" JobPartID="ID23" Status="Ready" Version="1.4"/>
```

The **RIPing** Process consumes page descriptions and instructions for producing the graphical output. It parses the graphical contents in the page descriptions, renders the contents, and produces a rasterized image of the page. This raster MAY contain contone data and be represented upon output as a **ByteMap**. Alternatively, the **RIPing** Process MAY also perform halftone screening, in which case the output is in the form of a bitmap. It is also responsible for resolving all system Resource references that include font handling and Resource aliasing.

Instructions read by the RIP include information about the media, halftoning, color transformations, colorant controls and other items that affect that rasterized output. They do not, however, represent any specific controls for the physical output Device, nor do they deal with any instructions intended for the finishing Device.

In most cases, RIPing will be part of a Combined Process with a Process that specifies physical marking (e.g., **DigitalPrinting** or **ImageSetting**). In this case, the interpreter SHOULD be able to act upon Device control instructions that affect the physical functioning of the printing Device such as media selection and page delivery. **Media** selection determines which type of medium is used for marking and where that medium can be obtained. Page delivery controls the location, orientation and quantity of physical output. The RIP is also responsible for resolving all system resource references. This includes handling font substitutions and dealing with Resource aliases. However, the RIP specifically does not get involved with any functions of the Device that could be considered finishing features such as stapling, duplexing and collating.

When a **RIPing** Process is comprised of only the **Interpreting** and **Rendering** Processes, various intermediary steps are needed before the output can be run through a **ConventionalPrinting** Process. In theory, however, a workflow could include no intermediary steps between a **RIPing** Process and a **DigitalPrinting** Process. The following workflow scenarios represent possible Process chains in each circumstance:

**RIPing** → **Screening** → **ImageSetting** → **ContactCopying** → **ConventionalPrinting**

**RIPing** → (**Screening**) → **DigitalPrinting**

Since **RIPing** is not a predefined JDF Process, see the Processes that contribute to the RIP for input and Output Resources.

#### 6.4.34 Scanning

The **Scanning** Process creates bitmaps from analog images using a scanner.

**Table 6-78: Scanning – Input Resources**

Name	Description
<b>ExposedMedia</b> ?	Description of the media to be scanned. The <b>ExposedMedia</b> SHOULD be Partitioned by <b>@RunIndex</b> , in order to provide unique mapping from <b>ExposedMedia</b> to the output <b>RunList</b> .
<b>ScanParams</b> ?	High level scanner settings. These settings are specifically not intended as a replacement for low-level Device interfaces such as TWAIN.

**Table 6-79: Scanning – Output Resources**

Name	Description
<b>RunList</b>	List of a <b>ByteMap</b> Resource or a <b>LayoutElement</b> Resource of <b>@ElementType = "Image"</b> .

#### 6.4.35 Screening

This Process specifies the Process of halftone screening. It consumes contone raster data (e.g., the output from an **Interpreting** and **Rendering** Process). It produces monochrome which has been filtered through a halftone screen to identify which pixels are needed to approximate the original shades of color in the document.

This Process definition includes capabilities for post-RIP halftoning according to the PostScript definitions. Alternatively it allows for the selection of FM screening/error diffusion techniques. In general, an actual screening Process will be a Combined Process of **ContoneCalibration** and **Screening** Processes.

**Table 6-80: Screening – Input Resources (Sheet 1 of 2)**

Name	Description
<b>RunList</b> ?	Ordered list of rasterized <b>ByteMap</b> <b>ByteMap</b> or <b>InterpretedPDLData</b> interpreted data representing pages or surfaces.
<b>ScreeningParams</b> ?	Parameters specifying which halftone mechanism is to be applied and with what specific controls.

**Table 6-80: Screening – Input Resources (Sheet 2 of 2)**

Name	Description
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-81: Screening – Output Resources**

Name	Description
RunList ?	Ordered list of rasterized and screened output pages. Assumes that the resolution remains the same and that resulting data are one bit per component. Furthermore, the organization of planes within the data does not change.

### 6.4.36 Separation

The **Separation** Process specifies the controls associated with the generation of color-separated data. It is designed to be flexible enough to allow a variety of possible methods for accomplishing this task. First of all, it sponsors host-based PDF separating operations, in which a **RunList** of pre-separated PDF data is generated. It can also be combined with a RIP to allow control of In-RIP separations. In this scenario a **RunList** containing **ByteMap** Resources generated as the output. Yet another anticipated combination is with the Process to deal with incoming Device-dependent data. And finally, it MAY be part of a Combined Process with an **ImageReplacement** Process in order to do image substitution for omitted or proxy images. **Separation** may be applied either to pdl data or raster data.

**Table 6-82: Separation – Input Resources**

Name	Description
ColorantControl ? <a href="#">Modified in JDF 1.1A</a>	Identifies which colorants in the Job are to be output.
RunList ?	List of <b>elements</b> , <b>surfaces</b> or <b>pages</b> that are to be operated on.
SeparationControlParams ?	Controls for the separation Process.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-83: Separation – Output Resources**

Name	Description
RunList	List of separated <b>elements</b> , <b>separated surfaces</b> , <b>separated</b> <b>pages</b> or <b>separated raster bytemaps</b> .

### 6.4.37 SheetOptimizing

[New in JDF 1.5](#)

**SheetOptimizing** describes ganging of multiple sections onto one or more printed sheets. Sections MAY be parts of unrelated customer jobs. This process is also referred to as job ganging.

**SheetOptimizing** MAY be used together with **QueueSubmissionParams**/**QueueSubmissionParams**/**@GangName** and the **ForceGang** Command. In this case, individual jobs with identical **QueueSubmissionParams**/**QueueSubmissionParams**/**@GangName** are collected with each job submission. A **ForceGang** Command instructs the Ganging engine to process the waiting **GangInfo**/**GangInfo** Elements.

**SheetOptimizing** is a further definition of the concepts first described in version 1.0 of JDF [JDF 1.0] and are found in Section 4.4.5, “Case 5: Spawning and Merging of Independent Jobs” on page 194 above.

**SheetOptimizing** MAY be defined either using Intent based job descriptions, as recommended in Section 4.4.5, “Case 5: Spawning and Merging of Independent Jobs” on page 194, or using Process based job descriptions.

**Table 6-84: SheetOptimizing – Input Resources**

Name	Description
<b>Assembly</b> *	Input assemblies to specify the binding order for creep calculation. These Assemblies MAY contain sections that are not included in this sheet optimization (e.g., when only covers are optimized and the bodies are produced individually).
<b>SheetOptimizingParams</b> ?	Parameters specifying details that allow individual sections to be distributed on the printed sheets.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-85: SheetOptimizing – Output Resources**

Name	Description
<b>StrippingParams Layout</b>	The <b>StrippingParams Layout</b> Resource that will be populated by the <b>SheetOptimizing</b> Process. The Resource MAY be partially populated by the submitter with restrictions on what the <b>SheetOptimizing</b> is allowed to do.

### 6.4.38 SoftProofing

Deprecated in JDF 1.2

The **SoftProofing** Process is deprecated in JDF 1.2. Instead, use a Combined Process to produce the soft proof in which the last Process is the **Approval** Process that approves the soft proof. See Section P.4.11, “SoftProofing” on page 1331 for details of this deprecated Process. In JDF 1.2 and beyond, soft proofing is a Combined Process.

### 6.4.39 Stripping

New in JDF 1.2

An important aspect of the interface between an MIS system and a prepress workflow system is imposition. When an order is accepted or even during the estimation phase, the MIS system determines how the product will be produced using the available equipment (e.g., presses, folders, cutters, etc.) in the most cost-efficient way. The result of this exercise has a large impact on imposition in prepress.

The **Stripping** Process specifies the Process of translating a high level structured description of the imposition of one or multiple Job Parts or part versions represented by the a partially populated **StrippingParams Layout** Resource into a fully populated **Layout** Resource for the **Imposition** Process. Note that the **Stripping** Process can generate all Resources needed for the **Imposition** Process, thus also the **RunList (Marks)**.

The **BinderySignature** elements that are referenced from **Layout/@BinderySignatureRef** define the individual Signatures that are combined to produce a final product. The **Assembly** specifies how the individual **BinderySignature** elements are combined relative to one another.

The **Assembly** Resource is often referred to as the product view, while the **BinderySignature** is referred to as the production view. In this way, **Assembly/@BindingSide** typically refers to the bound side of the final product, while **BinderySignature/@BindingEdge** refers to the bound side during production.

When both Attributes are not equal, it is up to the Stripping Device to modify the orientation and/or sequence of the content pages to synchronize product and production view.

#### 6.4.39.1 Pagination in Stripping

The distribution and orientation of pages on a **BinderySignature** is determined by the geometry of the final product. The **Assembly** Resource determines which pages SHALL be placed on which **BinderySignature**.

Example: if two 8 page **BinderySignatures** are gathered on top of one another, then pages 1-8 will go on the first **BinderySignature** and pages 9-16 will go on the second **BinderySignature**. If the same **BinderySignatures** are collected on a saddle, then pages 1-4 and 13-16 will go on the first **BinderySignature** and pages 5-12 will go on the second **BinderySignature**.

The **BinderySignature** determines how the pages that are selected by the **Assembly** SHALL be distributed on each **BinderySignature**. The page distribution is modified by the following attributes in **BinderySignature**:

- **@BinderySignatureType** determines whether the pagination SHALL be explicitly defined or SHALL be calculated from **@FoldCatalog**,
- **@BindingEdge** and **@JogEdge** using the methods defined in Appendix J, “Pagination Catalog” on page 1175.

**Table 6-86: Stripping – Input Resources**

Name	Description
<b>Assembly +Assembly *</b>	<b>Assembly</b> describes how the sections of the different Job Parts imposed together <b>BinderySignatures</b> are combined to a final product. If multiple <b>Assembly</b> Resources are defined, mapping between <b>StrippingParams</b> and <b>Assembly</b> is achieved by matching the respective <b>@JobID</b> and <b>@AssemblyIDs</b> Attributes.. Multiple Assemblies are typically specified when multiple jobs are ganged on a sheet.
<b>ColorantControl ?</b> <small>New in JDF 1.3</small>	Contains information on the colors and separations. Useful when creating marks that need color information.
<b>Layout ?</b>	High level structured description of the imposition of one or multiple <b>fold sheets</b> <b>Job Parts</b> or part versions.
<b>RunList (Document) ?</b>	List of documents. When available, this list can be used to generate a <b>Layout</b> and populated <b>RunList</b> (no <b>LayoutElementRunList</b> [@ElementType = "Reservation"]) which can be fed into a subsequent <b>Imposition</b> Process.
<b>StrippingParams ?</b>	High level structured description of the imposition of one or multiple Job Parts or part versions.
<b>TransferCurvePool ?</b>	Definition of the transfer curves and coordinate systems of the Devices. The coordinate system of the <b>StrippingParams</b> coincides with the <b>Layout</b> coordinate system specified in the <b>TransferCurvePool</b> .
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-87: Stripping – Output Resources**

Name	Description
<b>Layout ?</b>	The detailed layout of the document pages to be imposed.
<b>RunList (Document) ?</b>	List of documents that are to document pages that SHALL be used as input of the following <b>Imposition</b> Process.
<b>RunList (Marks) ?</b>	List of marks that are to SHALL be used as input of the following <b>Imposition</b> Process.

#### Example 6-9: Stripping: Simple Example

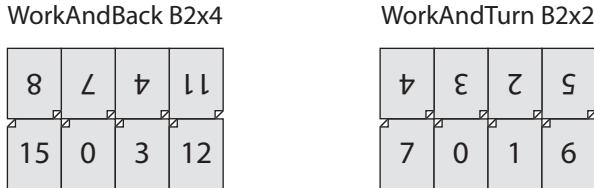
The first example specifies three Sheets based on folding catalog example F16-6. More examples can be found in Section O.6, “Stripping”.

TBD 2.x Example.

```
<StrippingParams ID="FoldCatalogSample" Class="Parameter" Status="Available"
  WorkStyle="WorkAndBack" PartIDKeys="SheetName">
  <BinderySignature FoldCatalog="F16-6"/>
  <StrippingParams SheetName="Sheet1"/>
  <StrippingParams SheetName="Sheet2"/>
  <StrippingParams SheetName="Sheet3"/>
</StrippingParams>
```

### Example 6-10: Stripping: Complex Example

The following example specifies three Sheets: *Sheet1* and *Sheet2* are based on a *B2x4 BinderySignature* using the "WorkAndBack" WorkStyle, while *Sheet3* is based on *BinderySignature B2x2* using the "WorkAndTurn" WorkStyle.



TBD 2.x Example.

```

<BinderySignature ID="B2x4" Class="Parameter" Status="Available"
    NumberUp="4 2">
    <SignatureCell FrontPages="15 0 3 12" BackPages="14 1 2 13"
        Orientation="Up"/>
    <SignatureCell FrontPages="8 7 4 11" BackPages="9 6 5 10"
        Orientation="Down"/>
</BinderySignature>
<BinderySignature ID="B2x2" Class="Parameter" Status="Available"
    NumberUp="2 2">
    <SignatureCell FrontPages="7 0" BackPages="6 1" Orientation="Up"/>
    <SignatureCell FrontPages="4 3" BackPages="5 2" Orientation="Down"/>
</BinderySignature>
<StrippingParams ID="L1" Class="Parameter" Status="Available"
    WorkStyle="WorkAndBack" PartIDKeys="SheetName">
    <StrippingParams SheetName="Sheet1">
        <BinderySignatureRef rRef="B2x4"/>
    </StrippingParams>
    <StrippingParams SheetName="Sheet2">
        <BinderySignatureRef rRef="B2x4"/>
    </StrippingParams>
    <StrippingParams WorkStyle="WorkAndTurn" SheetName="Sheet3">
        <BinderySignatureRef rRef="B2x2"/>
        <Position RelativeBox="0 0 0.5 1"/>
        <Position RelativeBox="0.5 0 1 1" Orientation="Flip180"/>
    </StrippingParams>
</StrippingParams>

```

#### 6.4.40 Tiling

The **Tiling** Process allows the contents of Surfaces to be imaged onto separate pieces of media. Note that many different workflows are possible. **Tiling** SHALL always follow **Imposition**, but it can operate on imposed PDL page contents or on contone or halftone data. **Tiling** will generally be part of a Combined Process. For example, **Tiling** might be part of a Combined Process with **ImageSetting**. In that case, the input would be a **RunList** that contains **ByteMap** Resources for each surface.

Table 6-88: Tiling – Input Resources (Sheet 1 of 2)

Name	Description
<b>RunList (Marks) ?</b>	Structured list of incoming marks. These are typically printer's marks that provide the information needed to combine the tiles.

**Table 6-88: Tiling – Input Resources (Sheet 2 of 2)**

Name	Description
<b>RunList</b> <i>(Surface)</i> ?	Structured list of imposed page contents or Byte Maps that are to be decomposed to produce the images for each tile. The <i>@ElementType</i> value of the <b>LayoutElement RunList</b> Resource SHALL be "Surface".
<b>Tile</b> ?	A Partitioned <b>Tile</b> Resource that describes how the surface contents are to be decomposed.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-89: Tiling – Output Resources**

Name	Description
<b>RunList</b> ?	Structured list of portions of the decomposed surfaces. The value of the <i>@ElementType</i> Attribute of the <b>LayoutElement RunList</b> element SHALL be "Tile".

#### 6.4.41 Trapping

**Trapping** is a prepress Process that modifies PDL files to compensate for a type of error that occurs on presses. Specifically, when more than one colorant is applied to a piece of media using more than one inking station, the media might not stay in perfect alignment when moving between inking stations. Any misalignment will result in an error called misregistration. The visual effect of this error is either that inks are erroneously layered on top of one another, or, more seriously, that gaps occur between inks that are intended to abut. In this second case, the color of the media is revealed in the gap and is frequently quite noticeable. **Trapping**, in short, is the Process of modifying PDL files so that abutting colorant edges intentionally overlap slightly, in order to reduce the risk of gaps.

The **Trapping** Process modifies a set of document pages to reduce or (ideally) eliminate visible misregistration errors in the final printed output. The Process MAY be part of a Combined Process with **RIPing** or specified as a stand-alone Process.

**Table 6-90: Trapping – Input Resources**

Name	Description
<b>ColorantControl</b> ?	Identifies color model used by the Job.
<b>Modified in JDF 1.1A</b>	
<b>FontPolicy</b> ?	Describes the behavior of the font machinery in absence of requested fonts.
<b>New in JDF 1.1</b>	
<b>RunList</b> ?	Structured list of incoming page contents that are to be trapped.
<b>TrappingDetails</b> <b>Trapping Params</b> ?	Describes the general setting needed to perform trapping.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-91: Trapping – Output Resources**

Name	Description
<b>RunList</b> ?	Structured list of the modified page contents after <b>Trapping</b> has been executed.

## 6.5 Press Processes

Press Processes are various technological procedures involving the transfer of ink to a substrate. From a technical standpoint they are often classified in impact and non-impact printing technologies. The impact printing class can be further subdivided into relief, intaglio, planograph or screen technologies, which in turn can be divided in further sub-

parts. Because of the way a workflow is constructed in **JDF XJDF**, however, a different approach to classification was used. All of the various printing technologies are gathered into two categories: 1) **ConventionalPrinting**, which involves printing from a physical master, 2) **DigitalPrinting**, which involves generic commercial printing from a digital master.

The most prominent physical, planographic printing technologies are offset lithography and electrophotography. They are also the printing Processes with the highest adoption in today's graphic arts industry. Consequently, the **ConventionalPrinting** Process in **JDF XJDF** takes them as models. That does not mean, however, that other printing techniques can not make use of the **ConventionalPrinting** Process and its Resources. The extensibility features of **JDF XJDF** can be used to fill other requirements related to printing technology.

### 6.5.1 ConventionalPrinting

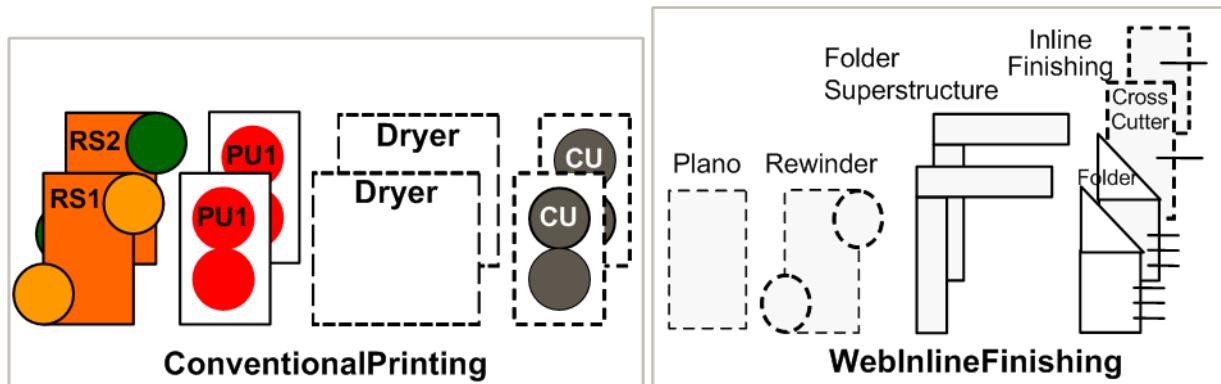
This Process covers several conventional printing tasks, including Sheet-Fed printing, Web Printing, Web/ribbon coating, converting and varnishing. Typically, each takes place after prepress and before postpress Processes. Direct imaging technology on press is modelled as a Combined Process of **ImageSetting** and **ConventionalPrinting**. Press machinery often includes postpress Processes (e.g., **WebInlineFinishing**, **Folding** and **Cutting**) as in-line finishing operations. The **ConventionalPrinting** Process itself does not cover these postpress tasks. Using a conventional printing press for producing a pressproof can be performed [in the following two ways](#):

- A formally by producing a proof of type **Component** is produced with a **ConventionalPrinting** Process. The result of this Process is then sent to the **Approval** Process, which in turn produces an **ApprovalSuccessApprovalDetails** Resource. That Resource is then passed on to a second **ConventionalPrinting** Process, which requires that the press be set up a second time.
- The **@DirectProof** Attribute of the **ConventionalPrintingParams** can be used to specify the proof if it is produced during the **ConventionalPrinting** Process. In this case, the press need only be set up once.

Note that the definition and ordering of separations is specified by the **@DeviceColorantOrder** Attribute of the appropriate **ColorantControl** Resource.

In the context of Web Printing, the **ConventionalPrinting** Process SHALL be in a Combined Process with the **WebInlineFinishing** Process. The following drawing gives an overview about Web Printing in general.

**Figure 6-3: Overview of Web Printing**



**Table 6-92: ConventionalPrinting – Input Resources (Sheet 1 of 3)**

Name	Description
<b>ColorantControl</b> ?	The <b>ColorantControl</b> Resources that define the ordering and usage of inks in print modules. The <b>ColorantControl</b> Resource specifies the complete set of colors that will be printed on a Sheet.

**Table 6-92: ConventionalPrinting – Input Resources (Sheet 2 of 3)**

Name	Description
<b>Component</b> ? <a href="#">Modified in JDF 1.4</a>	Various components in the form of preprints can be used in <b>ConventionalPrinting</b> in lieu of <b>Media</b> . Examples include waste or a set of preprinted Sheets. The most common <b>Component</b> used is unprinted Paper. <b>Modification note:</b> starting with JDF 1.4, the input ComponentLink NEED NOT have <code>@ProcessUsage= "Input"</code> .
<b>Component (Proof)</b> ?	A Proof component is used if a proof was produced during an earlier print run. Note that the proof MAY be a <b>Component</b> produced in a previous run and has not necessarily been produced explicitly as a proof. In general, at most one of <b>Component (Proof)</b> or <b>ExposedMedia (Proof)</b> SHOULD be specified.
<b>ConventionalPrintingParams</b> ?	Specific parameters to set up the press.
<b>ExposedMedia (Cylinder)</b> ? <a href="#">New in JDF 1.3</a>	<b>ExposedMedia (Cylinder)</b> is used to describe direct imaging on reusable cylinders. <b>ExposedMedia (Cylinder)</b> defines the set of cylinders to be used in the press run that is described by this Node. Both <b>ExposedMedia (Cylinder)</b> and <b>ExposedMedia (Plate)</b> MAY occur in the same Device. At least one of <b>ExposedMedia (Cylinder)</b> or <b>ExposedMedia (Plate)</b> SHALL be specified.
<b>ExposedMedia (Plate)</b> ? <a href="#">Modified in JDF 1.3</a>	The printing plates and information about them are used to set up the press. The <b>ExposedMedia (Plate)</b> Resource defines the set of plates to be used in the press run that is described by this Node. Both <b>ExposedMedia (Cylinder)</b> and <b>ExposedMedia (Plate)</b> MAY occur in the same Device. At least one of <b>ExposedMedia (Cylinder)</b> or <b>ExposedMedia (Plate)</b> SHALL be specified.
<b>ExposedMedia (Proof)</b> ?	A Proof is used to compare color and content during <b>ConventionalPrinting</b> . This Proof is produced by a prepress proofing Device. At most one of <b>ColorantControl (Proof)</b> or <b>ExposedMedia (Proof)</b> SHOULD be specified.
<b>ExposedMedia (Sleeve)</b> ? <a href="#">New in JDF 1.4</a>	Description of a sleeve.
<b>Ink</b> ? <a href="#">Modified in JDF 1.1</a>	Information about the ink (e.g., brand, color) is useful to set up the press.
<b>InkZoneProfile</b> ?	The <b>InkZoneProfile</b> contains information about how much ink is needed along the printing cylinder of a specific printing press. It is only useful for Offset Lithography presses with ink key adjustment functions.
<b>Layout</b> ? <a href="#">New in JDF 1.1</a>	Sheet and surface elements from the <b>Layout</b> tree (e.g., <b>CIELABMeasuringField</b> , <b>DensityMeasuringField</b> or <b>ColorControlStrip</b> ) can be used for quality control at the press. The quality control field value and position can be of interest for automatic quality control systems. <b>RegisterMark</b> can be used to line up the printing plates for the press run, and its position can in turn be used to position items such as a camera.
<b>Media</b> ?	The physical substrate (e.g., paper or foil) and information about the <b>Media</b> (e.g., thickness, type and size) are useful in setting up paper travel in the press. This Resource SHALL be present if no preprinted <b>Component (Input)</b> Resource is used.

**Table 6-92: ConventionalPrinting – Input Resources (Sheet 3 of 3)**

Name	Description
<b>Media</b> ( <i>MountingTape</i> ) ? <a href="#">New in JDF 1.4</a>	Description of a mounting tape for a sleeve.
<b>PrintCondition</b> ? <a href="#">New in JDF 1.2</a>	Used to control the use of colorants when printing pages on a specific media. The Attributes and Elements of the <b>PrintCondition</b> Resource describe the aim values for a given printing Process.
<b>Sheet</b> ? <a href="#">Deprecated in JDF 1.1</a>	Specific information about the <b>Media</b> (including type and color) and about the Sheet (e.g., placement coordinates on the printing cylinder). Replaced by <b>Layout</b> in JDF 1.1.
<b>TransferCurvePool</b> ? <a href="#">New in JDF 1.1</a>	Area coverage correction and coordinate transformations of the Device.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-93: ConventionalPrinting – Output Resources**

Name	Description
<b>Component</b> ? <a href="#">Modified in JDF 1.2</a>	Describes the printed Sheets, ribbons or webs which can be used by another printing Process or postpress Processes. Note that the <i>@Amount</i> Attribute of the <b>ResourceLink PartAmount</b> to this Resource indicates the number of copies of the entire Job which will be produced. <b>Modification note:</b> prior to JDF 1.2 this <b>Component</b> was marked with a <i>@ProcessUsage = "Good"</i> , which is OPTIONAL, but supported in JDF 1.2 and beyond.
<b>Component</b> ( <i>Waste</i> ) ? <a href="#">Deprecated in JDF 1.2</a>	Produced waste of printed Sheets or ribbons. In JDF 1.2 and beyond, <b>ConventionalPrinting</b> produces one <b>Component</b> that MAY be Partitioned by <i>@Condition</i> in order to distinguish waste <b>Component</b> Resources from good <b>Component</b> Resources.

## 6.5.2 DigitalPrinting

**DigitalPrinting** is a direct printing Process that, like **ConventionalPrinting**, occurs after prepress Processes but before postpress Processes. In **DigitalPrinting**, the data to be printed are not stored on an extra medium (e.g., a printing plate or a printing foil), but instead are stored digitally. The printed image is generated for every output using the digital data. Electrophotography, inkjet, and other technologies are used for transferring ink (both liquid ink and dry toner) onto the substrate. Furthermore, both Sheet-Fed and Web Presses can be used as machinery for **DigitalPrinting**. The **DigitalPrinting** Process SHALL also be used to describe hard copy proofing (see Section 6.3.1, “Approval” on page 347).

**DigitalPrinting** is often used to image a small area on preprinted **Component** Resources to perform actions such as addressing or numbering another **Component**. This kind of Process can be executed by imaging with an inkjet printer during press, postpress or packaging operations. Therefore, **DigitalPrinting** is not only a press or pre-press operation but sometimes also a postpress Process.

Digital printing Devices which provide some degree of finishing capabilities (e.g., collating and stapling) as well as some automated layout capabilities (e.g., N-up and duplex printing) MAY be modeled as a Combined Process which includes **DigitalPrinting**. Such a Combined Process MAY also include other Processes (e.g., **Approval**, **ColorCorrection**, **ColorSpaceConversion**, **ContoneCalibration**, **Cutting**, **Folding**, **HoleMaking**, **ImageReplacement**, **Imposition**, **Interpreting**, **LayoutPreparation**, **Perforating**, **Rendering**, **Screening**, **Stacking**, **Stitching**, **Trapping** or **Trimming**).

Controls for **DigitalPrinting** are provided in the **DigitalPrintingParams** Resource. The set of Input Resources of a Combined Process which includes **DigitalPrinting** MAY be used to represent an Internet Printing Protocol (IPP) Job or a PPML Job. See Application Notes for IPP and Variable Data printing. Note that putting a label on a product or **DropItem** is not **DigitalPrinting** but **Inserting**.

**Table 6-94: DigitalPrinting – Input Resources (Sheet 1 of 2)**

Name	Description
<b>ColorantControl</b> ?	The <b>ColorantControl</b> Resources that define the ordering and usage of inks in print modules.
<b>Component</b> * <a href="#">Modified in JDF 1.4</a>	Various components can be used in <b>DigitalPrinting</b> instead of <b>Media</b> . Examples include unprinted paper, preprinted covers, waste, precut <b>Media</b> , or a set of preprinted Sheets or webs. If multiple <b>Component</b> ( <i>Input</i> ) Resources are linked to one Process, the mapping of media to content is defined in the Partitions of <b>DigitalPrintingParams</b> . At least one of <b>Component</b> or <b>Media</b> SHALL be specified as Input <b>Modification note:</b> starting with JDF 1.4, the input <b>ComponentLink</b> NEED NOT have <code>@ProcessUsage= "Input"</code> .
<b>Component</b> ( <i>Proof</i> ) ?	A Proof component is used if a proof was produced during an earlier print run (see description in Section 6.5.1, “ConventionalPrinting”). Note that the proof MAY be a <b>Component</b> produced in a previous run and has not necessarily been produced explicitly as a proof. In general, at most one of <b>Component</b> ( <i>Proof</i> ) or <b>ExposedMedia</b> SHOULD be specified.
<b>DigitalPrintingParams</b> ?	Specific parameters to set up the machinery.
<b>ExposedMedia</b> ?	A Proof is useful for comparisons (completeness, color accuracy) with the print out of the <b>DigitalPrinting</b> Process. In general, at most one of <b>Component</b> ( <i>Proof</i> ) or <b>ExposedMedia</b> SHOULD be specified
<b>Ink</b> ?	Ink or toner and information that is needed for <b>DigitalPrinting</b> .
<b>Layout</b> ? <a href="#">New in JDF 1.1</a>	Sheet and surface Elements from a <b>Layout</b> (e.g., the <b>CIELABMeasuringField</b> , <b>DensityMeasuringField</b> or <b>ColorControlStrip</b> ) can be used for quality control at the press. The value and position of the quality can be of interest for automatic quality control systems. <b>RegisterMark</b> Resources can be used to line up the printing registration during press run, and its position can in turn be used to position an item such as a camera.
<b>Media</b> *	The physical <b>Media</b> and information about the <b>Media</b> (e.g., thickness, type and size) is used to set up paper travel in the press. This has to be present if no pre-printed <b>Component</b> ( <i>Input</i> ) Resource is present. Unprinted <b>Media</b> used for covers are also defined as <b>Media</b> . At least one of <b>Component</b> or <b>Media</b> SHALL be specified as Input <b>Note:</b> printing a Job on more than one Web or Sheet at the same time is parallel processing.
<b>PrintCondition</b> ?	Used to control the use of colorants when printing pages on a specific media. The Attributes and Elements of the <b>PrintCondition</b> Resource describe the aim values for a given printing Process.
<b>RunList</b> ?	Rendered data in <b>Byte Maps</b> that will be printed on the digital press are needed for <b>DigitalPrinting</b> . The <b>RunList</b> contains only <b>ByteMap</b> Elements.
<b>Sheet</b> ? <a href="#">Deprecated in JDF 1.1</a>	Specific information about the <b>Media</b> (including type and color) and about the Sheet (placement coordinates on the printing cylinder). Replaced by <b>Layout</b> in JDF 1.1.
<b>TransferCurvePool</b> ? <a href="#">New in JDF 1.1</a>	Area coverage correction and coordinate transformations of the Device.

**Table 6-94: DigitalPrinting – Input Resources (Sheet 2 of 2)**

Name	Description
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-95: DigitalPrinting – Output Resources**

Name	Description
<b>Component ?</b> <a href="#">Modified in JDF 1.2</a>	Components are produced for other printing Processes or postpress Processes. Note that the <a href="#">@Amount Attribute of the ResourceLink to this Resource /Resource/AmountPool/PartAmount/@Amount</a> indicates the number of copies of the entire Job which will be produced. Prior to JDF 1.2 this <b>Component</b> was marked with a <a href="#">@ProcessUsage = "Good"</a> , which is OPTIONAL, but supported in JDF 1.2 and beyond MAY be specified.  <b>Note:</b> when processing a PDL with multiple documents or sets, such as pdf/vt, the amount is defined in the scope of the entire document. If one copy of the number of copies defined within the PDL file of each record is requested, the <b>Component/@Amount</b> SHALL be set to 1.
<b>Component (Waste) ?</b> <a href="#">Deprecated in JDF 1.2</a>	Produced waste, MAY be used by other Processes. In JDF 1.2 and beyond, <b>DigitalPrinting</b> produces one <b>Component</b> that MAY be Partitioned by <a href="#">@Condition</a> in order to distinguish waste <b>Component</b> Resources from good <b>Component</b> Resources.

### 6.5.3 Varnishing

[New in JDF 1.4](#)

**Varnishing** is the Process of varnishing to a blank or printed sheet. Spot varnishing with a ripped image or a printing plate from **ExposedMedia** is described as **DigitalPrinting** or **ConventionalPrinting** with **Ink/@Family = "Varnish"**. All types of all-over (flood) Varnishing or Spot Varnishing applied without a ripped image or a printing plate from **ExposedMedia** are described with the **Varnishing** process.

**Table 6-96: Varnishing – Input Resources**

Name	Description
<b>Component ?</b>	The <b>Component</b> to be varnished. Exactly one of <b>Component</b> or <b>Media</b> SHALL be specified.
<b>ExposedMedia *</b>	Various types of <b>ExposedMedia</b> MAY be specified for varnishing. See <b>VarnishingParams/@VarnishMethod</b> for details
<b>Ink ?</b>	Details of the colorant that is used for <b>Varnishing</b> . <b>Ink/@Family</b> SHOULD be "Varnish".
<b>Media ?</b>	The <b>Media</b> to be varnished. Exactly one of <b>Component</b> or <b>Media</b> SHALL be specified.
<b>VarnishingParams ?</b>	Details of the setup of the varnishing device
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-97: Varnishing – Output Resources**

Name	Description
<b>Component ?</b>	The varnished <b>Component</b> .

### 6.5.4 IDPrinting

Deprecated in JDF 1.1

The IDPrinting Process was deprecated in JDF/1.1. Instead, implementations SHOULD use a Combined Process that includes the **DigitalPrinting** Process, thus improving interoperability by reducing one of the combinations of Processes. Also the **IDPrinting** Process defined a number of Resources and Subelements which are deprecated since they duplicate other Resources. See Section P.4.12, “IDPrinting” on page 1332 for details of this deprecated Process.

## 6.6 Postpress Processes

In this specification, the postpress Processes are presented in two parts: an alphabetical list of Processes that is then followed by a Postpress Processes Structure section that divides these Processes into subchapters for structuring purposes. This structuring is useful to find specific Processes. Please note that Processes, in some cases can be used to describe operations that go beyond the scope of a specific chapter. Therefore, it is a good idea not only to look at certain Processes within a subchapter but also to find out what functionality other Processes offer if a specific task needs to be addressed.

### 6.6.1 AdhesiveBinding

Deprecated in JDF 1.1

The **AdhesiveBinding** Process has been split into the following individual Processes:

- **CoverApplication**
- **Gluing**
- **SpinePreparation**
- **SpineTaping**

Note that the parameters of the **GlueApplication** for adhesive-binding operations have been moved into **CoverApplicationParams** and **SpineTapingParams** as **GlueApplication** Subelements. The generic **GlueApplication** for adhesive binding is now described by the **Gluing** Process.

### 6.6.2 BlockPreparation

New in JDF 1.1

As there are many options for a hardcover book, the block preparation is more complex than what has already been described for other types of binding [above](#). Those options are the ribbon band (numbers of bands, materials and colors), gauze (material and glue), headband (material and colors), kraft paper (material and glue) and tightbacking (different geometry and measurements).

**Table 6-98: BlockPreparation – Input Resources**

Name	Description
<b>Component</b> ?	The <b>BlockPreparation</b> Process consumes one <b>Component</b> and creates a book block.
<b>BlockPreparationParams</b> ?	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-99: BlockPreparation – Output Resources**

Name	Description
<b>Component</b> ?	One <b>Component</b> is produced: the prepared book block. Its <code>@ProductType = "BookBlock"</code> .

### 6.6.3 BoxFolding

New in JDF 1.3

**BoxFolding** defines the Process of folding and gluing blanks into folded flat boxes for packaging.

**Table 6-100: BoxFolding – Input Resources**

Name	Description
<b>BoxFoldingParams</b> ?	Specific parameters to set up the folder gluer.
<b>Component</b>	The <b>BoxFolding</b> Process consumes one <b>Component</b> , the folding blank. Its <i>@ProductType</i> = "BlankBox".
<b>Component (Application)</b> * <a href="#">Deprecated in JDF 1.4</a>	This Process MAY consume additional <b>Component</b> Resources, such as windows, handles or inlets. These <b>Component</b> Resources SHALL additionally be referenced from <b>BoxFoldingParams/BoxApplication</b> Elements.  <b>Deprecation note:</b> starting with JDF 1.4, a Combined Process that includes the <b>BoxFolding</b> and <b>Inserting</b> Processes replaces <b>BoxApplication</b> .
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-101: BoxFolding – Output Resources**

Name	Description
<b>Component</b> ?	One <b>Component</b> is produced: the folded flat box. Its <i>@ProductType</i> = "FlatBox".

## 6.6.4 BoxPacking

[New in JDF 1.1](#)

A pile, stack or bundle of products can be packed into a box or carton.

**Table 6-102: BoxPacking – Input Resources**

Name	Description
<b>BoxPackingParams</b> ?	Specific parameters to set up the machinery.
<b>Component</b> +*	The <b>BoxPacking</b> Process puts a set of <b>Component</b> Resources into the box <b>Component</b> .  If more than one <b>Component</b> is specified, a <b>Component/Bundle</b> Resource SHALL also be specified for <b>each the output Component</b> .  <b>Modification note:</b> starting with JDF 1.4, <b>Component</b> can occur more than once.
<b>Component (Box)</b> ?	Details of the box or carton.
<b>Media (Tie)</b> ? <a href="#">New in JDF 1.3</a>	Protective <b>Media</b> can be placed between individual rows of <b>Component</b> Resources.
<b>Media (Underlay)</b> ? <a href="#">New in JDF 1.3</a>	Protective <b>Media</b> can be placed between individual layers of <b>Component</b> Resources.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-103: BoxPacking – Output Resources**

Name	Description
<b>Component</b> ?	One <b>Component</b> is produced: the <b>boxed Component</b> that represents the packed Box.

### 6.6.5 Bundling

[New in JDF 1.2](#)

JDF-Spec 1.1 contains no Process for bundling products. The **Bundling** Process normally will be followed by a **Strapping** Process. In a **Bundling** Process, single products like Sheets or Signatures are bundled. The bundle is the output **Component** of the Process and is used to store the products. As input a **Component** to a consuming or subsequent Process (e.g., **Gathering**, **Collecting** or **Inserting**), the single components of a bundle are used.

Figure 6-4: Bundle Creation

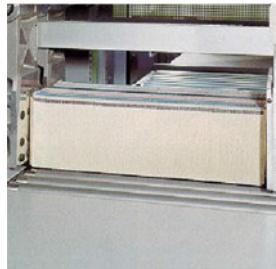


Figure 6-5: Bundle Transport



Table 6-104: Bundling – Input Resources

Name	Description
<b>BundlingParams</b> ?	Bundling parameters.
<b>Component</b> ?	Component to be bundled
<b>Media</b> ?	End boards to protect the bundle. For each bundle a pair of end boards is needed.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

Table 6-105: Bundling – Output Resources

Name	Description
<b>Component</b> ?	The completed bundle.

Parameters like manufacturer and Device type are defined in the **Device** Element.

### 6.6.6 CaseMaking

[New in JDF 1.1](#)

Case making is the Process where a hard **cover book** case is produced. **As there are many different kinds of hardcover cases, they will be described in a later version of the JDF specification.**

**Table 6-106: CaseMaking – Input Resources**

Name	Description
<b>CaseMakingParams</b> ?	Specific parameters to set up the machinery.
<b>Component (CoverMaterial)</b> ?	The cover material is either a preprinted or processed Sheet of paper. Exactly one of <b>Media (CoverMaterial)</b> or <b>Component (CoverMaterial)</b> SHALL be specified.
<b>Media (CoverBoard)</b> <b>Component (CoverBoard)</b> ? Modified in JDF 1.1A	The cardboard <b>Media Component</b> used for the cover board.
<b>Media (CoverMaterial)</b> ?	The <b>CaseMaking</b> Process MAY also consume unprocessed <b>Media</b> as cover material. Exactly one of <b>Media (CoverMaterial)</b> or <b>Component (CoverMaterial)</b> SHALL be specified.
<b>Media (SpineBoard)</b> ? <b>Component (SpineBoard)</b> ?	The cardboard <b>Media Component</b> used for the spine board. If not specified, the <b>Media Component (CoverBoard)</b> SHALL be used for the spine board.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-107: CaseMaking – Output Resources**

Name	Description
<b>Component</b> ?	One <b>Component</b> is produced: the book case. Its <i>@ProductType = "BookCase"</i> .

## 6.6.7 CasingIn

New in JDF 1.1

The hard cover book case and the book block are joined in the **CasingIn** Process.

**Table 6-108: CasingIn – Input Resources**

Name	Description
<b>CasingInParams</b> ?	Specific parameters to set up the machinery.
<b>Component</b> ?	The prepared book block.
<b>Component (Case)</b> ?	The hard cover book case.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-109: CasingIn – Output Resources**

Name	Description
<b>Component</b> ?	One <b>Component</b> is produced: the completed hard cover book.

## 6.6.8 ChannelBinding

Various sizes of metal clamps can be used in **ChannelBinding**. The Process can be executed in two ways. In the first, a pile of single Sheets – sometimes together with a front and back cover – is inserted into a U-shaped clamp and crimped in special machinery. In the second, a pre-assembled cover that includes the open U-shaped clamp is used instead of the U-shaped clamp alone. The thickness of the pile of Sheets determines in both cases the width of the U-shaped clamp to be used for forming the fixed document, which is not meant to be reopened later.

**Table 6-110: ChannelBinding – Input Resources**

Name	Description
<b>ChannelBindingParams</b>	Specific parameters to set up the machinery.
<b>Component</b>	The operation requires one component: the block of Sheets to be bound. If <b>Component</b> ( <i>Cover</i> ) is NOT provided and there is a cover, this <b>Component</b> SHALL be Partitioned, and the first Partition of this <b>Component</b> SHALL specify the Cover <b>Modification note:</b> starting with JDF 1.4, the input <b>ComponentLink</b> NEED NOT have <code>@ProcessUsage= "BookBlock"</code> .
<b>Component</b> ( <i>Cover</i> ) ?	The empty cover with the U-shaped clamp that might, for example, have been printed before it is used during the <b>ChannelBinding</b> Process.

**Table 6-111: ChannelBinding – Output Resources**

Name	Description
<b>Component</b>	One <b>Component</b> is produced: the channel-bound component forming an item such as a brochure.

### 6.6.9 CoilBinding

Another name for **CoilBinding** is *spiral binding*. Metal wire, wire with plastic or pure plastic is used to fasten prepunched Sheets of paper, cardboard or other materials. First, automated machinery forms a spiral of proper diameter and length. The ends of the spiral are then “tucked-in”. Finally, the content is permanently fixed. Note that every time a coil-bound book is opened, a vertical shift occurs as a result of the coil action. This is a characteristic of the Process.

**Table 6-112: CoilBinding – Input Resources**

Name	Description
<b>CoilBindingParams</b>	Specific parameters to set up the machinery.
<b>Component</b>	The operation requires one component: the pile of prepunched Sheets often including a top and button cover.

**Table 6-113: CoilBinding – Output Resources**

Name	Description
<b>Component</b>	One <b>Component</b> is produced: the coil-bound component forming an item such as a calendar.

### 6.6.10 Collecting

This Process collects folded Sheets or partial products, some of which might have been cut. The first **Component** to enter the workflow lies at the bottom of the pile collected on a saddle, and the sequence of the input components that follows depends upon the produced component. The figure to the right shows a typical collected pile.



The operation coordinate system is defined as follows: The y-axis is aligned with the binding edge. It increases from the registered edge to the edge opposite to the registered edge. The x-axis is aligned with the registered edge. It increases from the binding edge to the edge opposite to the binding edge (i.e., the product front edge).

**Table 6-114: Collecting – Input Resources**

Name	Description
<b>Assembly</b> ? <a href="#">New in JDF 1.3</a>	Explicitly describes the sequence of the <b>Component</b> Resources to be collected. If <b>Assembly</b> is not specified, the sequence is defined by the sequence of the <b>Component</b> . Caution: <b>Assembly</b> has the first on the outside, whereas the <b>Component</b> Resources are listed from inside to outside.
<b>CollectingParams</b> ?	Specific parameters to set up the machinery.
<b>Component</b> + *	Variable amount of Sheets to be collected.
<b>DBRules</b> * <a href="#">Deprecated in JDF 1.5</a>	Database input that describes which Sheets are to be collected for a particular instance component. In this version the schema is only human readable text. One rule is applied for each individual component.
<b>DBSelection</b> ? <a href="#">Deprecated in JDF 1.5</a>	Database input that describes which Sheets are to be collected for a particular instance component.
<b>IdentificationField</b> ? <a href="#">Deprecated in JDF 1.2</a>	Information about identification marks on the component. In JDF 1.2 and beyond, this information is defined in the <b>Component</b> itself.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-115: Collecting – Output Resources**

Name	Description
<b>Component</b> ?	A block of collected Sheets is produced. This <b>Component</b> can be joined in further postpress Processes.

### 6.6.11 CoverApplication

[New in JDF 1.1](#)

**CoverApplication** describes the Process of applying a soft cover to a book block.

**Table 6-116: CoverApplication – Input Resources**

Name	Description
<b>Component</b> ?	The book block on which the cover is applied. If <b>Component</b> ( <i>Cover</i> ) is NOT provided, this <b>Component</b> SHALL be Partitioned, and the first Partition of this <b>Component</b> SHALL specify the Cover.
<b>Component</b> ( <i>Cover</i> ) ? <a href="#">Modified in JDF 1.4</a>	The soft cover that is applied. <b>Modification note:</b> starting with JDF 1.4, this <b>Component</b> is optional because of the new rule about Partitioning the main <b>Component</b> specified above.
<b>CoverApplicationParams</b> ?	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-117: CoverApplication – Output Resources**

Name	Description
<b>Component</b> ?	The book block with the applied soft cover.

### 6.6.12 Creasing

[New in JDF 1.1](#)

Sheets are creased or grooved to enable folding or to create even, finished page delimiters.

**Table 6-118: Creasing – Input Resources**

Name	Description
<b>Component ?</b> <a href="#">Modified in JDF 1.2</a>	This Process consumes one <b>Component</b> : the printed Sheets. Note that prior to JDF 1.2 this <b>Component</b> was OPTIONAL, which was clearly a typing mistake in the specification.
<b>CreasingParams ?</b>	Details of the <i>Creasing</i> Process.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-119: Creasing – Output Resources**

Name	Description
<b>Component ?</b>	One creased <b>Component</b> is produced.

### 6.6.13 Cutting

Sheets are cut using a guillotine **Cutting** Machine. Before **Cutting**, the Sheets might be jogged and buffered. **CutBlock** Resources and/or **CutMark** Resources can MAY be used for positioning the knife. After the **Cutting** Process is performed, the blocks are often again buffered on a pallet.

Since **Cutting** is described here in a way that is Machine independent as much as possible, the specified **CutBlock** Elements do not directly imply a particular cutting sequence. Instead, a specialized Agent the Device SHALL determine the sequence.

**Media** might also be cut in a precutting step. In this case, **Cutting** MAY deliver **Media** as the Output Resource.

**Cutting** MAY also be used to describe cutting of a web into multiple Ribbons on a web press. This process is commonly referred to as “Slitting”.

**Table 6-120: Cutting – Input Resources**

Name	Description
<b>Component ?</b>	This Process consumes one <b>Component</b> : the printed Sheets. Exactly one of <b>Component</b> or <b>Media</b> SHALL be specified as input.
<b>CutBlock *</b> <a href="#">Deprecated in JDF 1.1</a>	One or more <b>CutBlock</b> Resources can be used to define the <i>Cutting</i> sequence. Either <b>CutBlock</b> or <b>CuttingParams/Cut</b> SHALL be specified, but not both.
<b>CutMark *</b> <a href="#">Deprecated in JDF 1.1</a>	<b>CutMark</b> Resources can be used to adapt the theoretical cut positions to the real positions of the corresponding blocks on the <b>Component</b> to be cut.
<b>CuttingParams ?</b> <a href="#">New in JDF 1.1</a>	Details of the <i>Cutting</i> Process.
<b>Media ?</b>	Cutting can be applied to <b>Media</b> in order to adjust size or shape. Exactly one of <b>Component</b> or <b>Media</b> SHALL be specified as input.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-121: Cutting – Output Resources**

Name	Description
<b>Component *</b> <a href="#">Modified in JDF 1.3</a>	One or several blocks of cut <b>Component</b> Resources are produced. When an input <b>Component</b> is cut, the output SHALL be a set of <b>Component</b> Resources. Either <b>Component</b> or <b>Media</b> SHALL be specified as output, but not both.
<b>Media *</b> <a href="#">Modified in JDF 1.3</a>	When <b>Media</b> are cut, the output SHOULD also be a set of <b>Media</b> . Either <b>Component</b> or <b>Media</b> SHALL be specified as output, but not both.

### 6.6.14 DieMaking

[New in JDF 1.4](#)

This Process describes the production of Tools for a die cutter (e.g., in a die maker shop).

**Table 6-122: DieMaking – Input Resources**

Name	Description
<b>DieLayout ?</b>	A Resource describing the die cutter tool set.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-123: DieMaking – Output Resources**

Name	Description
<b>Tool +*</b>	The set of tools for the die cutter.

### 6.6.15 Dividing

[Deprecated in JDF 1.1](#)

**Dividing** has been replaced by **Cutting**. See Section P.4.14, “Dividing” on page 1334 for details of this deprecated Process.

### 6.6.16 Embossing

[New in JDF 1.1](#)

The **Embossing** Process is performed after printing to stamp a raised or depressed image (artwork or typography) into the surface of paper using engraved metal embossing dies, extreme pressure and heat. Embossing styles include blind, deboss and foil-embossed.

**Table 6-124: Embossing – Input Resources**

Name	Description
<b>Component ?</b>	This Process consumes one <b>Component</b> which is embossed by the Process.
<b>EmbossingParams ?</b>	Parameters to setup the machinery.
<b>Media *</b> <b>Media (Foil) *</b> <a href="#">Modified in JDF 1.4</a>	If foil stamping or foil embossing, the stamping foil materials are REQUIRED. <b>Media(Foil)</b> SHOULD be provided if an <b>EmbossingParams/Emboss/@EmbossingType = FoilEmbossing</b> or <b>FoilStamping</b> . <b>Modification note:</b> starting with JDF 1.4, <b>Media</b> can occur more than once.
<b>Tool *</b> <a href="#">Modified in JDF 1.4</a>	The embossing stamps or calenders. <b>Modification note:</b> starting with JDF 1.4, <b>Tool</b> can occur more than once.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-125: Embossing – Output Resources**

Name	Description
Component ? <a href="#">Modified in JDF 1.5</a>	One Component is created.

### 6.6.17 EndSheetGluing

**EndSheetGluing** finalizes the folded Sheet or book block in preparation for case binding. It requires three Component Resources – the back-end Sheet, the book block and the front-end Sheet – and information about how they are merged together. Back-end Sheets and front-end Sheets are in most cases Sheets folded once before **EndSheetGluing** takes place. The end Sheets serve as connections between the book block and the cover boards.

**Table 6-126: EndSheetGluing – Input Resources**

Name	Description
Component ? <a href="#">Modified in JDF 1.5</a>	A back-end Sheet and a front-end Sheet are glued onto the book block. At least one of Component, Component (BackEndSheet) or Component (FrontEndSheet) SHALL be present. <b>Modification note:</b> starting with JDF 1.4, the input ComponentLink NEED NOT have @ProcessUsage= "BookBlock".
Component (BackEndSheet) ? <a href="#">Modified in JDF 1.5</a>	A back-end Sheet to be mounted on the book block. <b>Modification note:</b> starting with JDF 1.5, this element is optional.
Component (FrontEndSheet) ? <a href="#">Modified in JDF 1.5</a>	A front-end Sheet to be mounted on the book block. <b>Modification note:</b> starting with JDF 1.5, this element is optional.
EndSheetGluingParams ?	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-127: EndSheetGluing – Output Resources**

Name	Description
Component ?	A book block is produced that includes the end Sheets.

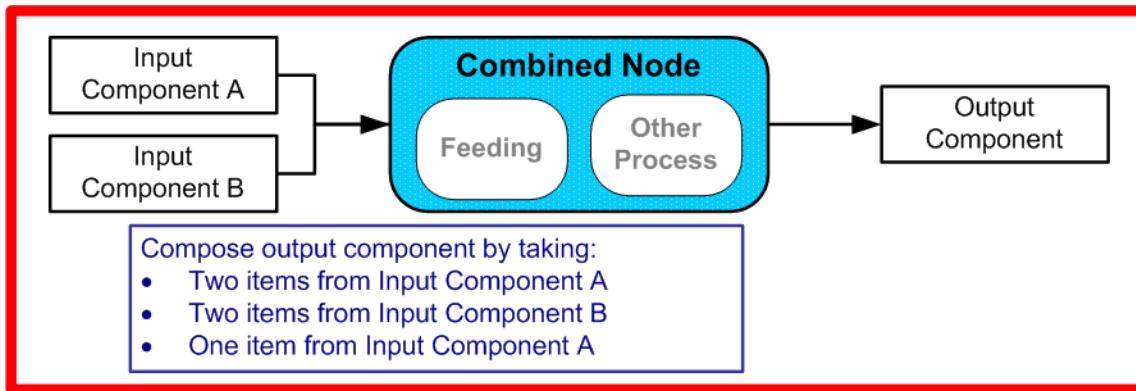
### 6.6.18 Feeding

[New in JDF 1.2](#)

The **Feeding** Process separates sheets or signatures from a stack or stream and feeds single Component(s) to Processes such as **Folding**, **Gathering**, **Collecting**, **ConventionalPrinting**, etc. In general, the **Feeding** Process will be part of a Combined Process with Processes that consume the feed of Component(s) or Media.

When used in a Combined Process with feed consuming Process (e.g., **Gathering**), the **Feeding** Process allows an arbitrary complex selection of input Component Elements in any number, and in any order, as long as elements are consumed consecutively (i.e., no random access within a single input component).

When specified for a web press or web finishing device, **Feeding** describes the process of unwinding Media or Components from a roll.

**Figure 6-6: Combined Process with Feeding Process**

In our example above, one input component (Component A) is a bundle component (`@BundleType = "Stack"`) consisting of a collated set of three Sheets, the other one (Component B) is a collated set consisting of two Sheets per set. Both sets are oriented face-up (See Figure 6-7). Figure 6-8 shows the output for the case of **Gathering**.

**Figure 6-7: Input Components**

- Sheet 1 of Component A — — Sheet 1 of Component B —
- Sheet 2 of Component A — — Sheet 2 of Component B —
- Sheet 3 of Component A —

**Figure 6-8: Output Component**

- Sheet 3 of Component A —
- Sheet 2 of Component B —
- Sheet 1 of Component B —
- Sheet 2 of Component A —
- Sheet 1 of Component A —

Note that, by default, none of the Sheets is flipped, so surfaces of Sheet 1 of **Component A** do not show in a different direction. To flip Sheets, **FeedingParams/CollatingItem/@Orientation** MAY be specified.

**Table 6-128: Feeding – Input Resources**

Name	Description
<b>Component</b> *	Sheets or Signatures to be fed to the machinery. The <code>@ProcessUsage</code> of the <b>Component</b> MAY be specified as any valid <code>@ProcessUsage</code> of the a feed consuming Process.
<b>FeedingParams</b> ?	Specific parameters to set up the <b>Feeding</b> Process
<b>Media</b> *	Media to be fed to the feeder machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-129: Feeding – Output Resources (Sheet 1 of 2)**

Name	Description
<b>Component</b> *	Component(s) fed to the consuming Process.

**Table 6-129: Feeding – Output Resources (Sheet 2 of 2)**

Name	Description
Media *	Media fed to the consuming Process.

### 6.6.19 Folding

Buckle folders or knife folders are used for **Folding** Sheets. One or more Sheets can be folded at the same time. Web presses often provide in-line **Folding** equipment. Longitudinal **Folding** is often performed using a former, a plow folder or a belt. While jaw folding, chopper folding or drum folding equipment is used for folding the Sheets that have been divided.

The **JDF XJDF Folding** Process covers both operations done in stand-alone **Folding** machinery – typically found for processing printed materials from Sheet-Fed presses – and in-line equipment of Web Presses. Creasing and/or slot perforating are sometimes necessary parts of the **Folding** operation that guarantee exact Process execution. They depend on the folder used, the **Media** and the folding layout. These operations are specified in the **Creasing** and **Perforating** Processes respectively.

**Table 6-130: Folding – Input Resources**

Name	Description
Component ?	Component Resources, including a printed Sheet or a pile of Sheets, are used in the <b>Folding</b> Process.
FoldingParams ?	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-131: Folding – Output Resources**

Name	Description
Component ? <a href="#">Modified in JDF 1.1</a>	The Process produces a <b>Component</b> , which in most cases is a folded Sheet.

### 6.6.20 Gathering

In the **Gathering** Process, ribbons, Sheets or other **Component** Resources are accumulated on a pile that will eventually be stitched or glued in some way to create an individual **Component**. The input **Component** Resources MAY be Output Resources of a Web-Printing Machine used in **Collecting** or of any Machine that executes a **ConventionalPrinting** or **DigitalPrinting** Process. In Sheet applications, a moving gathering channel is used to transport the pile. But no matter what the inception of the **Gathering** Process, the sequence of the input components dictates the produced component. Figure 6-9, “Gathering,” on page 406 shows typical gathered piles.

**Figure 6-9: Gathering****Table 6-132: Gathering – Input Resources (Sheet 1 of 2)**

Name	Description
Assembly ? <a href="#">New in JDF 1.3</a>	Explicitly describes the sequence of the <b>Component</b> Resources to be gathered. If <b>Assembly</b> is not specified, the sequence is defined by the sequence of the <b>Component</b> . Caution: <b>Assembly</b> has the first on the top, whereas the <b>Component</b> Resources are listed from bottom to top.

**Table 6-132: Gathering – Input Resources (Sheet 2 of 2)**

Name	Description
<b>Component</b> <small>+*</small>	Variable amount of components including single Sheets or folded Sheets are used in the <b>Gathering</b> Process. The first <b>Component</b> in the list lies at the bottom of the gathered pile.
<b>DBRules</b> * <small>Deprecated in JDF 1.5</small>	Database input that describes which Sheets are to be gathered for a particular instance component. The schema are only in the form of human-readable text. One rule is applied for each individual component.
<b>DBSelection</b> ? <small>Deprecated in JDF 1.5</small>	Database input that describes which Sheets are to be gathered for a particular instance component.
<b>GatheringParams</b> ?	Specific parameters to set up the machinery.
<b>IdentificationField</b> ? <small>Deprecated in JDF 1.2</small>	Information about identification marks on the component. In JDF 1.2 and beyond, this information is defined in the <b>Component</b> itself.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-133: Gathering – Output Resources**

Name	Description
<b>Component</b> ?	Components gathered together (e.g., a pile of folded Sheets).

## 6.6.21 Gluing

New in JDF 1.1

**Gluing** describes arbitrary methods of applying glue to a **Component**.

**Table 6-134: Gluing – Input Resources**

Name	Description
<b>Component</b> ?	This Process consumes one <b>Component</b> : the printed Sheets.
<b>GluingParams</b> ?	Details of the <b>Gluing</b> Process.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-135: Gluing – Output Resources**

Name	Description
<b>Component</b> ?	One <b>Component</b> is produced, the input <b>Component</b> with glue applied to it.

## 6.6.22 HeadBandApplication

New in JDF 1.1

Head bands are applied to the hard cover book block. In case different headbands are desired for top and bottom, **HeadBandApplicationParams** SHOULD be partitioned with **Part/@Option="Top"** and **Part/@Option="Bottom"**.

**Table 6-136: HeadBandApplication – Input Resources**

Name	Description
<b>Component</b> ?	The prepared book block.
<b>HeadBandApplicationParams</b> ?	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-137: HeadBandApplication – Output Resources**

Name	Description
Component ?	One <b>Component</b> is produced: the hard cover block with head bands.

### 6.6.23 HoleMaking

A variety of Machines (e.g., those responsible for stamping and drilling) can perform the **HoleMaking** Process. This postpress Process is needed for different binding techniques (e.g., spiral binding). One or several holes with different shapes can be made that are later on used for binding the book block together.

**Table 6-138: HoleMaking – Input Resources**

Name	
Component ?	One <b>Component</b> (e.g., a printed Sheet or a pile of Sheets) are modified in the <b>HoleMaking</b> Process.
HoleMakingParams ?	Specific parameters, including hole diameter and positions, used to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-139: HoleMaking – Output Resources**

Name	Description
Component ?	A <b>Component</b> with holes (e.g., a book block or a single Sheet) is produced for further postpress Processes.

### 6.6.24 Inserting

This Process can be performed at several stages in postpress. The Process can be used to describe the labeling of products, labeling of packages or the gluing-in of a **Component** (e.g., a card, Sheet or CD-ROM). Two **Component** Resources are required for the **Inserting** Process: the “mother” **Component** and the “child” **Component**. **Inserting** can be a selective Process by means of inserting different “child” **Component** Resources. Information about the placement is needed to perform the Process. Inserting multiple child components is specified as a Combined Process with multiple individual **Inserting** steps.

**Table 6-140: Inserting – Input Resources**

Name	Description
Component ?	Designates where to insert the child <b>Component</b> .
Modified in JDF 1.4 <a href="#">Modified in JDF 1.4</a>	<b>Modification note:</b> starting with JDF 1.4, the input ComponentLink NEED NOT have @ProcessUsage= "Mother".
Component (Child) ?	The <b>Component</b> to be inserted in the mother <b>Component</b> .
DBRules ? <a href="#">Deprecated in JDF 1.5</a>	Database input that describes whether the child is to be inserted for a particular instance <b>Component</b> . In this version the schema is only human readable text.
DBSelection ? <a href="#">Deprecated in JDF 1.5</a>	Database input that describes whether the child is to be inserted for a particular instance <b>Component</b> .
IdentificationField ? <a href="#">Deprecated in JDF 1.2</a>	Information about identification marks on the <b>Component</b> . In JDF 1.2 and beyond, this information is defined in the <b>Component</b> itself.
InsertingParams ?	Specific parameters (e.g., placement) to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-141: Inserting – Output Resources**

Name	Description
<b>Component</b>	A mother <b>Component</b> is produced containing the inserted child <b>Component</b> .

### 6.6.25 Jacketing

[New in JDF 1.1](#)

**Jacketing** is the Process where the book is wrapped by a jacket that needs to be folded twice. As long as the book is specified and the jacket dimensions are known, there are just a few important details. If the jacketing Device also creases the jacket, this can be described with a Combined Process of **Jacketing** and **Creasing**.

**Table 6-142: Jacketing – Input Resources**

Name	Description
<b>Component (Book)</b> ?	The book that the jacket is wrapped around.
<b>Component (Jacket)</b> ?	The description of the jacket.
<b>JacketingParams</b> ?	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-143: Jacketing – Output Resources**

Name	Description
<b>Component</b> ?	The jacketed book.

### 6.6.26 Labeling

[New in JDF 1.1](#)

A label can be attached to a bundle. The label can contain information on the addressee, the product, the product quantities, etc., which can be different for each bundle.

**Table 6-144: Labeling – Input Resources**

Name	Description
<b>Component</b> ?	The <b>Labeling</b> Process labels one <b>Component</b> with a set of labels.
<b>Component (Label)</b> ?	The label to be attached to the <b>Component</b> .
<b>LabelingParams</b> ?	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-145: Labeling – Output Resources**

Name	Description
<b>Component</b> ?	One <b>Component</b> is produced: the labeled <b>Component</b> .

### 6.6.27 Laminating

In the **Laminating** Process, a plastic film is bonded to one or both sides of a **Component** Resource's media, and adhered under pressure with either a thermal setting or pressure sensitive adhesive.

**Table 6-146: Laminating – Input Resources**

Name	Description
<b>Component ?</b>	A <b>Component</b> is REQUIRED SHALL be specified for <b>Laminating</b> .
<b>LaminatingParams ?</b>	Specific parameters to set up the machinery.
<b>Media (<i>Foil</i>) ?</b>	The laminating foil material.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-147: Laminating – Output Resources**

Name	Description
<b>Component ?</b>	One <b>Component</b> is produced: the laminated component.

## 6.6.28 LongitudinalRibbonOperations

Deprecated in JDF 1.1

In version 1.1 of JDF and beyond, in-line finishing is described using the “standard” finishing Processes (e.g., **Creasing**, **Cutting**, **Folding**) or in a Combined Process Node with **ConventionalPrinting**. See Section P.4.15, “LongitudinalRibbonOperations” on page 1334 for details of this deprecated Process.

## 6.6.29 LooseBinding

**LooseBinding** describes a binding (as for a notebook, catalog, price list) holding pages together by spiral wire, plastic combs, metal clamps, rings or metal rods.

LooseBinding can again be subdivided into two subtypes: ring binding and mechanical binding, each of which is described below.

### 6.6.29.1 Loose-Leaf Binding Methods

This binding techniques allow contents to be changed, inserted or removed at will. There are two essential groups of loose-leaf binding systems: those that require the paper to be punched or drilled and those that do not. The RingBinding method is the most prominent binding in the loose-leaf binding category. Loose-leaf binding methods include:

**Ring Binding:** In this process, prepunched sheets are placed in a ring binder. Ring binders have different numbers of rings that are fixed to a metal backbone. In most cases, two, three or four metal rings hold the sheets together as long as the binding is closed. Depending on the amount of sheets to be bound together, ring binders of different thickness are be used. Additional details MAY be specified in **LooseBindingParams/RingBindingDetails**.

### 6.6.29.2 Mechanical Binding Methods

Single leafs are fastened into what is essentially a permanent system that is not meant to be reopened. However, special machinery can be used to reopen some of the mechanical binding systems described below.

In mechanical binding, printing and folding can be done in a conventional manner. The gathered sheets, however, often require the back to be trimmed, as well as the other three sides. Mechanical bindings are often used for short-run jobs such as ones that have been printed digitally. Mechanical binding methods include:

**Channel Binding:** Various sizes of metal clamps can be used. The process can be executed in two ways. In the first, a pile of single sheets – sometimes together with a front and back cover – is inserted into a U-shaped clamp and crimped in special machinery. In the second, a pre-assembled cover that includes the open U-shaped clamp is used instead of the U-shaped clamp alone. The thickness of the pile of sheets determines in both cases the width of the U-shaped clamp to be used for forming the fixed document, which is not meant to be reopened later. Additional details MAY be specified in **LooseBindingParams/ChannelBindingDetails**.

**Coil Binding:** Another name is spiral binding. Metal wire, wire with plastic or pure plastic is used to fasten prepunched sheets of paper, cardboard or other materials. First, automated machinery forms a spiral of proper diameter.

ter and length. The ends of the spiral are then “tucked-in”. Finally, the content is permanently fixed. Note that every time a coil-bound book is opened, a vertical shift occurs as a result of the coil action. This is a characteristic of the method. Additional details MAY be specified in **LooseBindingParams/CoilBindingDetails**.

**Comb Binding:** In this method, a metal wire, wire with plastic or pure plastic insert wraps through prepunched holes in the substrate. In case of plastic combs, these holes are most often rectangular and elongated. After the comb is opened with a special tool, the prepunched block of sheets – often together with a top and bottom cover – is inserted onto the “teeth” of the comb. Additional details MAY be specified in **LooseBindingParams/CombBindingDetails**.

**Strip Binding:** Hard plastic strips are held together by plastic pins, which in turn are bound to the strips with heat. The sheets to be bound are prepunched so that the top strip with multiple pins fits through the assembled material. The top strip is then connected to the bottom strip with matching holes for the pins. The binding edge is often compressed in a special machine before the excess pin length is cut off. The backstrip is permanently fixed with plastic clamping bars and cannot be removed without a special tool.

**Table 6-148: LooseBinding – Input Resources**

Name	Description
<b>Component ?</b>	The operation requires one component: the block of Sheets to be bound. If <b>Component (Cover)</b> is NOT provided and there is a cover, this <b>Component</b> SHALL be Partitioned, and the first Partition of this <b>Component</b> SHALL specify the Cover
<b>Component (Cover) ?</b>	The empty cover with the U-shaped clamp that might, for example, have been printed before it is used for “ <i>ChannelBinding</i> ”. <b>Covers for LooseBinding</b> .
<b>LooseBindingParams ?</b>	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-149: LooseBinding – Output Resources**

Name	Description
<b>Component ?</b>	One <b>Component</b> is produced: the channel-bound component forming an item such as a brochure.

### 6.6.30 Numbering

Deprecated in JDF 1.5

Starting with JDF 1.5, use **LayoutElementProduction**. For details of the deprecated **Numbering** process, see Section P.4.16, “Numbering”.

### 6.6.31 Palletizing

New in JDF 1.1

Bundles, stacks, piles or boxes can be loaded onto a pallet.

**Table 6-150: Palletizing – Input Resources**

Name	Description
<b>Component</b> +* <a href="#">Modified in JDF 1.4</a>	The <b>Palletizing</b> Process describes placing the bundle that is represented by the <b>Component</b> onto a pallet. If more than one <b>Component</b> is specified, a <b>PalletizingParams/Bundle</b> Resource SHALL also be specified. <b>Modification note:</b> starting with JDF 1.4, <b>Component</b> can occur more than once.
<b>Pallet</b> ?	The pallet.
<b>PalletizingParams</b> ?	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-151: Palletizing – Output Resources**

Name	Description
<b>Component</b> ?	One <b>Component</b> is produced. It represents the loaded pallet. If more than one input <b>Component</b> is supplied, a <b>Component/Bundle</b> Resource SHALL also be supplied in the output <b>Component</b>

### 6.6.32 Perforating

[New in JDF 1.1](#)

**Perforating** describes any Process where a **Component** is perforated. **Perforating** includes production perforation applied as a preparation for **Folding**.

**Table 6-152: Perforating – Input Resources**

Name	Description
<b>Component</b> ?	This Process consumes one <b>Component</b> : the printed Sheets.
<b>PerforatingParams</b> ?	Details of the <b>Perforating</b> Process.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-153: Perforating – Output Resources**

Name	Description
<b>Component</b> ?	One <b>Component</b> is produced.

### 6.6.33 PlasticCombBinding

In the **PlasticCombBinding** Process, a plastic insert wraps through prepunched holes in the substrate. Most often, these holes are rectangular and elongated. After the plastic comb is opened with a special tool, the prepunched block of Sheets – often together with a top and button cover – is inserted onto the “teeth” of the plastic comb. When released from the Machine, the teeth return to their original cylindrical positions with the points tucked into the back-side of the spine area. Special machinery can be used to reopen the plastic comb binding.

**Table 6-154: PlasticCombBinding – Input Resources**

Name	Description
<b>Component</b>	The operation requires one component: the pile of Sheets often including a top and button cover.
<b>PlasticCombBindingParams</b>	Specific parameters to set up the machinery.

**Table 6-155: PlasticCombBinding – Output Resources**

Name	Description
Component	One <b>Component</b> is produced: the plastic-comb-bound component forming an item such as a calendar.

### 6.6.34 PrintRolling

New in JDF 1.2

The single products like Sheets, Signatures or partial products are rolled onto a roll stand. The Roll is the output component of the Process and is used to store the products. The single components of a Roll are used as input component of a consuming Process (e.g., **Collecting**, **Gathering** or **Inserting**). See Figure 6-10, “Print Roll,” on page 413

**Figure 6-10: Print Roll****Table 6-156: PrintRolling – Input Resources**

Name	Description
Component ?	<b>Component</b> to be rolled.
PrintRollingParams ?	Print rolling parameters.
RollStand ?	Roll stand to store the component(s) as rolls.

**Table 6-157: PrintRolling – Output Resources**

Name	Description
Component ?	The print Roll.

### 6.6.35 RingBinding

In this Process, prepunched Sheets are placed in a ring binder. Ring binders have different numbers of rings that are fixed to a metal backbone. In most cases, two, three or four metal rings hold the Sheets together as long as the binding is closed. Depending on the amount of Sheets to be bound together, ring binders of different thickness SHALL be used.

**Table 6-158: RingBinding – Input Resources (Sheet 1 of 2)**

Name	Description
Component <a href="#">Modified in JDF 1.4</a>	The operation requires one component: the pile of prepunched Sheets to be inserted into the ring binder.  <b>Modification note:</b> starting with JDF 1.4, the input ComponentLink NEED NOT have @ProcessUsage= "BookBlock".

**Table 6-158: RingBinding – Input Resources (Sheet 2 of 2)**

Name	Description
<b>Component</b> ( <i>RingBinder</i> ) ?	The empty ring binder that might have been printed, for example, before it is used during the <b>RingBinding</b> Process.
<b>RingBindingParams</b>	Specific parameters to set up the Process/machinery.

**Table 6-159: RingBinding – Output Resources**

Name	Description
<b>Component</b>	One <b>Component</b> is produced: the ring-bound component forming an item such as a calendar.

### 6.6.36 SaddleStitching

[Deprecated in JDF 1.1](#)

**SaddleStitching** has been replaced by **Stitching** in JDF 1.1. See Section P.4.17, “SaddleStitching” on page 1335 for details of this deprecated Process.

### 6.6.37 ShapeCutting

[New in JDF 1.1](#)

The **ShapeCutting** Process can be performed using tools such as hollow form punching, perforating or die-cutting equipment.

**Table 6-160: ShapeCutting – Input Resources**

Name	Description
<b>Component</b> ?	This Process consumes one <b>Component</b> : The Sheets to be cut.
<b>ShapeCuttingParams</b> ?	Details of the <b>ShapeCutting</b> Process.
<a href="#">Modified in JDF 1.3</a>	
<b>Tool</b> *	The set of tools (die, counter, blankers, strippers, etc.).
<a href="#">Modified in JDF 1.3</a>	
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-161: ShapeCutting – Output Resources**

Name	Description
<b>Component</b> +* <a href="#">Modified in JDF 1.3</a>	One or more <b>Component</b> Resources are produced by the <b>ShapeCutting</b> Process.

### 6.6.38 ShapeDefProduction

[New in JDF 1.4](#)

This process describes the structural design of a packaging or labels product (e.g., a non rectangular label, a box, a display, a bag, a pouch, etc.). Also, this process typically (but not exclusively) describes the process of designing the shape of a new box using a CAD application. The output of the **ShapeDefProduction** Process can be multiple **ShapeDef** Resources (e.g., when the design of the box results in multiple pieces, such as a box, an object and an insert piece, where the insert piece is fixed to the object to be packed in the box). Another example would be a multi-piece display. The **ShapeDefProduction** Process can be performed by a human operator using a CAD application. In some cases it can be an automated process. Note that **ShapeDefProduction** needs information stored in both **ShapeDefProductionParams** and **ShapeDef** to make a new structural design.

**Table 6-162: ShapeDefProduction – Input Resources**

Name	Description
<b>LayoutElement ?</b>	A rough drawing or outline (e.g., an EPS) of the <b>ShapeDef</b> that serves as the input for structural design.
<b>RunList ?</b>	
<b>ShapeDefProductionParams ?</b>	Parameters for the structural design.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-163: ShapeDefProduction – Output Resources**

Name	Description
<b>ShapeDef +ShapeDef *</b>	A Resource describing the shape of the product to be produced

### 6.6.39 Shrinking

New in JDF 1.1

The **Shrinking** Process shrinks the shrink-wrap that is wrapped around a bundle. Shrink-wrap foil SHALL be treated in order to shrink.

**Note:** **Shrinking** does NOT include the wrapping of the **Component** with foil. The actual wrapping is described by the **Wrapping** process. See Section 6.6.54, “Wrapping” on page 421

**Table 6-164: Shrinking – Input Resources**

Name	Description
<b>Component ?</b>	The bundle including the shrink-wrap media is represented by this <b>Component</b> .
<b>ShrinkingParams ?</b>	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-165: Shrinking – Output Resources**

Name	Description
<b>Component ?</b>	One <b>Component</b> is produced: the bundle including bundle including the shrunk shrink-wrap media.

### 6.6.40 SideSewing

Deprecated in JDF 1.1

Replaced by **ThreadSewing**. See Section P.4.18, “SideSewing” on page 1335 for details of this deprecated Process.

### 6.6.41 SpinePreparation

New in JDF 1.1

The **SpinePreparation** Process describes the preparation of the spine of book blocks for hard and soft cover book production (e.g., milling and notching).

**Table 6-166: SpinePreparation – Input Resources (Sheet 1 of 2)**

Name	Description
<b>Component ?</b>	The raw book block.

**Table 6-166: SpinePreparation – Input Resources (Sheet 2 of 2)**

Name	Description
<b>SpinePreparationParams</b> ?	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-167: SpinePreparation – Output Resources**

Name	Description
<b>Component</b> ?	The book block with a processed spine.

## 6.6.42 SpineTaping

[New in JDF 1.1](#)

**SpineTaping** describes the Process of applying a tape strip to the spine of a book block. It also describes the Process of applying kraft paper to a hard cover book block.

**Table 6-168: SpineTaping – Input Resources**

Name	Description
<b>Component</b> ?	The book block that the spine is taped to.
<b>SpineTapingParams</b> ?	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-169: SpineTaping – Output Resources**

Name	Description
<b>Component</b> ?	The book block with the spine.

## 6.6.43 Stacking

[New in JDF 1.1](#)

The **Stacking** Process collects **PhysicalResources Resource Elements** (products) and produces a pile, stack or bundle for delivery. In a standard production each bundle consists of the same amount of identical products, possibly followed by one or more odd-count bundles. In a production with variable data (e.g., newspaper dispatch, demographic production or individual addressed products), each bundle has a variable amount of products, and, in the worst case, each product can be different from the others. The input components are single products; the output components are stacks of this product.

**Table 6-170: Stacking – Input Resources**

Name	Description
<b>Component</b> ?	The <b>Stacking</b> Process consumes one <b>Component</b> and stacks it onto a stack.
<b>StackingParams</b> ?	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-171: Stacking – Output Resources**

Name	Description
<b>Component</b> ?	One <b>Component</b> is produced: the stack of input Components.

### 6.6.44 StaticBlocking

[New in JDF 1.4](#)

The **StaticBlocking** Process puts an electrical charge on a stack in order to hold it together for shipping.

**Table 6-172: StaticBlocking – Input Resources**

Name	Description
<b>Component</b> ?	The <b>StaticBlocking</b> Process puts an electrical charge on the specified <b>Component</b> .
<b>StaticBlockingParams</b> ?	Specific parameters for the electrical charging.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-173: StaticBlocking – Output Resources**

Name	Description
<b>Component</b> ?	The resulting electrically charged <b>Component</b> .

### 6.6.45 Stitching

Gathered or collected Sheets or Signatures are stitched together with a cover.

**Table 6-174: Stitching – Input Resources**

Name	Description
<b>Component</b> ?	A <b>Component</b> is REQUIRED SHALL be specified that represents the pile of gathered or collected sheets, including the cover.
<b>StitchingParams</b> ?	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-175: Stitching – Output Resources**

Name	Description
<b>Component</b> ?	One <b>Component</b> is produced: the gathered or collected Sheets including the cover stitched together.

### Example 6-11: Stitching: Combined Process

Components containing staples of different characteristics like shape, width, etc. are defined by a Combined Process.

[TBD 2.x Example](#)

```
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="CombinedStitch"
      JobID="Stitching special" JobPartID="ID123" Type="Combined"
      Types="Stitching Stitching" Status="Ready" Version="1.4">
  <ResourcePool>
    <StitchingParams Class="Parameter" ID="Stitch1" NumberOfStitches="2"
                     StapleShape="Butted" Status="Available" StitchPositions="100 700"
                     StitchWidth="28.3" WireBrand="Steel" WireGauge="2.3"/>
    <StitchingParams Class="Parameter" ID="Stitch2" NumberOfStitches="2"
                     StapleShape="Eyelet" Status="Available" StitchPositions="300 500"
                     StitchWidth="42.5" WireBrand="Steel" WireGauge="2.3"/>
    <Component Class="Quantity" ID="Comp1" Status="Available"
               ComponentType="Sheet"/>
    <Component Class="Quantity" ID="Comp2" Status="Unavailable"
               ComponentType="Sheet"/>
  </ResourcePool>
```

```

<ResourceLinkPool>
  <StitchingParamsLink CombinedProcessIndex="0" Usage="Input" rRef="Stitch1"/>
  <StitchingParamsLink CombinedProcessIndex="1" Usage="Input" rRef="Stitch2"/>
  <ComponentLink Usage="Input" rRef="Comp1"/>
  <ComponentLink Usage="Output" rRef="Comp2"/>
</ResourceLinkPool>
</JDF>

```

## 6.6.46 Strapping

[New in JDF 1.1](#)

The Strapping process specifies how straps are wrapped around a bundle. The straps that are used SHOULD be specified as a **MiscConsumable**.

A bundle MAY be strapped. There are different kinds of strapping (e.g., single (one strap around the bundle), double (two parallel straps) and cross (two crossed straps)).

**Table 6-176: Strapping – Input Resources**

Name	Description
<b>Component</b> ?	The <b>Strapping</b> Process puts straps around a bundle that is represented by a <b>Component</b> .
<b>Strap</b> ?	The straps used.
<b>StrappingParams</b> ?	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-177: Strapping – Output Resources**

Name	Description
<b>Component</b> ?	One <b>Component</b> is produced: the strapped <b>Component</b> .

## 6.6.47 StripBinding

[New in JDF 1.1](#)

Hard plastic strips are held together by plastic pins, which in turn are bound to the strips with heat. The Sheets to be bound SHALL be prepunched so that the top strip with multiple pins fits through the assembled material. It is then connected to the bottom strip with matching holes for the pins. The binding edge is often compressed in a special Machine before the excess pin length is cut off. The backstrip is permanently fixed with plastic clamping bars and cannot be removed without a special tool.

**Table 6-178: StripBinding – Input Resources**

Name	Description
<b>Component</b>	The operation requires one component: the block of Sheets to be bound.
<b>StripBindingParams</b>	Specific parameters to set up the machinery.

**Table 6-179: StripBinding – Output Resources**

Name	Description
<b>Component</b>	One <b>Component</b> is produced: the strip-bound component forming an item such as a book.

## 6.6.48 ThreadSealing

[New in JDF 1.1](#)

Similar to Smythe sewing, **ThreadSealing** involves sewing the Signatures at the spine of the book. After the Signatures are sewn, they are gathered and run through the perfect binder. The perfect binder however does not grind the spine. Instead the binding adhesive (which attaches the cover) envelops the thread that holds the book together. This special thread holds to the glue to create a sewn book with most of the same properties as Smythe sewing.

**Table 6-180: ThreadSealing – Input Resources**

Name	Description
<b>Component</b> ?	This Process consumes one <b>Component</b> : the printed Sheets.
<b>ThreadSealingParams</b> ?	Details of the <b>ThreadSealing</b> Process.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-181: ThreadSealing – Output Resources**

Name	Description
<b>Component</b> ?	One <b>Component</b> is produced.

## 6.6.49 ThreadSewing

This Process might include a gluing application, which would be used principally between the first and the second Sheet or the last and the last Sheet but one. **Gluing** might also be necessary if different types of paper are used.

**Table 6-182: ThreadSewing – Input Resources**

Name	Description
<b>Component</b> ?	The operation requires one component: the gathered Sheets.
<b>ThreadSewingParams</b> ?	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-183: ThreadSewing – Output Resources**

Name	Description
<b>Component</b> ?	One <b>Component</b> is produced: the thread-sewn components forming an item such as a raw book block.

## 6.6.50 Trimming

The **Trimming** Process is performed to adjust a book block or Sheet to its final size. In most cases, it follows a block joining Process, and the Process is often executed as an in-line operation of a production chain. For example, the binding station might deliver the book blocks to the trimmer. A Combined Process in the trimming machinery would then execute a cut at the front, head and tail in a cycle of two operations. Closed edges of folded Signatures would then be opened while the book block is trimmed to its predetermined dimensions.

The separation of N-up Multiple Products is specified with a **Cutting** Process in front of a **Trimming** Process.

**Table 6-184: Trimming – Input Resources (Sheet 1 of 2)**

Name	Description
<b>Component</b> ?	The bound book block or Sheet that will be trimmed.
<a href="#">Modified in JDF 1.2</a>	

**Table 6-184: Trimming – Input Resources (Sheet 2 of 2)**

Name	Description
TrimmingParams?	Specific parameters (e.g., trim size) to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-185: Trimming – Output Resources**

Name	Description
Component?	One <b>Component</b> is produced: the trimmed component.

### 6.6.51 WebInlineFinishing

[New in JDF 1.3](#)

The **WebInlineFinishing** Process combines all additional information about inline finishing functionality in connection with Web Printing. In order to describe the **WebInlineFinishing** functionality fully, it is necessary to combine additional Processes like **Stitching**, **Trimming**, **Gluing**, etc.

**Table 6-186: WebInlineFinishing – Input Resources**

Name	Description
Assembly?	In context of newspaper printing, <b>Assembly</b> describes how the newspaper Job is sub-divided in physical sections and bound together.
Component?	Printed webs or ribbons, which will be processed by the <b>WebInlineFinishing</b> Process
ProductionPath?	<b>ProductionPath</b> describes the paper path that is used through the press and describes exactly one particular product which has to be produced.
StrippingParams?Layout?	Defines how the surfaces of the bindery Signatures of a single Job or Jobs are placed onto the Web(s) or Sheet(s) This information MAY be used for counting the amount of components produced.
WebInlineFinishingParams?	Additional parameters for production are described by <b>WebInlineFinishingParams</b>
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-187: WebInlineFinishing – Output Resources**

Name	Description
Component?	Describes the finished printed <b>Component</b> out of Web inline finishing equipment. This could be printed and / or folded Sheets or rolls. With one production run, it is possible to produce more than one product / order per press run. <b>Component</b> MAY be Partitioned by @WebProduct @ProductPart.

### 6.6.52 Winding

[New in JDF 1.5](#)

The **Winding** process describes the winding of continuous media or processed components onto a core. The setup is defined in **WindingParams**. The final orientation of the labels on the output roll is specified in **Component/@WindingResult**.

**Table 6-188: Winding – Input Resources**

Name	Description
<b>Component</b>	Ribbon or Web to be wound. Exactly one of <b>Media</b> or <b>Component</b> SHALL be specified.
<b>Media ?</b>	Unprocessed <b>Media</b> MAY be wound. Exactly one of <b>Media</b> or <b>Component</b> SHALL be specified.
<b>Media (Core) ?</b>	Core that the input <b>Component</b> is wound around.
<b>WindingParams ?</b>	Setup parameters of the winding process.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-189: Winding – Output Resources**

Name	Description
<b>Component ?</b>	The Roll including the core and the wound products. <b>Component</b> / @ <i>WindingResult</i> SHALL be evaluated to determine the winding orientation.

### 6.6.53 **WireCombBinding**

In **WireCombBinding** metal wire, wire with plastic or pure plastic is used to fasten prepunched Sheets of paper, cardboard or other such materials. The wire – often formed as a double wire – is inserted into the holes, then curled to create a circular enclosure.

**Table 6-190: WireCombBinding – Input Resources**

Name	Description
<b>Component</b>	The operation requires one component: the pile of preprinted Sheets often including a front and back cover.
<b>WireCombBindingParams</b>	Specific parameters to set up the machinery.

**Table 6-191: WireCombBinding – Output Resources**

Name	Description
<b>Component</b>	One <b>Component</b> is produced: the wire-comb bound component forming an item such as a calendar.

### 6.6.54 Wrapping

New in JDF 1.1

Single products, bundles or pallets can be wrapped by film or paper using bags, bands or wrapping material.

**Table 6-192: Wrapping – Input Resources (Sheet 1 of 2)**

Name	Description
<b>Component ?</b>	The <b>Wrapping</b> Process wraps a bundle that is represented by a <b>Component</b> .
<b>Component (Wrapper)?</b>	If the wrapping material is preprinted, then <b>Component</b> (Wrapper) represents the wrapping material. Rubber bands and other non-printed material SHOULD be represented as <b>MiscConsumable</b> .
<b>Media ?</b>	The wrapping material.

**Table 6-192: Wrapping – Input Resources (Sheet 2 of 2)**

Name	Description
WrappingParams?	Specific parameters to set up the machinery.
Generic Input Resources*	See Table 6-2 for additional input resources that are valid for all process types.

**Table 6-193: Wrapping – Output Resources**

Name	Description
Component?	One <b>Component</b> is produced: the wrapped <b>Component</b> .

## 6.7 Postpress Processes Structure

### 6.7.1 Block Production

This subcategory of the postpress Processes merges together all the Processes for making a book block. First the block is compiled using the **Collecting** and **Gathering** Processes. After that, it is combined using one or several of the block joining Processes, including **CoverApplication**, **SpineTaping**, **Stitching** and **ThreadSewing**. The workflow using these Processes eventually produces a **Component** that can be trimmed.

#### 6.7.1.1 Block Compiling

The **Gathering** and **Collecting** Processes are used to position unfolded Sheets and/or folded Sheets in a planned order. These operations set a fixed page sequence in preparation for three-side trimming and binding. Block compiling includes:

- **Collecting**
- **Gathering**
- **PrintRolling**
- **Feeding**
- **Winding**

#### 6.7.1.2 Block Joining

The block joining Processes can be grouped into two major subcategories: conventional binding methods, which includes the Processes of **Stitching**, **CoverApplication**, **SpinePreparation**, **SpineTaping**, **ThreadSealing** and **ThreadSewing**; and single-leaf binding methods, which are listed in [Section 6.7.1.3.1, “Single-Leaf Binding Methods”](#). Together they form a subcategory of block-production Processes. All of these Processes, which are known as block joining Processes, unite Sheets and/or folded Sheets lying loose on top of each other.

There are numerous possible binding methods. The most prominent ones are modeled by the Processes described in the following sections. Many of them can be part of a combined production chain being performed as in-line tasks. Block joining includes:

- **CoverApplication**
- **EndSheetGluing**
- **Gluing**
- **SpinePreparation**
- **SpineTaping**
- **Stitching**
- **ThreadSewing**

#### 6.7.1.3 Binding Methods

##### 6.7.1.3.1 Single-Leaf Binding Methods

Besides the conventional binding methods, there is a multifaceted group of binding methods for single-leaf bindings. This group can again be subdivided into two subtypes: loose-leaf binding and mechanical binding, each of which is described in the sections that follow.

### 6.7.1.3.2 Loose-Leaf Binding Method

This binding techniques allow contents to be changed, inserted or removed at will. There are two essential groups of loose-leaf binding systems: those that require the paper to be punched or drilled and those that do not. The ***RingBinding*** method, described in the next section, is the most prominent binding in the loose-leaf binding category. Loose-leaf binding methods include:

- ***RingBinding***

### 6.7.1.3.3 Mechanical Binding Methods

Single leafs are fastened into what is essentially a permanent system that is not meant to be reopened. However, special machinery can be used to reopen some of the mechanical binding systems described below.

In mechanical binding, printing and folding can be done in a conventional manner. The gathered Sheets, however, often require the back to be trimmed, as well as the other three sides. Mechanical bindings are often used for short-run Jobs such as ones that have been printed digitally. The most prominent mechanical binding Processes are described in the sections that follow. Mechanical binding methods include:

- ***ChannelBinding***
- ***CoilBinding***
- ***PlasticCombBinding***
- ***RingBinding***
- ***StripBinding***
- ***WireCombBinding***

## 6.7.2 HoleMaking

- ***HoleMaking***

## 6.7.3 Laminating

- ***Laminating***

## 6.7.4 Numbering

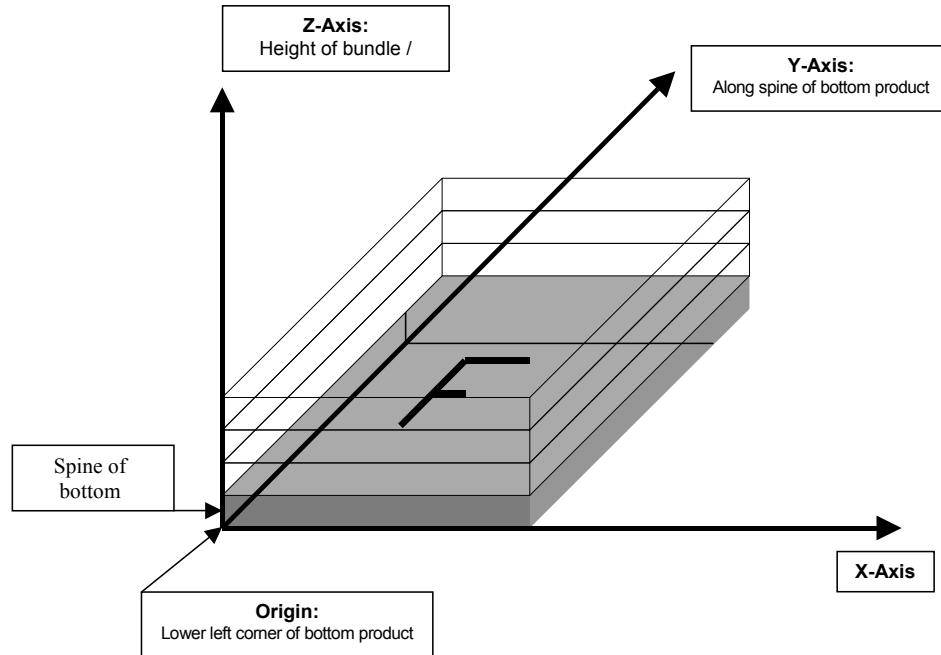
- ***Numbering***

## 6.7.5 Packaging Processes

The individual Processes defined in this section replace the deprecated ***Packing*** Process. Packaging Processes include:

- ***BoxPacking***
- ***Bundling***
- ***Labeling***
- ***Palletizing***
- ***Shrinking***
- ***Stacking***
- ***Strapping***
- ***Wrapping***

Each of these Processes share a common coordinate system as depicted below:

**Figure 6-11: Packaging Process Coordinate System**

### 6.7.6 Processes in Hardcover Book Production

The following Processes refer to the production of hard cover books. Several Processes are needed to produce a hard-cover book. Some of them are essential and others are optional. The Processes are:

- CaseMaking:** Production of hard cover book cases.
  - BlockPreparation:** The optional hardcover design elements (e.g., rounding and backing, ribbon band, headband, side gluing and tightbacking) are described in this Process. Application of kraft paper to the book block is described in the **SpineTaping** Process.
  - CasingIn:** In this Process, the case and the prepared book block are brought together.
  - Jacketing:** In the **Jacketing** Process, the jacket is wrapped around the hardcover book.
- Processes in hardcover book production include:
- **BlockPreparation**
  - **CaseMaking**
  - **CasingIn**
  - **Collecting**
  - **Gluing**
  - **HeadBandApplication**
  - **Jacketing**
  - **SpinePreparation**
  - **SpineTaping**
  - **ThreadSealing**
  - **ThreadSewing**

### 6.7.7 Sheet Processes

Many printing Processes produce Sheets that are processed further in finishing operations. The Web Processes presented in the preceding sections result in Sheets that are treated in much the same way as Sheets produced by Sheet-Fed printing presses. The following Processes describe these Sheet finishing operations. Sheet Processes include:

- **Creasing**
- **Cutting**

- *Embossing*
- *Feeding*
- *Folding*
- *Gathering*
- *Gluing*
- *Palletizing*
- *Perforating*
- ***PrintRolling***
- *ShapeCutting*
- *ThreadSealing*
- ***Winding***

### 6.7.8 Tip-on/in

The following Processes, **EndSheetGluing**, **Inserting**, are part of the postpress operations. They can be grouped together as the tip-on/in Processes. Both Processes can be performed by hand, tip-on/in Machine or by a press. Tip-on/in includes:

- *EndSheetGluing*
- *Inserting*

### 6.7.9 Trimming

- *Trimming*.

### 6.7.10 Web Processes

This subchapter of the postpress Processes is dedicated to Web and ribbon operations (i.e., operations that require a Web or a ribbon to execute). In essence, a ribbon is a Web that has been slit or cross-cut. More specifically, a Web is a continuous strip of **Media** to be used for printing (e.g., paper or foil). This substrate is called “Web” while it is threaded through the printing machinery, but once it has run through the **Cutting** Process and been slit, the Web no longer exists. In its place are ribbons or Sheets.

A ribbon, then, is the part of the Web that enters the folder. If the Web is never slit, however, the Web and the ribbon are identical. Slitting and salvage-trim operations on a Web can result in one or more ribbons. A ribbon can be further subdivided after it has been slit. After the **Cutting** Process, Sheets are treated further. The **Gathering** Process and **Folding** Process also handle Web and ribbon applications.



# Chapter 7 Product Intents

As was described in Section 4.1.1, “Product Intent Constructs”, **Intent Resources Intent Elements** are designed to narrow down the available options describe a finished product when defining a **JDF** an **XJDF** Job. Many of the Elements in **Intent Resources** are **OPTIONAL**. If an **OPTIONAL** Element or Attribute of an **Intent Resource Intent Element** is omitted and no additional information is specified in the description, the value defaults to “don’t care”. If an entire **Intent Resource Intent Element** that specifies a given product feature is omitted, then that feature is not requested. For instance, if a Product Intent description has no **ResourceLink to BindingIntent**, then no binding is requested. The characteristics of the product that are not specified through the use of **Intent Resources Intent Elements** will be selected by the system that Processes the **Intent Resources Intent Elements**. The system that processes the Product Intent data in a **JDF** an **XJDF** Job ticket MAY insert the details of its selection into the **JDF XJDF** data for the Job. See Section 1.6.2.1, “Conformance Requirements for Support of Attributes and Attribute Values” on page 17 for more information on the handling and processing of systems-specified default values.

All **Intent Resources Intent Elements** share a set of Subelements that allow a Request for Quote to describe a range of acceptable values for various aspects of the product. These elements, taken together, allow an administrator to provide a specific value for the quote. The section below () describes these Elements.

## 7.1 Product Description

The products or set of products that are processed during a given workstep MAY be specified in a **ProductList**. This describes a bill of materials. Multiple end products MAY be specified, e.g. when a press sheet of a gang job that contains multiple individual customer jobs is printed.

Product Elements SHOULD contain Intent Elements that describe the details of the desired Product or Product part.

### 7.1.1 Representation of Product Binding

**BindingIntent** and **InsertingIntent** SHALL specify how multiple product parts are combined.

### 7.1.2 Product

The Product Element specifies an individual product or sub product.

A Node should contain at most one **Resource** for each type of Intent Element. If multiple product parts with different intents are needed, each part has its own Product Intent Node.

Table 7-1: Product Element (Sheet 1 of 2)

Name	Data Type	Description
<i>Amount</i> ?	integer	Total number of Products or Product parts of this type to produce.
<i>CommentURL</i> ?	URL	URL to an external, human-readable description of the Product or Product Part.
<i>DescriptiveName</i> ?	string	Human-readable descriptive name of the Product or Product Part.
<i>ExternalID</i> ?	NMTOKEN	Identifier of the Product in an MIS.
<i>ID</i> ?	ID	Identifier of this product.
<i>IsRoot</i> ?	boolean	If true, this Product is a self-contained product. If false, this Product is a child product of another Product, such as a cover or insert. Multiple Product elements with <i>@IsRoot="true"</i> MAY be specified, for instance in a gang job. If the parent <b>ProductList</b> element contains multiple Product elements, <i>@IsRoot</i> SHOULD be specified.

**Table 7-1: Product Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>MaxAmount</i> ?	integer	Maximum total number of Products or Product parts of this type to produce including the maximum overage that the Customer is willing to accept.
<i>MinAmount</i> ?	integer	Minimum total number of Products or Product parts of this type to produce including the maximum underage that the Customer is willing to accept.
<i>ProductType</i> ?	NMTOKEN	Type of product that this component specifies. <b>Values include those from:</b> Table 7-2, “ProductType Attribute Values” on page 428.
<i>ProductTypeDetails</i> ?	string	Additional details of the product: If @ <i>ProductType</i> = "BlankBox" or @ <i>ProductType</i> = "FlatBox", @ <i>ProductTypeDetails</i> specifies a box type (e.g., [ECMA], [FEFCO] or company internal box type standard).
Comment *	element	Any human-readable text that relates to the product or product part.
GeneralID *	element	Additional identifiers related to the Product or Product Part.
Intent *	element	Container Elements for Intent resources.

**— Attribute: ProductType****Table 7-2: ProductType Attribute Values (Sheet 1 of 2)**

Value	Description
<i>BackCover</i>	
<i>BlankBox</i>	Cut, Unfolded box, input for folder-gluer
<i>BlankSheet</i>	A sheet with connected blanks after a die cutting
<i>BlankWeb</i>	A web with connected blanks after a die cutting.
<i>Body</i>	Generic content inside of a cover.
<i>Book</i>	Body with a Cover and a Spine
<i>BookBlock</i>	
<i>BookCase</i>	
<i>Booklet</i>	Body with a Cover without a Spine (typically stapled).
<i>Box</i>	Convenience packaging that is not envisioned to be protection for shipping.
<i>Brochure</i>	A single folded sheet.
<i>BusinessCard</i>	
<i>Carton</i>	Protection packaging for shipping.
<i>BusinessCard</i>	
<i>Chapter</i>	
<i>Cover</i>	A single sheet covering a side of a print product
<i>CoverLetter</i>	A letter accompanying another print product
<i>EndSheet</i>	Endsheet for hard cover books.
<i>Envelope</i>	

**Table 7-2: ProductType Attribute Values (Sheet 2 of 2)**

<b>Value</b>	<b>Description</b>
<i>FlatBox</i>	A folded and glued blank (not opened). Output from a box folder-gluer.
<i>FlatWork</i>	Non-bound, non-folded Products or Products that only have packaging folds.
<i>FrontCover</i>	
<i>Insert</i>	A product part intended to be inserted into a print product
<i>Jacket</i>	Hard cover case jacket.
<i>Label</i>	
<i>Leaflet</i>	A single unfolded sheet
<i>Letter</i>	
<i>Map</i>	
<i>Notebook</i>	A book or block with a set of identical or similar pages, e.g. a writing tablet, where all page fronts have identical content, and all page backs have identical content.
<i>Newspaper</i>	A newspaper-product
<i>Pallet</i>	Loaded pallet of Boxes, Cartons or <b>Component</b> Resources
<i>Postcard</i>	
<i>Poster</i>	
<i>ResponseCard</i>	A SelfMailer to respond to an offer
<i>Section</i>	
<i>SelfMailer</i>	A document to be sent via the post without an additional envelope.
<i>Spine</i>	The binding side of a print product
<i>Stack</i>	Stacked <b>Component</b> .
<i>WrapAroundCover</i>	A single sheet containing the Front Cover, Spine and Back Cover.

### 7.1.3 Intent

Intent elements define the details of products to be produced without defining the process to produce them. The details of all Product Intents are described in Chapter 7, “Product Intents”.

**Table 7-3: Intent Element**

<b>Name</b>	<b>Data Type</b>	<b>Description</b>
<i>Name</i>	enumeration	Type of the Product Intent. A list of valid values is specified in Table 7-4, “Product Intent – Input Resources Elements”.
<i>Product Intent ?</i>	element	Details of the Intent. The node name of the element <b>SHALL</b> be the value of <i>@Name</i> .

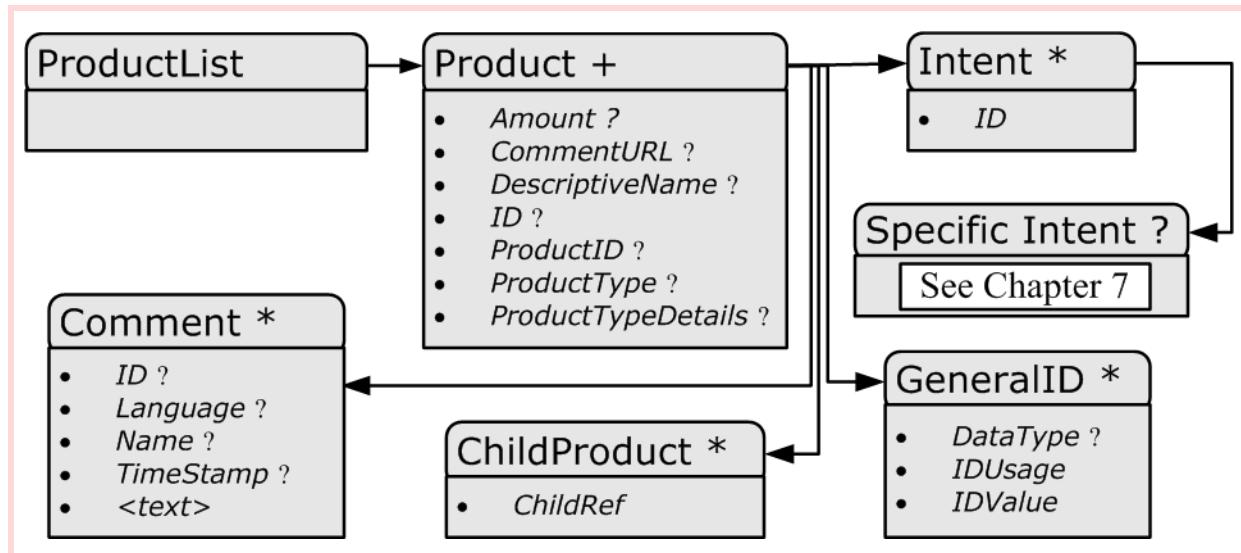
### 7.1.4 Product Intent

A Product Intent is any Intent defined in this chapter (e.g., *BindingIntent*). There is a separate section for each Product Intent. A Product Intent is a child of a Intent Element

### 7.1.5 Structure Diagram of ProductList

Figure 7-1 shows the structure of the ProductList. Arrows point to child elements.

Figure 7-1: ProductList – a Diagram of its Structure



### 7.1.6 Product Intent Descriptions

Product Intent [Product Intent](#) is also described as [a JDF an XJDF Node Product element in a ProductList](#). The following table defines the list of [JDF XJDF Intent Resources Intent Elements](#) used to describe Product Intent.

Table 7-4: Product Intent – Input Resources Elements (Sheet 1 of 2)

Name	Description
ArtDeliveryIntent ?	This Resource specifies the prepress art delivery intent for a JDF Job.
BindingIntent ?	This Resource specifies the binding intent for a JDF an XJDF Job.
ColorIntent ?	This Resource specifies the type of ink to be used for a JDF an XJDF Job.
Component *	Components that are partial products of the product described by this Node. If input Component Resources are specified, at least one of BindingIntent or InsertingIntent is REQUIRED.
ContentCheckIntent ?	This Resource specifies the prepress proofing intent for a JDF an XJDF Job, using information that identifies the type, quality, brand name and overlay of the proof.
DeliveryIntent ?	Summarizes the options that describe pickup or delivery time and location of the PhysicalResources of a Job.
EmbossingIntent ?	This Resource specifies the embossing and/or foil stamping intent for a JDF an XJDF Job.
FoldingIntent ?	This Resource specifies the fold intent for a JDF an XJDF Job using information that identifies the number of folds, the height and width of the folds, and the folding catalog number.
HoleMakingIntent ?	This Resource specifies the holemaking intent for a JDF an XJDF Job.
InsertingIntent ?	This Resource specifies the placing or inserting of one component within another, using information that identifies page location, position and attachment method.
LaminatingIntent ?	This Resource specifies the laminating intent for a JDF an XJDF Job using information that identifies whether or not the product is laminated.

**Table 7-4: Product Intent – Input Resources Elements (Sheet 2 of 2)**

Name	Description
<b>LayoutIntent ?</b>	This Resource records the size of the finished pages for the product component.
<b>MediaIntent ?</b>	This Resource describes the media to be used for the product component.
<b>NumberingIntent ?</b>	This Resource describes the parameters of stamping or applying variable marks in order to produce unique components, for items such as lottery notes or currency.
<b>PackingIntent ?</b>	This Resource specifies the packaging intent for a <b>JDF</b> an <b>XJDF</b> Job, using information that identifies the type of package, the wrapping used and the shape of the package.
<b>ProductionIntent ?</b>	This Resource specifies the manufacturing intent and considerations for a <b>JDF</b> an <b>XJDF</b> Job using information that identifies the desired result or specified manufacturing path.
<b>ProofingIntent ?</b>	This Resource specifies the prepress proofing intent for a <b>JDF</b> an <b>XJDF</b> Job, using information that identifies the type, quality, brand name and overlay of the proof.
<b>PublishingIntent ?</b>	This Resource specifies publishing metadata that are of general interest for prepress, press and postpress. The data include details on the general structure of product being published.
<b>ScreeningIntent ?</b>	This Resource specifies the screening intent parameters desired for a <b>JDF</b> an <b>XJDF</b> Job.
<b>ShapeCuttingIntent ?</b>	This Resource specifies form and line cutting for a <b>JDF</b> an <b>XJDF</b> Job.
<b>SizeIntent ?</b> <i>Deprecated in JDF 1.2</i>	This Resource records the size of the finished pages for the product component. SizeIntent has been deprecated in JDF 1.1. All contents have been moved to <b>LayoutIntent</b> .

**Table 7-5: Product Intent – Output Resources**

Name	Description
<b>Component + *</b>	Resource representation of the output this Product Intent Node. Multiple <b>Component</b> Resources SHALL be specified in a Root Node that contains a <b>DeliveryIntent</b> that references multiple <b>Component</b> Resources as delivery end products.

## 7.2 Intent Properties Template

Each of the following sections begins with a brief narrative description of the **Resource Product Intent Element**. Following that is a list containing details about the properties of the **Resource Product Intent Element**, as shown below. The first item in the list provides the Class of the Resource, which, in this section is always "*Intent*". For more information on Resource Class, see Section 3.13.4, "Resource Classes". A template of this list is shown below.

After the list describing the **Resource Product Intent** Properties, each section contains tables that outline the structure of each **Resource Product Intent Element** and, when applicable, the abstract or Subelement information that pertains to the **Resource Product Intent Element** structure. The first column contains the name of the Attribute or Element. A template of these tables is also provided below.

**Note:** for the **Resource Intent** Properties Template below, the *italicized* text describes the actual text that would be in its place in an actual **Resource Product Intent Element** definition.

**Note also:** for the **Resource Product Intent Element** Structure Template table below: *Cardinality* in the Name column of the **Resource Product Intent Element** Structure Template table refers to a cardinality symbol, which is

either empty or consists of a symbol, such as “?”. Examples described by the Name column include: “**Ink** \*” and “**FileSpec** (“*DeviceLinkProfile*”) ?”. For further details, see Section 1.5.4, “Specification of Cardinality”.

### Intent Properties Template

<b>Resource Class:</b>	<i>Defines the Resource Class.</i>
<b>Process Resource Pairing:</b>	List of Process Resources to which an Intent <b>Resource Element</b> is generally identified with. In practice, the Process Resources will contain the data with which the customer’s intent is fulfilled in production and distribution of the product. This is a list of the primary Resources and not a complete list.
<b>Example Partition:</b>	<i>List of RECOMMENDED Partition Keys: For a complete list of Partition Keys, see the description of @PartIDKeys in Table 3-32, “Partitionable Resource Element” on page 128. Note that Resources MAY be Partitioned by keys that are not specified in this list.</i>

**Table 7-6: Template for Intent Resources**

Name	Data Type	Description
<i>Attribute-Name</i> <i>Cardinality</i>	<i>Attribute-data-type</i>	<i>Information about the Attribute.</i>
<i>Element-Name</i> <i>Cardinality</i>	element	<i>Information about the Element.</i> <b>Note:</b> the “element” data type means that the specified Element SHALL be an in-line Subelement within the Resource.
<i>Element-Name</i> <i>Cardinality</i>	refelement	<i>Information about the Element</i> <b>Note:</b> the “refelement” data type means that the specified Element is based on other atomic Resources or Resource Elements. The specified Element SHALL be either an in-line Element or an instance of a ResourceRef Element (see Section 3.15.2, “ResourceRef – Element for Inter-Resource Linking and refelement”). In case of a ResourceRef Element, a “Ref” SHALL be appended to the name specified in the table column entitled “Name”.

Intent Resources contain Subelements that allow spans of values to be specified. These Subelements also provide mechanisms to select a set of values from the provided range and map them to a set of quotes. These Subelements are called Span Elements. The Span Element to use is determined by the data type of the values to be recorded. Span Elements are defined to facilitate negotiation between buyer and provider.

#### 7.2.1 Abstract Span Element

Span Elements of Intent Resources have a common set of Attributes that define the priority, data type and requested identity of the Element. These common Attributes are described in Table 7-7, “Abstract Span Element”. In addition, Abstract Span Elements have at least four Attributes that define the data type dependent aspects of the span. The data type of these values depends on the data type of the span and is defined in the following sections:

**@Actual** – The intended value agreed to by the producer of the product.

**@OfferRange** – A proposed range of equivalent values in cost that are defined by the producer of the product.

**@Preferred** – A preferred value defined by the recipient of the product.

**@Range** – A proposed range of values defined by the recipient of the product.

**Table 7-7: Abstract Span Element**

Name	Data Type	Description											
<i>DataType</i>	enumeration	<p>Describes the data type of the Span Element within an Intent Resource. This Attribute is provided for applications that do not have access to schema validation.</p> <p><b>Allowed values are:</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td><i>DurationSpan</i></td> <td><i>OptionSpan</i></td> </tr> <tr> <td><i>EnumerationSpan</i></td> <td><i>ShapeSpan</i></td> </tr> <tr> <td><i>IntegerSpan</i></td> <td><i>StringSpan</i></td> </tr> <tr> <td><i>NameSpan</i></td> <td><i>TimeSpan</i></td> </tr> <tr> <td><i>NumberSpan</i></td> <td><i>XYPairSpan</i></td> </tr> </table>		<i>DurationSpan</i>	<i>OptionSpan</i>	<i>EnumerationSpan</i>	<i>ShapeSpan</i>	<i>IntegerSpan</i>	<i>StringSpan</i>	<i>NameSpan</i>	<i>TimeSpan</i>	<i>NumberSpan</i>	<i>XYPairSpan</i>
<i>DurationSpan</i>	<i>OptionSpan</i>												
<i>EnumerationSpan</i>	<i>ShapeSpan</i>												
<i>IntegerSpan</i>	<i>StringSpan</i>												
<i>NameSpan</i>	<i>TimeSpan</i>												
<i>NumberSpan</i>	<i>XYPairSpan</i>												
<i>Priority ?</i> <a href="#">Deprecated in JDF 1.2</a>	enumeration	<p>Indicates the importance of the specific intent.</p> <p><b>Allowed values are:</b></p> <p><i>None</i></p> <p><i>Suggested</i> – The customer will accept a value of <i>@Actual</i> that is different than the value of <i>@Preferred</i> or outside of <i>@Range</i>.</p> <p><i>Required</i> – The customer expects the <i>@Actual</i> to be equal to <i>@Preferred</i> or within <i>@Range</i>. Note that the Attribute <i>@Preferred</i> is available in the data types which inherit from this Abstract type.</p> <p><b>Deprecation note:</b> starting with JDF 1.2, use <i>@SettingsPolicy</i>.</p>											

## 7.2.2 Span Elements

The Data Type column of tables for Intent Resources (below) can contain the same data types as non-Intent Resources (namely data types defined in the Section 1.7, “Data Structures” on page 19) as well as Span Elements that are listed in the Table 7-8, “List of Span Elements”. In Intent Resource tables, *XXXSpan* Elements are treated as Attribute-like data types even though Span Elements are technically XML elements because the semantic usage of the Span Elements is equivalent to the usage of Attributes in Process Resources.

Each Span Element contains Attributes or Subelements listed in Table 7-7, “Abstract Span Element” and in the pertinent Span Element listed in Table 7-8, “List of Span Elements”.

**Table 7-8: List of Span Elements (Sheet 1 of 2)**

Name	Page	Description
<i>DurationSpan</i> <a href="#">New in JDF 1.1</a>	page 434	Describes a set of duration values.
<i>EnumerationSpan</i>	page 434	Describes a set of enumeration values.
<i>IntegerSpan</i>	page 435	Describes a numerical range of integer values.
<i>NameSpan</i>	page 435	Describes a set of NMOKEN values.
<i>NumberSpan</i>	page 435	Describes a numerical range of values.
<i>OptionSpan</i>	page 436	Describes an intent in which the principal information is that a specific option is requested.
<i>ShapeSpan</i> <a href="#">New in JDF 1.1</a>	page 436	Describes a set of shape values.
<i>StringSpan</i>	page 437	Describes a set of string values.

**Table 7-8: List of Span Elements (Sheet 2 of 2)**

Name	Page	Description
TimeSpan	page 437	Describes a set of dateTime values.
XYPairSpan	page 437	Describes a set of XYPair values.

**7.2.2.1 DurationSpan**New in JDF 1.1

This Span Subelement is used to describe a selection of instances in time. It inherits from the Abstract Span Element described in Section 7.2.1, “Abstract Span Element”.

**Table 7-9: DurationSpan Element**

Name	Data Type	Description
<i>Actual</i> ?	duration	The actual value selected for the quote.
<i>OfferRange</i> ? <u>New in JDF 1.3</u>	DurationRange	Provides an offered range of time durations. If not specified, it defaults to the value of <i>@Actual</i> .
<i>Preferred</i> ?	duration	Provides a value specified by the person submitting the request, indicating what that person prefers. The value of <i>@Preferred</i> SHALL fall within the range of values specified in <i>@Range</i> .
<i>Range</i> ?	DurationRange	Provides a valid range of time durations. If not specified, it defaults to the value of <i>@Preferred</i> .

**7.2.2.2 EnumerationSpan**

This Span Subelement is used to describe ranges of enumerative values. It inherits from the Abstract Span Element described in Section 7.2.1, “Abstract Span Element”. It is identical to the NameSpan Element except for the fact that it describes a closed list of enumeration values.

**Table 7-10: EnumerationSpan Element**

Name	Data Type	Description
<i>Actual</i> ?	enumeration	The actual value selected for the quote.
<i>OfferRange</i> ? <u>New in JDF 1.3</u>	enumerations	Provides an offered range of values. <b>Default value is from:</b> <i>@Actual</i> .
<i>Preferred</i> ?	enumeration	Provides a value specified by the person submitting the request, indicating what that person prefers. The value of <i>@Preferred</i> SHALL fall within the range of values specified in <i>@Range</i> .
<i>Range</i> ?	enumerations	Provides a set of discreet enumeration values. <b>Default value is from:</b> <i>@Preferred</i> .

**Example 7-1: EnumerationSpan**

```
<BindingIntent Class="Intent" ID="BI1" Status="Available">
  <BindingType DataType="EnumerationSpan" Actual="Ring"/>
  <RingBinding>
    <HoleType DataType="EnumerationSpan" Range="R4m-DIN-A5 R6m-DIN-A5">
      <Comment Name="R4m-DIN-A5">
        4 equidistant holes on each side of a hexagonal piece of paper
      </Comment>
      <Comment Name="R6m-DIN-A5">
        6 equidistant holes on each side of a hexagonal piece of paper
      </Comment>
    
```

```

</HoleType>
</RingBinding>
</BindingIntent>

```

### 7.2.2.3 IntegerSpan

This Span Subelement is used to describe ranges of integer values. It inherits from the Abstract Span Element described in Section 7.2.1, “Abstract Span Element”.

**Table 7-11: IntegerSpan Element**

Name	Data Type	Description
<i>Actual</i> ?	integer	The actual value selected for the quote.
<i>OfferRange</i> ? <a href="#">New in JDF 1.3</a>	IntegerRangeList	Provides either a set of discreet values, a range of values or a combination of the two that comprise all offered values for the Span. <b>Default value is from:</b> <i>@Actual</i> .
<i>Preferred</i> ?	integer	Provides a value specified by the person submitting the request, indicating what that person prefers. The value of <i>@Preferred</i> SHALL fall within the range of values specified in <i>@Range</i> .
<i>Range</i> ?	IntegerRangeList	Provides either a set of discreet values, a range of values or a combination of the two that comprise all allowed values for the Span. <b>Default value is from:</b> <i>@Preferred</i> .

### 7.2.2.4 NameSpan

This Span Subelement is used to describe name ranges. It inherits from the Abstract Span Element described in Section 7.2.1, “Abstract Span Element”. It is identical to the EnumerationSpan Element except for the fact that it describes an extensible list of NMTOKEN values.

**Table 7-12: NameSpan Element**

Name	Data Type	Description
<i>Actual</i> ?	NMTOKEN	The actual value selected for the quote.
<i>OfferRange</i> ? <a href="#">New in JDF 1.3</a>	NMTOKENS	Provides a set of discreet values that comprise all offered values for the Span. <b>Default value is from:</b> <i>@Actual</i> .
<i>Preferred</i> ?	NMTOKEN	Provides a value specified by the person submitting the request, indicating what that person prefers. The value of <i>@Preferred</i> SHALL fall within the range of values specified in <i>@Range</i> .
<i>Range</i> ?	NMTOKENS	Provides a set of discreet values that comprise all allowed values for the Span. <b>Default value is from:</b> <i>@Preferred</i> .

#### 7.2.2.4.1 Specifying New Values in a NameSpan Subelement

NameSpan Elements generally define an open list of predefined values. If a custom value is specified, a Comment Element in the NameSpan defines the value with a @Name Attribute in the Comment, as demonstrated in the following example:

### 7.2.2.5 NumberSpan

This Span Subelement is used to describe a numerical range of values. It inherits from the Abstract Span Element described in Section 7.2.1, “Abstract Span Element”.

**Table 7-13: NumberSpan Element**

Name	Data Type	Description
<i>Actual</i> ?	double	The actual value selected for the quote.
<i>OfferRange</i> ? <a href="#">New in JDF 1.3</a>	DoubleRangeList	Provides either a set of discreet values, a range of values or a combination of the two that comprise all offered values for the Span. <b>Default value is from:</b> <i>@Actual</i> .
<i>Preferred</i> ?	double	Provides a value specified by the person submitting the request, indicating what that person prefers. The value of <i>@Preferred</i> SHALL fall within the range of values specified in <i>@Range</i> .
<i>Range</i> ?	DoubleRangeList	Provides either a set of discreet values, a range of values or a combination of the two that comprise all allowed values for the Span. <b>Default value is from:</b> <i>@Preferred</i> .

**7.2.2.6 OptionSpan**

This Span Subelement is used to describe a range of options or Boolean values. It inherits from the Abstract Span Element described in Section 7.2.1, “Abstract Span Element”.

**Table 7-14: OptionSpan Element**

Name	Data Type	Description
<i>Actual</i> ?	boolean	The actual value selected for the quote. If the option is included = “true”.
<i>Detail</i> ? <a href="#">Deprecated in JDF 1.2</a>	string	<i>@Detail</i> provides information about the option. <b>Deprecation note:</b> starting with JDF 1.2, use <i>@DescriptiveName</i> .
<i>OfferRange</i> ? <a href="#">New in JDF 1.3</a>	enumerations	Provides a set of the discreet Boolean values. <b>Default value is from:</b> <i>@Actual</i> . <b>Allowed values are:</b> <i>true</i> <i>false</i>
<i>Preferred</i> ?	boolean	Provides a value specified by the person submitting the request, indicating what that person prefers.
<i>Range</i> ? <a href="#">New in JDF 1.2</a>	enumerations	Provides a set of the discreet Boolean values. <b>Allowed values are:</b> <i>true</i> <i>false</i>

**7.2.2.7 ShapeSpan**

[New in JDF 1.1](#)

This Span Subelement is used to describe ranges of numerical value pairs. It inherits from the Abstract Span Element described in Section 7.2.1, “Abstract Span Element”.

**Table 7-15: ShapeSpan Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Actual</i> ?	shape	The actual value selected for the quote.

**Table 7-15: ShapeSpan Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>OfferRange</i> ? <a href="#">New in JDF 1.3</a>	ShapeRangeList	Provides either a set of discreet values, a range of values or a combination of the two that comprise all offered values for the Span. <b>Default value is from:</b> <i>@Actual</i> .
<i>Preferred</i> ?	shape	Provides a value specified by the person submitting the request, indicating what that person prefers. The value of <i>@Preferred</i> SHALL fall within the range of values specified in <i>@Range</i> .
<i>Range</i> ?	ShapeRangeList	Provides either a set of discreet values, a range of values or a combination of the two that comprise all allowed values for the Span. <b>Default value is from:</b> <i>@Preferred</i> .

**7.2.2.8 StringSpan**

This Span Subelement is used to describe string ranges. It inherits from the Abstract Span Element described in Section 7.2.1, “Abstract Span Element”.

**Table 7-16: StringSpan Element**

Name	Data Type	Description
<i>Actual</i> ?	string	The actual value selected for the quote.
<i>Preferred</i> ?	string	Provides a value specified by the person submitting the request, indicating what that person prefers. The value of <i>@Preferred</i> SHALL fall within the range of values specified in <i>@Range</i> .
<i>OfferRange</i> * <a href="#">New in JDF 1.3</a>	text element	Provides a set of discreet values that comprise all offered values for the Span. <b>Default value is from:</b> <i>@Actual</i> .
<i>Range</i> *	text element	Provides a set of discreet values that comprise all allowed values for the Span. <b>Default value is from:</b> <i>@Preferred</i> .

**7.2.2.9 TimeSpan**

This Span Subelement is used to describe a selection of instances in time. It inherits from the Abstract Span Element described in Section 7.2.1, “Abstract Span Element”.

**Table 7-17: TimeSpan Element**

Name	Data Type	Description
<i>Actual</i> ?	dateTime	The actual value selected for the quote.
<i>OfferRange</i> ? <a href="#">New in JDF 1.3</a>	DateTimeRange	Provides a range of values that comprise all offered values for the Span. <b>Default value is from:</b> <i>@Actual</i> .
<i>Preferred</i> ?	dateTime	Provides a value specified by the person submitting the request, indicating what that person prefers. The value of <i>@Preferred</i> SHALL fall within the range of values specified in <i>@Range</i> .
<i>Range</i> ?	DateTimeRange	Provides a range of values that comprise all allowed values for the Span. <b>Default value is from:</b> <i>@Preferred</i> .

**7.2.2.10 XYPairSpan**

This Span Subelement is used to describe ranges of numerical value pairs. It inherits from the Abstract Span Element described in Section 7.2.1, “Abstract Span Element”.

**Table 7-18: XYPairSpan Element**

Name	Data Type	Description
<i>Actual</i> ?	XYPair	The actual value selected for the quote.
<i>OfferRange</i> ? <i>New in JDF 1.3</i>	XYPairRangeList	Provides either a set of discreet values, a range of values or a combination of the two that comprise all offered values for the Span. <b>Default value is from:</b> <i>@Actual</i> .
<i>Preferred</i> ?	XYPair	Provides a value specified by the person submitting the request, indicating what that person prefers. The value of <i>@Preferred</i> SHALL fall within the range of values specified in <i>@Range</i> .
<i>Range</i> ?	XYPairRangeList	Provides either a set of discreet values, a range of values or a combination of the two that comprise all allowed values for the Span. <b>Default value is from:</b> <i>@Preferred</i> .

### 7.3 ArtDeliveryIntent

This Resource specifies the prepress art delivery intent for a JDF Job and maps the items to the appropriate Reader Pages and separations. Art delivery refers to any physical or electronic asset that is needed for processing the Job.

#### Resource Properties

**Resource Class:** Intent

**Process Resource Pairing:** **DeliveryParams, DigitalDeliveryParams**

**Example Partition:** "Option"

**Table 7-19: ArtDeliveryIntent Resource (Sheet 1 of 3)**

Name	Data Type	Description
<i>ArtDeliveryDate</i> ? <i>New in JDF 1.1</i>	TimeSpan	Specifies the latest time by which the transfer of the artwork will be made.
<i>ArtDeliveryDuration</i> ? <i>New in JDF 1.1</i>	DurationSpan	Specifies the latest time by which the transfer will be made relative to the date of the purchase order. Within an RFQ or a Quote, at most one of either <i>ArtDeliveryDate</i> or <i>ArtDeliveryDuration</i> SHALL be specified. Within a purchase order, only <i>ArtDeliveryDate</i> is allowed.
<i>ArtHandling</i> ? <i>New in JDF 1.1</i>	EnumerationSpan	<p>Describes what is to happen to the artwork after usage. The address for the "Return" and "Pickup" values SHALL be specified by a <b>Contact</b>[contains (@ContactTypes, "ArtReturn")]/<b>Address</b>.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>ReturnWithProof</i> – The artwork is delivered back to the customer together with the proof if there is any.</li> <li><i>ReturnWithProduct</i> – The artwork is delivered back to the customer together with the final product.</li> <li><i>Return</i> – The artwork is delivered back independently directly after usage.</li> <li><i>Pickup</i> – The customer picks up the artwork.</li> <li><i>Destroy</i> – The printer destroys the artwork.</li> <li><i>PrinterOwns</i> – The artwork belongs to the printer.</li> <li><i>Store</i> – The printer has to store the artwork for future purposes.</li> </ul>

Table 7-19: ArtDeliveryIntent Resource (Sheet 2 of 3)

Name	Data Type	Description
DeliveryCharge ? <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.3</a>	EnumerationSpan	Specifies who pays for a delivery being made by a third party. <b>Allowed values are from:</b> DeliveryIntent/DeliveryCharge.
Method ? <a href="#">Modified in JDF 1.5</a>	NameSpan	Specifies the delivery method, which can be a generic method. <b>Values include those from:</b> Drop/@Method <b>Modification note:</b> starting in JDF 1.5, values have changed.
PreflightStatus = "NotPerformed" <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.2</a>	enumeration	Information about a <b>Preflight</b> Process probably applied to the artworks before being submitted. <b>Allowed values are:</b> <i>NotPerformed</i> – No preflighting was applied. <i>WithErrors</i> – Preflighting resulted in error messages and possibly warning messages. <i>WithWarnings</i> – Preflighting resulted in warning messages and no errors. <i>WithoutErrors</i> – Preflighting was successful. No errors and no warnings occurred.
ReturnList ?= "None" <a href="#">New in JDF 1.1</a>	NMTOKENS	Type of printer created intermediate materials that are to be sent to the customer after usage. <b>Values include:</b> <i>DigitalMedia</i> – Digital data on media (e.g., a CD). <i>DigitalNetwork</i> – Digital data via network. <i>ExposedPlate</i> – Pre-exposed press plates, usually used for a rerun. <i>ImposedFilm</i> – Film of the imposed surfaces. <i>LooseFilm</i> – Film of individual pages or sections. <i>OriginalPhysicalArt</i> – Analog artwork (e.g., reflective or transparencies). <i>Tool</i> – Tools needed for processing the Job (e.g., a die for die cutting or embossing stamp). <i>None</i> – No intermediate materials are to be returned to the customer.
ReturnMethod ? <a href="#">New in JDF 1.1</a>	NameSpan	Specifies a delivery method for returning the artwork if ArtHandling/@Actual = "Return" and for the printer created materials listed in ReturnList. <b>Values include those from:</b> Method
ServiceLevel ? <a href="#">New in JDF 1.2</a>	StringSpan	The service level of the specific carrier. <b>Values include those from:</b> Drop/ServiceLevel

**Table 7-19: ArtDeliveryIntent Resource (Sheet 3 of 3)**

Name	Data Type	Description
Transfer ? <a href="#">New in JDF 1.1</a>	EnumerationSpan	<p>Describes the responsibility of the transfer.</p> <p><b>Allowed values are:</b></p> <p><i>BuyerToPrinterDeliver</i> – The buyer delivers the artwork to the printer. The printer MAY specify in the quote a special <b>Contact</b>[contains (@ContactTypes, "Delivery")] to specify where the buyer is to send the artwork.</p> <p><i>BuyerToPrinterPickup</i> – The printer picks up the artwork. The <b>Contact</b>[contains (@ContactTypes, "Pickup")] specifies where the printer has to pick up the artwork.</p>
ArtDelivery + <a href="#">Modified in JDF 1.1</a>	element	Individual delivery.
Company ? <a href="#">Deprecated in JDF 1.1</a>	refelement	Address and further information of the art delivery. <b>Company</b> SHALL NOT be specified unless the printer is expected to pick up the art delivery at this address. In JDF 1.1 and beyond, <b>Company</b> is a Subelement of <b>Contact</b> .
Contact * ContactRefs ? <a href="#">New in JDF 1.1</a>	refelementI-DREFS	<p>Address and further information about the transfer of the artwork. The actual delivery address SHALL be specified by <b>Contact</b>[contains (@ContactTypes, "Delivery")]/<b>Address</b>. At most one such <b>Contact</b> SHALL be specified.</p> <p>The actual pickup address SHALL be specified by <b>Contact</b>[contains (@ContactTypes, "Pickup")]/<b>Address</b>. At most one such <b>Contact</b> SHALL be specified.</p>

### 7.3.1 Element: ArtDelivery

Each ArtDelivery Element defines a set of existing products that are needed to create the specified product. Attributes that are specified in an ArtDelivery Element overwrite those that are specified in their parent ArtDeliveryIntent Element. If OPTIONAL Attributes are not specified, their values default to the values specified in ArtDeliveryIntent.

**Table 7-20: ArtDelivery Element (Sheet 1 of 4)**

Name	Data Type	Description
Amount ? <a href="#">Modified in JDF 1.2</a>	integer	Number of physical objects to be delivered. Only valid if no detailed Resource description (e.g., <b>ExposedMedia</b> , <b>RunList</b> , <b>ScanParams</b> , <b>DigitalMedia</b> or <b>Tool</b> ) is specified.
ArtDeliveryDate ? <i>ArtDeliveryDate</i> ? <a href="#">New in JDF 1.1</a>	TimeSpandate-Time	Specifies the latest time by which the transfer of the artwork will be made.
ArtDeliveryDuration ? <i>ArtDeliveryDuration</i> ? <a href="#">New in JDF 1.1</a>	DurationSpanduration	Specifies the latest time by which the transfer will be made relative to the date of the purchase order. Within an RFQ or a Quote, at most one of either ArtDeliveryDate or ArtDeliveryDuration SHALL be specified. Within a purchase order, only the ArtDeliveryDate is allowed.

Table 7-20: ArtDelivery Element (Sheet 2 of 4)

Name	Data Type	Description
<i>ArtDeliveryType</i> <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.2</a>	NMTOKEN	<p>Type of artwork supplied.</p> <p><b>Values include:</b></p> <p><i>DigitalFile</i> – Digital data irrespective of the delivery mechanism. The union of "<i>DigitalMedia</i>" and "<i>DigitalNetwork</i>". <a href="#">New in JDF 1.2</a></p> <p><i>DigitalMedia</i> – Digital data on media (e.g., a CD).</p> <p><i>DigitalNetwork</i> – Digital data via network.</p> <p><i>ExposedPlate</i> – Pre-exposed press plates, usually used for a rerun.</p> <p><i>ImposedFilm</i> – Film of the imposed surfaces.</p> <p><i>LooseFilm</i> – Film of individual pages or sections.</p> <p><i>OriginalPhysicalArt</i> – Analog artwork (e.g., reflective or transparencies).</p> <p><i>Proof</i> – Physical proof delivered with digital scan or separated film asset.</p> <p><i>Tool</i> – Tools needed for processing the Job (e.g., a die for die cutting or embossing stamp).</p> <p><i>None</i> – No artwork exists, and it will be created later.</p>
<i>ArtHandling ?</i> <i>ArtHandling ?</i> <a href="#">New in JDF 1.1</a>	EnumerationSpanenumeration	<p>Describes what is to happen to the artwork after usage.</p> <p>The address for the "<i>Return</i>" and "<i>Pickup</i>" values SHALL be specified by <b>Contact</b>[contains (@<i>ContactTypes</i>, "<i>ArtReturn</i>")]/<b>Address</b>.</p> <p><b>Default value is from: ArtDeliveryIntent/ArtHandling.</b></p> <p><b>Allowed values are:</b></p> <p><i>ReturnWithProof</i> – The artwork is delivered back to the customer together with the proof if there is any.</p> <p><i>ReturnWithProduct</i> – The artwork is delivered back to the customer together with the final product.</p> <p><i>Return</i> – The artwork is delivered back independently directly after usage.</p> <p><i>Pickup</i> – The customer picks up the artwork.</p> <p><i>Destroy</i> – The printer destroys the artwork.</p> <p><i>PrinterOwns</i> – The artwork belongs to the printer.</p> <p><i>Store</i> – The printer has to store the artwork for future purposes.</p>
<i>DeliveryCharge ?</i> <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.3</a>	EnumerationSpanenumeration	<p>Specifies who pays for a delivery being made by a third party.</p> <p><b>Default value is from: ArtDeliveryIntent/DeliveryCharge.</b></p> <p><b>Allowed values are from: DeliveryIntent/DeliveryCharge.</b></p>
<i>HasBleeds ?= "false"</i>	boolean	If " <i>true</i> ", the file has bleeds.
<i>IsTrapped ?= "false"</i>	boolean	If " <i>true</i> ", the file has been trapped.

Table 7-20: ArtDelivery Element (Sheet 3 of 4)

Name	Data Type	Description
Method ? <i>Method ? Modified in JDF 1.5</i>	NameSpan-NMTOKEN	<p>Specifies a delivery method. It MAY be a generic item from the list defined in @Method in ArtDeliveryIntent method.</p> <p>Values include those from: Drop/@Method</p> <p><b>Modification note:</b> starting in JDF 1.5, values have changed.</p>
PageList ?	IntegerRangeList	<p>Set of pages of the output Component that are filled by this ArtDelivery. This maps the pages in the ArtDelivery to the Pages in the product that is produced. For example if PageList = "3 ~ 5", page 0 of the ArtDelivery (e.g., RunList) is page 3 in the product, page 1 is page 4, etc. If not specified, the @PageList SHALL include all pages in reader order. The indices specified in @PageList reference the PageData Elements defined in PageList.</p>
PreflightOutput ? <i>New in JDF 1.1</i>	URL	<p>Pointer to the output information created by the preflight tool if @PreflightStatus is either "WithoutErrors" or "WithErrors".</p>
PreflightStatus ? <i>New in JDF 1.1</i>	enumeration	<p>Information about a Preflight Process probably applied to the artworks before being submitted.</p> <p><b>Default value is from:</b> ArtDeliveryIntent/@PreflightStatus.</p> <p><b>Allowed values are from:</b> ArtDeliveryIntent/@PreflightStatus.</p> <p><i>NotPerformed</i> – No preflighting was applied.</p> <p><i>WithErrors</i> – Preflighting resulted in error messages and possibly warning messages.</p> <p><i>WithWarnings</i> – Preflighting resulted in warning messages and no errors.</p> <p><i>WithoutErrors</i> – Preflighting was successful. No errors and no warnings occurred.</p>
ReturnMethod ? <i>ReturnMethod ? New in JDF 1.1</i>	NameSpan-NMTOKEN	<p>Specifies a delivery method for returning the artwork if ArtHandling/@Actual = "Return".</p> <p><b>Default value is from:</b> ArtDeliveryIntent/ReturnMethod.</p> <p><b>Values include those from:</b> ArtDeliveryIntent/ReturnMethodMethod.</p>
ServiceLevel ? <i>ServiceLevel ? New in JDF 1.2</i>	StringSpanstring	<p>The service level of the specific carrier.</p> <p><b>Values include those from:</b> Drop/ServiceLevel</p>
Transfer ? <i>Transfer ? New in JDF 1.1</i>	EnumerationSpanenumeration	<p>Describes the responsibility of the transfer.</p> <p><b>Default value is from:</b> ArtDeliveryIntent/Transfer.</p> <p><b>Allowed values are from:</b> ArtDeliveryIntent/Transfer.</p> <p><i>BuyerToPrinterDeliver</i> – The buyer delivers the artwork to the printer. The printer MAY specify in the quote a special <b>Contact</b>[contains (@ContactTypes, "Delivery")] to specify where the buyer is to send the artwork.</p> <p><i>BuyerToPrinterPickup</i> – The printer picks up the artwork. The <b>Contact</b>[contains (@ContactTypes, "Pickup")] specifies where the printer has to pick up the artwork.</p>

Table 7-20: ArtDelivery Element (Sheet 4 of 4)

Name	Data Type	Description
Company ? <a href="#">Deprecated in JDF 1.1</a>	refelement	Address and further information about the art delivery. This SHALL NOT be specified unless the printer is expected to pick up the art delivery at this address. In JDF 1.1 and beyond, Company is a Subelement of <b>Contact</b> .
Component ? <a href="#">Deprecated in JDF 1.1</a>	refelement	Description of a physical component (e.g., physical artwork). If neither <b>Component</b> , <b>ExposedMedia</b> , nor <b>RunList</b> are specified, no details of the ArtDelivery except the <b>@ArtDeliveryType</b> and <b>@Amount</b> are known.
Contact * <a href="#">ContactRefs ?<a href="#">New in JDF 1.1</a></a>	refelementI-DREFS	Address and further information about the art transfer. <b>Default value is from:</b> <b>ArtDeliveryIntent/Contact</b> .
DigitalMedia ? <a href="#">DigitalMediaRef ?<a href="#">New in JDF 1.2</a></a>	refelementIDREF	Description of any digital media (e.g., CD or tape with artwork that will be delivered). If neither <b>ExposedMedia</b> , <b>RunList</b> , <b>DigitalMedia</b> , nor <b>Tool</b> are specified, no details of the ArtDelivery except the <b>@ArtDeliveryType</b> and <b>@Amount</b> are known.
ExposedMedia ? <a href="#">DigitalMediaRef ?<a href="#">Modified in JDF 1.2</a></a>	refelementIDREF	Description of exposed media (e.g., film, plate or proof). If neither <b>ExposedMedia</b> , <b>RunList</b> , <b>DigitalMedia</b> , nor <b>Tool</b> are specified, no details of the ArtDelivery, except the <b>@ArtDeliveryType</b> and <b>@Amount</b> , are known.
RunList ? <a href="#">RunListRef ?<a href="#">Modified in JDF 1.2</a></a>	refelementIDREF	Link to digital artwork that is accessible via a set of URLs that are defined in the <b>RunList/LayoutElement/FileSpec/@URL</b> . If neither <b>DigitalMedia</b> , <b>ExposedMedia</b> , <b>RunList</b> , nor <b>Tool</b> are specified, no details of the ArtDelivery except the <b>@ArtDeliveryType</b> and <b>@Amount</b> are known.
ScanParams ? <a href="#">ScanParamsRef ?</a>	refelementIDREF	Description of a <b>ScanParams</b> that defines scanning details for the exposed media defined by <b>ExposedMedia</b> .
Tool ? <a href="#">ToolRef ?<a href="#">New in JDF 1.1</a></a> <a href="#">Modified in JDF 1.2</a>	refelementIDREF	Details of the Tool if <b>@ArtDeliveryType = "Tool"</b> . If neither <b>ExposedMedia</b> , <b>RunList</b> , <b>DigitalMedia</b> , nor <b>Tool</b> are specified, no details of the ArtDelivery except the <b>@ArtDeliveryType</b> and <b>@Amount</b> are known.

## 7.4 AssemblingIntent

This Product Intent element specifies the creation of a composite component by either the assembly, placing or inserting of one component with or within another, using information that identifies page location, position and attachment method. The Containing Product is the receiving Product part. AssemblingIntent MAY be specified multiple times within one product. Products that are used as inserts SHALL have **@ProductType = "Insert"**

### Intent Properties

Process Resource Pairing: [InsertingParams](#), [ManualLaborParams](#)

Table 7-21: AssemblingIntent Element (Sheet 1 of 2)

Name	Data Type	Description
AssemblyItem	element	Each AssemblyItem element describes an individual item that is assembled with the main Product.
BindIn *	element	Each BindIn element describes an individual insert that is glued into this Product.

**Table 7-21: AssemblingIntent Element (Sheet 2 of 2)**

Name	Data Type	Description
BlowIn *	element	Each BlowIn element describes an individual insert that is loosely inserted into this Product.
StickOn *	element	Each StickOn element describes an individual child Product that is glued onto this Product. StickOn is typically used for labels.

**7.4.1 Element: AssemblyItem**

An AssemblyItem element describes any individual item that is assembled with the main Product. Examples of AssemblyItems include stands or frames.

**Figure 7-2: Roll-up Display****Table 7-22: Assemble Element**

Name	Data Type	Description
ChildRef *	IDREF	Product/@ID of the product that describes the Assemble.

**7.4.2 Element: BindIn****Table 7-23: BindIn Element**

Name	Data Type	Description
Folio ?	integer	Index of the parent surface where the insert SHALL be bound in the context of this Product.
Position ?	XYPair	Position of the bottom left corner of the insert in the coordinate system of the surface specified by @Folio after applying all rotations
Orientation ?	Orientation	Orientation of the insert in the coordinate system of the surface specified by @Folio.
ChildRef	IDREF	Product/@ID of the product that describes the insert.
Glue ?	element	Details of the Glue used to fasten the insert.

**7.4.3 Element: BlowIn****Table 7-24: BlowIn Element (Sheet 1 of 2)**

Name	Data Type	Description
FolioFrom ?	integer	Index of the first valid parent surface where the insert SHALL be placed in the context of this Product.

**Table 7-24: BlowIn Element (Sheet 2 of 2)**

Name	Data Type	Description
FolioTo ?	integer	Index of the last valid parent surface where this Product SHALL be placed in the context of the parent Product.
Orientation ?	Orientation	Orientation of the referenced insert in the coordinate system of the surface specified by @Folio
ChildRef	IDREF	Product/@ID of the product that describes the insert.

#### 7.4.4 Element: StickOn

**Table 7-25: StickOn Element**

Name	Data Type	Description
Folio ?	integer	Index of the parent surface where the stick-on SHALL be placed in the context of this Product. @Folio SHALL NOT be specified if Location is specified.
Location ?	Location	Location of the stick-on on the Product. See Location for a list of allowed values. Location SHALL NOT be specified if @Folio is specified.
Position ?	XYPair	Position of the bottom left corner of the stick-on in the coordinate system of the surface specified by @Folio and Location after applying all rotations.
Orientation ?	Orientation	Orientation of the stick-on in the coordinate system of the surface specified by @Folio or Location.
ChildRef	IDREF	Product/@ID of the product that describes the stick-on.
Glue ?	element	Details of the Glue used to fasten the stick-on.

## 7.5 BindingIntent

This Resource [Product Intent element](#) specifies the binding intent for a [JDF](#) an [XJDF](#) Job using information that identifies the desired type of binding and which sides SHALL be bound. The input products that are used as a cover SHALL have a @ProductType of "Cover", "FrontCover" or "BackCover". The input products that are used as a hard cover jacket SHALL have a @ProductType of "Jacket". The input components that are used as a end Sheets for hardcover or soft cover binding SHALL have a @ProductType of "EndSheet". All other Products are bound in the order of their appearance in one of the [ResourceLinkPool](#) of the JDF Node @ChildRefs of the parent Product that contains the [BindingIntent](#).

### Resource Intent Properties

Resource Class:	Intent
Process Resource Pairing:	BlockPreparationParams, CaseMakingParams, CasingInParams, ChannelBindingParams, CoilBindingParams, CoverApplicationParams, EndSheetGluingParams, GlueApplication, GluingParams, GlueLine, Glue, InsertingParams, JacketingParams, LooseBindingParams, PlasticCombBindingParams, RingBindingParams, StitchingParams, SpinePreparationParams, SpineTapingParams, StitchingParams, StripBindingParams, ThreadSealingParams, ThreadSewingParams, WireCombBindingParams
Example Partition:	"Option"

**Table 7-26: BindingIntent Resource Element (Sheet 1 of 3)**

Name	Data Type	Description
BackCoverColor ? <i>BackCoverColor ?</i> New in JDF 1.1	EnumerationSpanNamed-Color	Defines the color of the back cover material of the binding. <b>Default value is from:</b> @CoverColor <b>Allowed values are from:</b> Table A-3, “NamedColor Enumeration Values” on page 1125.
BackCoverColorDetails ? <i>BackCoverColorDetails ?</i> New in JDF 1.4	StringSpanstring	A more specific, specialized or site-defined name for the color. If BackCoverColorDetails is supplied, BackCoverColor SHOULD also be supplied.
BindingColor ? <i>BindingColor ?</i>	EnumerationSpanNamed-Color	Defines the color of the spine material of the binding. <b>Allowed values are from:</b> Table A-3, “NamedColor Enumeration Values” on page 1125.
BindingColorDetails ? <i>BindingColorDetails ?</i> New in JDF 1.4	StringSpanstring	A more specific, specialized or site-defined name for the color. If BindingColorDetails is supplied, BindingColor SHOULD also be supplied.
BindingLength ? Deprecated in JDF 1.6	EnumerationSpan	Indicates which side is to be bound when no content. Thus, no orientation is available, but a quote for binding is needed. <b>Allowed values are:</b> <i>Long</i> <i>Short</i>
BindingOrder ?= "Gathering" New in JDF 1.1 Modified in JDF 1.4	enumeration	Specifies whether the child <b>Component</b> resources are to be collected or gathered if multiple child <b>Component</b> resources are combined. <b>Allowed values are:</b> <i>None</i> – The products referenced by <b>child Product@ChildRefs</b> are NOT bound together. Typically used for flatwork Jobs. New in JDF 1.4 <i>Collecting</i> – The products referenced by <b>child Product@ChildRefs</b> are collected on a spine and placed within one another. The first <b>Component</b> is on the outside. <i>Gathering</i> – The child <b>Component</b> resources are gathered on a pile and placed on top of one another. The first child product specified by <b>@ChildRefs</b> is on the top. <i>List</i> – More complex ordering of child <b>Component</b> resources is specified using the BindList in this Intent resource for this product.

**Table 7-26: BindingIntent Resource Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>BindingSide ?</i> <i>BindingSide ?</i>	EnumerationSpanenumeration	<p><i>@BindingSide</i> indicates which side of the product SHALL be bound. <i>@BindingSide</i> is defined in the coordinate system of the product.</p> <p><b>Constraint:</b> If both <i>BindingSide</i> and <i>BindingLength</i> are specified, <i>BindingSide</i> has precedence</p> <p><b>Default value is from:</b> <i>BindingLength</i>, unless a non-empty <i>BindList</i> was specified.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Top</i></li> <li><i>Bottom</i></li> <li><i>Right</i></li> <li><i>Left</i></li> </ul>
<i>BindingType ?</i> <i>BindingType ?</i> <a href="#">Modified in JDF 1.2</a>	EnumerationSpanenumeration	<p>Describes the desired binding for the Job.</p> <p><b>Allowed values are from:</b> Table 7-27, “BindingType Attribute Values”.</p>
<i>ChildRefs ?</i>	IDREFS	Reference to zero or more child products each identified by <i>Product/@ID</i> (e.g., Cover and Body of a Book).
<i>CoverColor ?</i> <a href="#">CoverColor ?</a>	EnumerationSpanNamed-Color	<p>Defines the color of the cover material of the binding.</p> <p><b>Allowed values are from:</b> Table A-3, “NamedColor Enumeration Values” on page 1125.</p>
<i>CoverColorDetails ?</i> <i>CoverColorDetails ?</i> <a href="#">New in JDF 1.4</a>	StringSpanstring	A more specific, specialized or site-defined name for the color. If <i>CoverColorDetails</i> is supplied, <i>CoverColor</i> SHOULD also be supplied.
<i>AdhesiveNote</i> <a href="#">New in JDF 1.6</a>	element	Details of <i>AdhesiveNote</i> binding
<i>AdhesiveBinding ?</i> <a href="#">Deprecated in JDF 1.1</a>	element	Details of <i>AdhesiveBinding</i> . Replaced with <i>SoftCoverBinding</i> in JDF 1.1.
<i>BindList ?</i> <a href="#">New in JDF 1.1</a>	element	Details of binding of individual child <b>Component</b> Resources.
<i>BookCase ?</i> <a href="#">Deprecated in JDF 1.1</a>	element	Details of the Book Case. Used in Combination with <i>AdhesiveBinding</i> , <i>ThreadSewing</i> or <i>ThreadSealing</i> . Replaced with <i>HardCoverBinding</i> in JDF 1.1.
<i>ChannelBinding ?</i>	element	Details of <i>ChannelBinding</i> .
<i>CoilBinding ?</i>	element	Details of <i>CoilBinding</i> .
<i>EdgeGluing ?</i> <a href="#">New in JDF 1.1</a>	element	Details of <i>EdgeGluing</i> .
<i>HardCoverBinding ?</i> <a href="#">New in JDF 1.1</a>	element	Details of <i>HardCoverBinding</i> .
<i>LooseBinding?</i>	element	Details of <i>LooseBinding</i> .
<i>PlasticCombBinding ?</i>	element	Details of <i>PlasticCombBinding</i> .
<i>RingBinding ?</i>	element	Details of <i>RingBinding</i> .
<i>SaddleStitching ?</i>	element	Details of <i>SaddleStitching</i> .
<i>SideSewing ?</i>	element	Details of <i>SideSewing</i> .

**Table 7-26: BindingIntent Resource Element (Sheet 3 of 3)**

Name	Data Type	Description
SideStitching ?	element	Details of SideStitching.
SoftCoverBinding ? <a href="#">New in JDF 1.1</a>	element	Details of SoftCoverBinding.
StripBinding ? <a href="#">New in JDF 1.1</a>	element	Details of StripBinding.
Tabs ?	element	Details of Tabs.
Tape ? <a href="#">New in JDF 1.1</a>	element	Details of Tape binding.
ThreadSealing ?	element	Details of ThreadSealing.
ThreadSewing ?	element	Details of ThreadSewing.
VeloBinding ? <a href="#">Deprecated in JDF 1.1</a>	element	Details of VeloBinding. Renamed to StripBinding in JDF 1.1.
WireCombBinding ?	element	Details of WireCombBinding.

### — Attribute: BindingType

**Table 7-27: BindingType Attribute Values (Sheet 1 of 2)**

Value	Description
AdhesiveNote <a href="#">New in JDF 1.6</a>	Binding with removable adhesive on the back side of a product. Typically used for small brightly colored paper designed to be stuck prominently to an object or surface and easily removed when necessary.
Adhesive <a href="#">Deprecated in JDF 1.1</a>	This type of binding can be handled with the <b>AdhesiveBinding</b> Process. It includes perfect binding. Deprecated in JDF 1.1 and replaced with "SoftCover" or "HardCover".
ChannelBinding	This type of binding can be handled with the <b>ChannelBinding LooseBinding</b> Process.
CoilBinding	This type of binding can be handled with the <b>CoilBinding LooseBinding</b> Process.
CornerStitch <a href="#">New in JDF 1.2</a>	Stitch in the corner that is at the clockwise end binding edge. For example, to stitch in the top left corner, set <b>@BindingSide BindingSide/@Actual</b> = "Left". This type of binding can be handled with the <b>Stitching</b> Process.
EdgeGluing	Gluing gathered Sheets at one edge of the pile. This Type of Binding can be handled with the <b>Gluing</b> Process. Products of this type are also referred to as padded.
HardCover	This type of binding defines a hard-cover bound book.
LooseBinding	Generic loose Binding - one of "CoilBinding", "PlasticComb", "Ring", "StripBind" and "WireComb".
None	This type of binding defines a stack of pages with no additional binding.
PlasticComb	This type of binding can be handled with the <b>PlasticCombBinding LooseBinding</b> Process.
Ring	This type of binding can be handled with the <b>RingBinding LooseBinding</b> Process.
SaddleStitch	This type of binding can be handled with the <b>Stitching</b> Process.
Sewn <a href="#">Deprecated in JDF 1.4</a>	This type of binding can be handled with the <b>ThreadSewing</b> Process.

**Table 7-27: BindingType Attribute Values (Sheet 2 of 2)**

<b>Value</b>	<b>Description</b>
<i>SideSewn</i> <i>Deprecated in JDF 1.4</i>	This type of binding can be handled with the <b>ThreadSewing</b> Process.
<i>SideStitch</i>	This type of binding can be handled with the <b>Stitching</b> Process.
<i>SoftCover</i>	This type of binding defines a soft cover bound book. It includes perfect binding.
<i>StripBind</i>	This type of binding can be handled with the <b>StripBinding LooseBinding</b> Process.
<i>Tape</i>	This type of binding is an inexpensive version of the "SoftCover".
<i>ThreadSealing</i> <i>Deprecated in JDF 1.4</i>	This type of binding can be handled with the <b>ThreadSealing</b> Process.
<i>WireComb</i>	This type of binding can be handled with the <b>WireCombBinding LooseBinding</b> Process.

**7.5.1 Element: AdhesiveNote**[New in JDF 1.6](#)

Details of AdhesiveNote binding.

**Table 7-28: AdhesiveNote Element**

<b>Name</b>	<b>Data Type</b>	<b>Description</b>
<i>GlueLine</i> <i>Glue</i> ?	element	<i>GlueLine</i> <i>Glue</i> provides details of the shape of the glue application and type of glue used

**7.5.2 Element: BindList**[New in JDF 1.1](#)

BindList is used to describe complex bindings where more than one child is bound into a cover (e.g., in promotional products).

**Table 7-29: BindList Element**

<b>Name</b>	<b>Data Type</b>	<b>Description</b>
<i>BindItem</i> *	element	Individual bind item description.

**7.5.3 Element: BindItem**[New in JDF 1.1](#)A child BindItem is bound to a parent item. The position of the spine of the child BindItem is defined by *@ChildFolio* and the position of the child BindItem in the parent is defined by *@ParentFolio*.**Table 7-30: BindItem Element (Sheet 1 of 2)**

<b>Name</b>	<b>Data Type</b>	<b>Description</b>
<i>BindingType</i> <i>?BindingType</i> ?	<i>EnumerationSpanenumeration</i>	Describes the desired binding for the individual BindItem. <b>Default value is from:</b> <i>BindingIntent/BindingType</i> . <b>Allowed values are from:</b> <i>BindingIntent/BindingType</i> .

**Table 7-30: BindItem Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>ChildFolio</i> ?	XYPair	Definition of the fold between two pages in the <b>BindItem</b> component that is bound to the cover. The two numbers (as integers) in the <i>@ChildFolio</i> Attribute are the page numbers of the two outer pages of the child <b>Component</b> which touch the cover or another parent <b>Component</b> . The pages are counted in the order as described in <b>LayoutIntent/@FolioCount</b> of the child product. Defaults to the spine of the child.
<i>ParentFolio</i>	XYPair	Definition of the fold between two pages in the Cover <b>Component</b> that receive the <b>BindItem</b> . The two numbers (as integers) in the <i>@ParentFolio</i> Attribute are the page numbers in the Cover <b>Component</b> which touch the child <b>Component</b> . The pages are counted in the order as described in <b>LayoutIntent/@FolioCount</b> of the cover product.
<i>Transformation</i> ?	matrix	Rotation and offset between the <b>Component</b> to be inserted and the parent <b>Component</b> . For details on transformations, see Section 2.5.2, “Coordinates and Transformations”.
<i>WrapPages</i> ?	IntegerRangeList	List of pages of the Cover that wrap around a <b>BindItem</b> after all folds are applied. It is sufficient to specify the pages of the “Front” partition of the cover (e.g. Cover pages 1 and 4). <b>Note</b> that this Attribute SHALL NOT be specified if t
ChannelBinding ?	element	Details of ChannelBinding.
CoilBinding ?	element	Details of CoilBinding.
EdgeGluing ?	element	Details of EdgeGluing.
HardCoverBinding ?	element	Details of HardCoverBinding.
PlasticCombBinding ?	element	Details of PlasticCombBinding.
RingBinding ?	element	Details of RingBinding.
SaddleStitching ?	element	Details of SaddleStitching.
SideSewing ?	element	Details of SideSewing.
SideStitching ?	element	Details of SideStitching.
SoftCoverBinding ?	element	Details of SoftCoverBinding.
StripBinding ?	element	Details of StripBinding.
Tabs ?	element	Details of Tabs.
Tape ?	element	Details of Tape binding.
ThreadSealing ?	element	Details of ThreadSealing.
ThreadSewing ?	element	Details of ThreadSewing.
WireCombBinding ?	element	Details of WireCombBinding.

#### 7.5.4 Element: **AdhesiveBinding**

Deprecated in JDF 1.1

The table defining the deprecated **AdhesiveBinding** Subelement has been moved to Section P.5.1, “BindingIntent Deprecated Subelements” on page 1336.

### 7.5.5 Element: **BookCase**

Deprecated in JDF 1.1

The table defining the deprecated **BookCase** Subelement has been moved to Section P.5.1, “BindingIntent Deprecated Subelements” on page 1336.

### 7.5.6 Element: **ChannelBinding**

**Table 7-31: ChannelBinding Element**

Name	Data Type	Description
ChannelBrand ? <u>New in JDF 1.3</u>	StringSpan	Strings providing available brand names for the <b>ChannelBinding</b> .
Cover ?	OptionSpan	If “true”, the clamp used in <b>ChannelBinding</b> includes a preassembled cover.
Thickness ?	NumberSpan	Specifies thickness of board which is wrapped as front and back covers of a case bound book, in points.

### 7.5.7 Element: **CoilBinding**

**Table 7-32: CoilBinding Element**

Name	Data Type	Description
CoilBrand ? <u>New in JDF 1.3</u>	StringSpan	Strings providing available brand names for the coil.
CoilMaterial ?	EnumerationSpan	The coil materials available for <b>CoilBinding</b> . <b>Allowed values are:</b> <i>Steel</i> – Plain steel. <i>ColorCoatedSteel</i> – Coated steel. <i>Plastic</i> – any kind of plastic.
HoleList ? <u>New in JDF 1.2</u>	refelement	Details of the holes for coil binding.
HoleType ? <u>New in JDF 1.1</u>	HoleType ? <u>New in JDF 1.1</u>	Predefined hole pattern that matches the Binder. For details of the hole types, see the values. <b>Allowed values are from:</b> Appendix M, “JDF XJDF/CIP4 Hole Pattern Catalog” on page 1239.

### 7.5.8 Element: **EdgeGluing**

New in JDF 1.1

**Table 7-33: EdgeGluing Element**

Name	Data Type	Description
EdgeGlue ? <i>EdgeGlue</i> ?	EnumerationSpanenumera-tion	Glue type used to glue the edge of the gathered Sheets. <b>Allowed values are:</b> <i>ColdGlue</i> <i>Hotmelt</i> <i>PUR</i> – Polyurethane rubber.

### 7.5.9 Element: HardCoverBinding

[New in JDF 1.1](#)

Table 7-34: HardCoverBinding Element (Sheet 1 of 2)

Name	Data Type	Description
BlockThreadSewing ? <i>BlockThreadSewing ?</i>	OptionSpanboolean	Specified if the block is thread sewn.
CoverStyle ? <i>CoverStyle ?</i> <a href="#">New in JDF 1.3</a>	NameSpan-NMTOKEN	Defines the style of the cover board. <b>Values include:</b> <i>Simple</i> – Single layer cover board, see Figure 7-3. <i>Padded</i> – Padded cover board, see Figure 7-4.
EndSheets ? <i>EndSheets ?</i>	OptionSpanboolean	@ <i>EndSheets</i> SHALL be specified Specified if end sheets are SHALL be applied. Additional details of the EndSheets MAY be specified by supplying an input Component with @ProcessUsage a Product that is referenced by the parent BindingIntent/@ChildRefs with @ProductType = "EndSheet".
HeadBands ? <i>HeadBands ?</i>	OptionSpanboolean	The following case binding choice specifies the use of headbands on a case bound book. If "true", headbands are inserted both top and bottom.
HeadBandColor ? <i>HeadBandColor ?</i>	EnumerationSpanNamed-Color	Defines the color of the headband. <b>Allowed values are from:</b> Table A-3, ‘NamedColor Enumeration Values’ on page 1125.
HeadBandColorDetails ? <i>HeadBandColorDetails ?</i> <a href="#">New in JDF 1.4</a>	StringSpanstring	A more specific, specialized or site-defined name for the color. If HeadBandColorDetails is supplied, HeadBandColor SHOULD also be supplied.
Jacket ? <i>Jacket ?</i>	EnumerationSpanenumeration	Specifies whether a hard cover jacket is needed and how it is attached. Details of the jacket MAY be described in the Component with @ProcessUsage Product that is referenced by the parent BindingIntent/@ChildRefs whose @ProductType = "Jacket". <b>Allowed values are:</b> <i>None</i> – No jacket is needed. <i>Loose</i> – The jacket is loosely wrapped. <i>Glue</i> – The jacket is glued to the spine
JacketFoldingWidth ? <i>JacketFoldingWidth ?</i> <a href="#">New in JDF 1.3</a>	NumberSpandouble	Dimension of the jacket folds. See <b>JacketingParams</b> for details.
JapanBind ? <i>JapanBind ?</i>	OptionSpanboolean	Bind the book block at the open edge, so that the folds are visible on the outside. If not specified, explicitly, this option is never selected.
RegisterRibbon *	refelementelement	Number, materials, colors and details of register ribbons.
SpineBrushing ? <i>SpineBrushing ?</i>	OptionSpanboolean	Brushing option for <b>SpinePreparation</b> .

Table 7-34: HardCoverBinding Element (Sheet 2 of 2)

Name	Data Type	Description
SpineFiberRoughing ?SpineFiberRoughing ?	OptionSpanbool-ean	Fiber roughing option for <i>SpinePreparation</i> .
SpineGlue ?SpineGlue ?	EnumerationSpanenumeration	Glue type used to glue the book block to the cover. <b>Allowed values are:</b> <i>ColdGlue</i> <i>Hotmelt</i> <i>PUR – Polyurethane rubber.</i>
SpineLevelling ?SpineLevelling ?	OptionSpanbool-ean	Leveling option for <i>SpinePreparation</i> .
SpineMilling ?SpineMilling ?	OptionSpanbool-ean	Milling option for <i>SpinePreparation</i> .
SpineNotching ?SpineNotching ?	OptionSpanbool-ean	Notching option for <i>SpinePreparation</i> .
SpineSanding ?SpineSanding ?	OptionSpanbool-ean	Sanding option for <i>SpinePreparation</i> .
SpineShredding ?SpineShredding ?	OptionSpanbool-ean	Shredding option for <i>SpinePreparation</i> .
StripMaterial ?StripMaterial ?	EnumerationSpanenumeration	Spine taping strip material. <b>Allowed values are:</b> <i>Calico</i> <i>Cardboard</i> <i>CrepePaper</i> <i>Gauze</i> <i>Paper</i> <i>PaperlinedMules</i> <i>Tape</i>
Thickness ?Thickness ?	NumberSpandouble	Specifies thickness of board which is wrapped as front and back covers of a case bound book, in points.
TightBacking ?TightBacking ?	EnumerationSpanenumeration	Definition of the geometry of the back of the book block. <b>Allowed values are:</b> <i>Flat</i> – A flat backing. <i>Round</i> – Rounding way. <i>FlatBacked</i> – Backing way. <i>RoundBacked</i> – Rounding way, backing way.
RegisterRibbon *Register.RibbonRefs ?	refelementIDREFS	Number, materials, colors and details of register ribbons.

Figure 7-3: Structure of a normal hardcover book

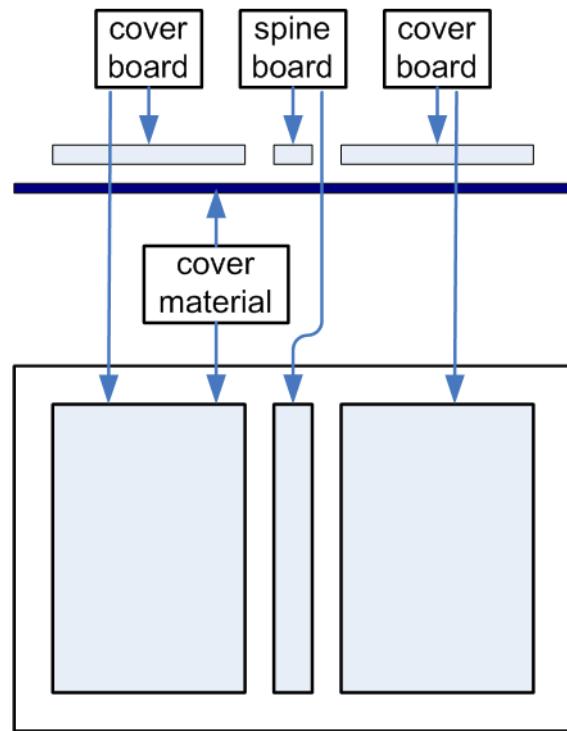
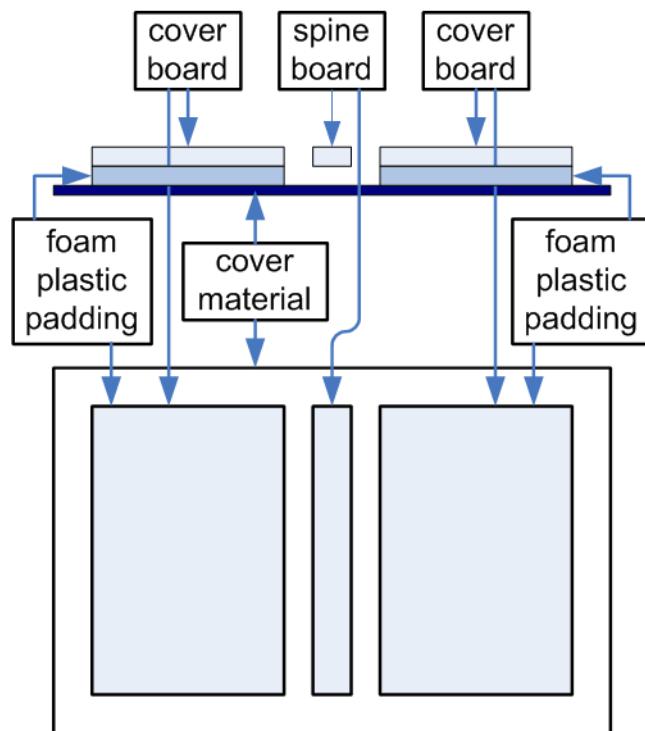


Figure 7-4: Structure of a padded hardcover book



### 7.5.10 Element: **LooseBinding**

**Table 7-35: LooseBinding Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>BinderMaterial</i> ?	NMTOKEN	<p>The following describe "<i>RingBinding</i>" binder materials used.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Cardboard</i> – Cardboard with no covering.</li> <li><i>ClothCovered</i> – Cardboard with cloth covering.</li> <li><i>Plastic</i> – Binder cover fabricated from solid plastic Sheet material (e.g., PVC Sheet).</li> <li><i>VinylCovered</i> – Cardboard with colored vinyl covering.</li> </ul> <p><b>Note:</b> @<i>BinderMaterial</i> is for "<i>RingBinding</i>" only.</p>
<i>Brand</i> ?	string	Specifies the Binder Brand:
<i>CombShape</i> ?	NMTOKEN	<p>The shape of the comb .</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Single</i> – Each “tooth” is made with one wire.</li> <li><i>SingleCalendar</i> – Each “tooth” is made with one wire and an extension for hanging the bound product is provided in the center.</li> <li><i>Twin</i> – The shape of each “tooth” is made with a double wire (e.g., <i>Wire-O®</i>).</li> <li><i>TwinCalendar</i> – The shape of each “tooth” is made with a double wire and an extension for hanging the bound product is provided in the center.</li> </ul>
<i>Diameter</i> ?	double	Specifies the diameter of coil, comb or rings, in points:
<i>Material</i> ?	enumeration	<p>The material available for forming the coil binding with "<i>CoilBinding</i>" or wire comb binding with "<i>WireCombBinding</i>".</p> <p><b>Allowed values</b> are:</p> <ul style="list-style-type: none"> <li><i>Steel</i> – Plain steel. For both binding types.</li> <li><i>ColorCoatedSteel</i> – Coated steel. For both binding types.</li> <li><i>Plastic</i> – any kind of plastic. For "<i>CoilBinding</i>" only</li> </ul> <p><b>Note:</b> "<i>Steel-Silver</i>" (for 1.x "<i>WireCombBinding</i>") renamed to "<i>Steel</i>".</p> <p><b>Note:</b> 2.x @<i>Material</i> replaces 1.x @<i>CoilMaterial</i> and 1.x @<i>WireCombMaterial</i>.</p>
<i>RingShape</i> ?	NMTOKEN	<p>"<i>RingBinding</i>" shapes.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Round</i></li> <li><i>Oval</i></li> <li><i>D-shape</i></li> <li><i>SlantD</i></li> </ul> <p><b>Note:</b> @<i>RingShape</i> is for "<i>RingBinding</i>" only.</p>

**Table 7-35: LooseBinding Element (Sheet 2 of 2)**

Name	Data Type	Description
RivetsExposed ?	boolean	The following "RingBinding" choice describes mounting of the ring mechanism in binder case. If "true", the heads of the rivets are visible on the exterior of the binder. If "false", the binder covering material covers the rivet heads. <b>Note:</b> @RivetsExposed is for "RingBinding" only.
ViewBinder ?	NMTOKEN	The values are "RingBinding" clear vinyl outer wrap types and are used on top of a colored base wrap. <b>Values include:</b> <i>Embedded</i> – Printed material is embedded by sealing between the colored and clear vinyl layers during binder manufacturing. <i>Pocket</i> – Binder is designed so that printed material can be inserted between the color and clear vinyl layers after binder manufacturing. <b>Note:</b> @ViewBinder is for "RingBinding" only.
HolePattern ?	element	HolePattern describes the hole pattern that the binder requires. Note that this MAY differ from the holes in the media. For instance the media for a 2 hole ring binder MAY have additional holes that are compatible with a 3 hole ring binder.

### 7.5.11 Element: **PlasticCombBinding**

**Table 7-36: PlasticCombBinding Element**

Name	Data Type	Description
CombBrand ? <a href="#">New in JDF 1.3</a>	StringSpan	Strings providing available brand names for the plastic comb.
PlasticCombType ? <a href="#">Modified in JDF 1.1</a>	NameSpan	The distance between the “teeth” in <b>PlasticCombBinding</b> and the distance between the holes of the prepunched leaves SHALL be the same. The following values from the hole type catalog in Appendix M, “JDF XJDF/CIP4 Hole Pattern Catalog” on page 1239 exist:  <b>Values include:</b> <i>P12m-rect-02</i> – Distance = 12 mm; Holes = 7 mm x 3 mm <i>P16_9i-rect-0t</i> – Distance = 14.28 mm; Holes = 8 mm x 3 mm <i>Euro</i> – Distance = 12 mm; Holes = 7 mm x 3 mm <a href="#">Deprecated in JDF 1.1</a> <i>USA1</i> – Distance = 14.28 mm; Holes = 8 mm x 3 mm. <a href="#">Deprecated in JDF 1.1</a>
HoleList ? <a href="#">New in JDF 1.2</a>	element	Details of the holes for the plastic comb. Note that @Shape is always rectangular by design of the plastic combs.
HoleType ? <a href="#">New in JDF 1.1</a>	HoleType ? <a href="#">New in JDF 1.1</a>	Predefined hole pattern that matches the Binder. For details of the hole types, see the values.  <b>Allowed values are from:</b> Appendix M, “JDF XJDF/CIP4 Hole Pattern Catalog” on page 1239.

### 7.5.12 Element: **RingBinding**

**Table 7-37: RingBinding Element (Sheet 1 of 2)**

Name	Data Type	Description
<a href="#">BinderBrand ?</a> <a href="#">New in JDF 1.3</a>	<a href="#">StringSpan</a>	Strings providing available brand names for <b>RingBinding</b> .
<a href="#">BinderMaterial ?</a>	<a href="#">NameSpan</a>	The following describe <b>RingBinding</b> binder materials used. <b>Values include:</b> <i>Cardboard</i> – Cardboard with no covering. <i>ClothCovered</i> – Cardboard with cloth covering. <i>Plastic</i> – Binder cover fabricated from solid plastic Sheet material (e.g., PVC Sheet). <i>VinylCovered</i> – Cardboard with colored vinyl covering.
<a href="#">HoleType ?</a> <a href="#">New in JDF 1.1</a>	<a href="#">HoleType ?</a> <a href="#">New in JDF 1.1</a>	Predefined hole pattern for the ring system. Multiple hole patterns are not allowed (e.g., 3-hole ring binding and 4-hole ring binding holes on one piece of media). For details of the hole types, see the values. <b>Allowed values are from:</b> Appendix M, “JDF XJDF/CIP4 Hole Pattern Catalog” on page 1239.
<a href="#">RingDiameter ?</a>	<a href="#">NumberSpan</a>	Size of the rings in points. The value used in production SHALL be suitable for specified values of <b>HoleType</b> . Note that in ring shapes other than round, this size is specified by industry-standard method.
<a href="#">RingMechanic ?</a>	<a href="#">OptionSpan</a>	The ring binder used includes a lever for opening and closing.
<a href="#">RingShape ?</a>	<a href="#">NameSpan</a>	<b>RingBinding</b> shapes. <b>Values include:</b> <i>Round</i> <i>Oval</i> <i>D-shape</i> <i>SlantD</i>
<a href="#">RingSystem ?</a> <a href="#">Deprecated in JDF 1.1</a>	<a href="#">NameSpan</a>	<b>Values include:</b> <i>2HoleEuro</i> <i>3HoleUS</i> <i>4HoleEuro</i> <b>Deprecation note:</b> starting with JDF 1.1, use <b>HoleType</b> .
<a href="#">RivetsExposed ?</a>	<a href="#">OptionSpan</a>	The following <b>RingBinding</b> choice describes mounting of the ring mechanism in binder case. If "true", the heads of the rivets are visible on the exterior of the binder. If "false", the binder covering material covers the rivet heads.

**Table 7-37: RingBinding Element (Sheet 2 of 2)**

Name	Data Type	Description
ViewBinder ?	NameSpan	<p>The values are <i>RingBinding</i> clear vinyl outer wrap types and are used on top of a colored base wrap.</p> <p><b>Values include:</b></p> <p><i>Embedded</i> – Printed material is embedded by sealing between the colored and clear vinyl layers during binder manufacturing.</p> <p><i>Pocket</i> – Binder is designed so that printed material can be inserted between the color and clear vinyl layers after binder manufacturing.</p>

### 7.5.13 Element: SaddleStitching

**Table 7-38: SaddleStitching Element**

Name	Data Type	Description
StitchNumber ? <i>StitchNumber</i> ?New in JDF 1.1	IntegerSpan-integer	Number of stitches used for saddle stitching.

### 7.5.14 Element: SideSewing

This is a placeholder that might be filled with private or future data.

**Table 7-39: SideSewing Element**

Name	Data Type	Description

### 7.5.15 Element: SideStitching

**Table 7-40: SideStitching Element**

Name	Data Type	Description
StitchNumber ? <i>StitchNumber</i> ?New in JDF 1.2	IntegerSpan-integer	Number of stitches used for side stitching.

### 7.5.16 Element: SoftCoverBinding

New in JDF 1.1

**Table 7-41: SoftCoverBinding Element (Sheet 1 of 3)**

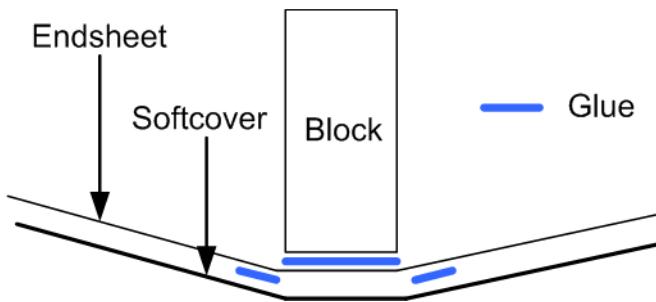
Name	Data Type	Description
BlockThreadSewing ?BlockThreadSewing ?	OptionSpanboolean	Specifies whether the block is also thread sewn.

Table 7-41: SoftCoverBinding Element (Sheet 2 of 3)

Name	Data Type	Description
EndSheets ? <i>EndSheets ?</i> <a href="#">New in JDF 1.3</a>	OptionSpanboolean	@ <i>EndSheets</i> SHALL be specified if end Sheets are SHALL be applied. Additional details of the EndSheets MAY be specified by supplying an input <b>Component</b> with @ <i>ProcessUsage</i> a Product that is referenced by the parent <b>BindingIntent</b> /@ <i>ChildRefs</i> whose @ <i>ProductType</i> = "EndSheet".
FoldingWidth ? <i>FoldingWidth ?</i> <a href="#">New in JDF 1.3</a>	NumberSpandouble	Definition of the dimension of the folding width of the front cover fold. See <b>JacketingParams</b> for details.
FoldingWidthBack ? <i>FoldingWidthBack ?</i> <a href="#">New in JDF 1.3</a>	NumberSpandouble	Definition of the dimension of the folding width of the back cover fold. If not specified, FoldingWidthBack defaults to FoldingWidth.
GlueProcedure ? <i>GlueProcedure ?</i>	EnumerationSpanenumeration	Glue procedure used to glue the book block to the cover. <b>Allowed values are:</b> <i>Spine</i> <i>SideOnly</i> – Glued at the side or endsheets but not at the spine. " <i>SideOnly</i> " books are also referred to as "layflat" if EndSheets are also specified. See Figure 7-5, "Structure of a book with GlueProcedure = "SideOnly" (Layflat)," on page 460. <i>SingleSide</i> – Swiss Brochure. <i>SideSpine</i> – Both side gluing and spine gluing.
Scoring ? <i>Scoring ?</i>	EnumerationSpanenumeration	Scoring option for <b>SoftCoverBinding</b> . Values are based on viewing the cover in its flat, prebound state. <b>Allowed values are:</b> <i>TwiceScored</i> <i>QuadScored</i> <i>None</i>
SpineBrushing ? <i>SpineBrushing ?</i>	OptionSpanboolean	Brushing option for <b>SpinePreparation</b> .
SpineFiberRoughing ? <i>SpineFiberRoughing ?</i>	OptionSpanboolean	FiberRoughing option for <b>SpinePreparation</b> .
SpineGlue ? <i>SpineGlue ?</i>	EnumerationSpanenumeration	Glue type used to glue the book block to the cover. <b>Allowed values are:</b> <i>ColdGlue</i> <i>Hotmelt</i> <i>PUR</i> – Polyurethane rubber.
SpineLevelling ? <i>SpineLevelling ?</i>	OptionSpanboolean	Leveling option for <b>SpinePreparation</b> .
SpineMilling ? <i>SpineMilling ?</i>	OptionSpanboolean	Milling option for <b>SpinePreparation</b> .
SpineNotching ? <i>SpineNotching ?</i>	OptionSpanboolean	Notching option for <b>SpinePreparation</b> .

**Table 7-41: SoftCoverBinding Element (Sheet 3 of 3)**

Name	Data Type	Description
SpineSanding ?SpineSanding ?	OptionSpanboolean	Sanding option for <i>SpinePreparation</i> .
SpineShredding ?SpineShredding ?	OptionSpanboolean	Shredding option for <i>SpinePreparation</i> .

**Figure 7-5: Structure of a book with GlueProcedure = "SideOnly" (Layflat)****7.5.17 Element: StripBinding**[New in JDF 1.1](#)**Table 7-42: StripBinding Element**

Name	Data Type	Description
HoleList ? <a href="#">New in JDF 1.2</a>	refelement	Note that @Shape is always round by design of the strip poles.
HoleType ? <a href="#">New in JDF 1.1</a>	HoleType ? <a href="#">New in JDF 1.1</a>	Predefined hole pattern that matches the Binder. For details of the hole types, see the values. <b>Allowed values are from:</b> Appendix M, “JDF XJDF/CIP4 Hole Pattern Catalog” on page 1239.

**7.5.18 Element: Tabs**

Specifies tabs in a bound document.

**Table 7-43: Tabs Element (Sheet 1 of 2)**

Name	Data Type	Description
TabBanks = "1" <a href="#">Deprecated in JDF 1.4</a>	integer	Number of rows of tabs on the face of the book. <b>Deprecation note:</b> starting with JDF 1.4, @TabBanks should be calculated from @TabCount and @TabsPerBank.
TabBrand ? ?TabBrand ? <a href="#">New in JDF 1.3</a>	StringSpanstring	Strings providing available brand names for the Tabs.
TabCount ? ?TabCount ? <a href="#">New in JDF 1.4</a>	integer	Number of tabs across all banks. If @TabsPerSet is not an even multiple of @TabsPerBank, the last bank in each set is partially filled.
TabsPerBank ?TabsPerBank ?	integer	Number of equal-sized tabs in a single bank if all positions were filled. Note that banks can have tabs only in some of the possible positions

**Table 7-43: Tabs Element (Sheet 2 of 2)**

Name	Data Type	Description
TabExtensionDistance ?TabExtensionDistance ?	NumberSpandouble	Distance tab extends beyond the body of the book block, in points.
TabExtensionMylar ? ?TabExtensionMylar ?	OptionSpanboolean	If "true", the tab extension will be mylar reinforced.
TabBindMylar ?TabBindMylar ?	OptionSpanboolean	If "true", the tab bind edge will be mylar reinforced.
TabBodyCopy ? ?TabBodyCopy ?	OptionSpanboolean	If "true", Color will be applied not only on tab extension, but also on tab body. Note that lack of body copy allows all tabs within a bank to be printed on a single Sheet.
TabMylarColor ?TabMylarColor ?	EnumerationSpanNamed-Color	Specifies the color of the mylar used to reinforce the tab extension. This is conditional on TabExtensionMylar being "true". <b>Allowed values are from:</b> Table A-3, "NamedColor Enumeration Values" on page 1125.
TabMylarColorDetails ? ?TabMylarColorDetails ? New in JDF 1.4	StringSpanstring	A more specific, specialized or site-defined name for the color. If TabMylarColorDetails is supplied, TabMylarColor SHOULD also be supplied.

**7.5.19 Element: Tape**[New in JDF 1.1](#)**Table 7-44: Tape Element**

Name	Data Type	Description
TapeColor ? <a href="#">Deprecated in JDF 1.4</a>	EnumerationSpan	Defines the color of the tape material of the binding. <b>Allowed values are from:</b> Table A-3, "NamedColor Enumeration Values" on page 1125. <b>Deprecation note:</b> starting with JDF 1.4, use <b>BindingIntent</b> / @BindingColor.

**7.5.20 Element: ThreadSealing**

This is a placeholder that might be filled with private or future data.

**Table 7-45: ThreadSealing Element**

Name	Data Type	Description

**7.5.21 Element: ThreadSewing****Table 7-46: ThreadSewing Element**

Name	Data Type	Description
Sealing ?Sealing ?	OptionSpan-boolean	If "true", thermo-sealing is needed in <b>ThreadSewing</b> .

### 7.5.22 Element: **WireCombBinding**

**Table 7-47: WireCombBinding Element**

Name	Data Type	Description
WireCombBrand ? <a href="#">New in JDF 1.3</a>	StringSpan	Strings providing available brand names for the <b>WireCombBinding</b> .
WireCombMaterial ?	EnumerationSpan	The material used for forming the <b>WireCombBinding</b> . <b>Allowed values are:</b> <i>Steel-Silver</i> <i>ColorCoatedSteel</i>
WireCombShape ? <a href="#">Modified in JDF 1.6</a>	NameSpan	The shape of the wire comb. <b>Values include:</b> <i>Single</i> – Each “tooth” is made with one wire. <i>SingleCalendar</i> – Each “tooth” is made with one wire and an extension for hanging the bound product is provided in the center. <a href="#">New in JDF 1.6</a> <i>Twin</i> – The shape of each “tooth” is made with a double wire. <i>TwinCalendar</i> – The shape of each “tooth” is made with a double wire and an extension for hanging the bound product is provided in the center. <a href="#">New in JDF 1.6</a>
HoleList ? <a href="#">New in JDF 1.2</a>	refelement	Details of the holes for the wire comb.
HoleType ? <a href="#">New in JDF 1.1</a>	HoleType ? <a href="#">New in JDF 1.1</a>	Predefined hole pattern that matches the Binder. For details of the hole types, see the values. <b>Allowed values are from:</b> Appendix M, “JDF XJDF/CIP4 Hole Pattern Catalog” on page 1239.

## 7.6 ColorIntent

**ColorIntent** specifies the color and varnishing of the Product. Each surface SHALL be specified individually in a **SurfaceColor** element. This Resource specifies the type of ink to be used. Typically, the parameters consist of a manufacturer name and additional identifying information. The Resource also specifies any coatings and colors to be used, including the process color model and any spot colors.

### Resource Intent Properties

**Resource Class:** Intent

**Process Resource Pairing:** Color, ColorantControl, ColorCorrectionParams, **ColorPool**,  
ColorSpaceConversionParams

**Example Partition:** "Option", "PageNumber", "Side"

**Table 7-48: ColorIntent Resource Element (Sheet 1 of 2)**

Name	Data Type	Description
Coatings ? <a href="#">Modified in JDF 1.5</a>	StringSpan	<p>Material usually applied to a full surface on press as a protective or gloss-enhancing layer over ink.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Aqueous</i></li> <li><i>DullUV</i> <a href="#">New in JDF 1.5</a></li> <li><i>DullVarnish</i></li> <li><i>GlossUV</i> <a href="#">New in JDF 1.5</a></li> <li><i>GlossVarnish</i></li> <li><i>Protective</i></li> <li><i>SatinUV</i> <a href="#">New in JDF 1.5</a></li> <li><i>SatinVarnish</i></li> <li><i>Silicone</i></li> <li><i>UV-Generic UV</i> <a href="#">Modified in JDF 1.5</a></li> </ul> <p><b>Note:</b> the individual strings within <b>Coatings</b> are of type NMTO-KENS and MAY contain multiple entries from the list of values.</p> <p><b>Note:</b> spot coating is specified in <b>ColorsUsed</b>.</p>
ColorICCStandard ? <a href="#">New in JDF 1.2</a>	StringSpan	<p>ColorICCStandard can be used to identify a specific standard printing condition, by reference to Characterization Data registered with the ICC (<a href="http://www.color.org/drsection1.html">http://www.color.org/drsection1.html</a>). This printing condition reference corresponds to the OutputIntent characterization referencing capability in PDF/X. The syntax will be Reference Name as shown in the examples below. Reference Name is the standard reference string name used in both JDF and PDF/X, defined for each printing condition in the characterization registry on the ICC website.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>FOGRA11</i> – Registered by FOGRA pertaining to offset commercial and specialty printing according to [ISO12647-2:2004], positive plates, paper type 1 (gloss-coated, above 70 g/m<sup>2</sup>) and paper type 2 (matte-coated, above 70 g/m<sup>2</sup>), screen frequency 60/cm. Appropriate for black-backing measurement.</li> <li><i>FOGRA15</i> – Registered by FOGRA pertaining to offset commercial and specialty printing according to [ISO12647-2:2004], positive plates, paper type 1 (gloss-coated, above 70 g/m<sup>2</sup>) and paper type 2 (matte-coated, above 70 g/m<sup>2</sup>), screen frequency 60/cm. Appropriate for self-backing measurement.</li> <li><i>CGATS TR001</i> – pertaining to printing conditions that conform to ANSI CGATS.6, which addresses Publication printing in the US as defined by SWOP.</li> </ul> <p><b>Note:</b> If both of <b>ColorICCStandard</b> or are specified, the union of the two is specified. If both of <b>ColorICCStandard</b> and <b>ColorStandard</b> are specified, then <b>ColorICCStandard</b> defines the ICC specific details, whereas <b>ColorStandard</b> defines the generic color standard.</p>

**Table 7-48: ColorIntent Resource Element (Sheet 2 of 2)**

Name	Data Type	Description
ColorStandard ? <a href="#">Modified in JDF 1.2</a>	NameSpan	The color process (i.e., printing condition) requested for the Job. ColorStandard does not imply values for ColorsUsed. For instance, if ColorStandard is "CMYK", ColorsUsed SHALL still contain the four process colors "Cyan", "Magenta", "Yellow" and "Black". If both of ColorICCStandard and ColorStandard are specified, then ColorICCStandard defines the ICC specific details, whereas ColorStandard defines the generic color standard. <b>Values include those from:</b> Table 7-50, "ColorStandard Attribute Values" on page 466.
Coverage ?	NumberSpan	Cumulative colorant coverage percentage. For example, a full Sheet of 100% deep black in CMYK has Coverage/@Actual = "400". Typical coverages based on one color plane are: <i>Light</i> – 1-9% <i>Medium</i> – 10-35% <i>Heavy</i> – 36+%
InkManufacturer ? <a href="#">Deprecated in JDF 1.2</a>	NameSpan	Name of the manufacturer of the ink requested (e.g., "ACME Ink", "CIP4_Ink_Company", etc.).
NumColors ? <a href="#">New in JDF 1.5</a>	integer	@NumColors specifies the number of colors (Inks) used for a product. A value of 0 implies no printing. A value of 1 implies Black. A value of 4 implies CMYK. Spot colors SHALL be specified in @ColorsUsed. If both @NumColors and @ColorsUsed are specified, the sum of both is requested (e.g., @NumColors = "4" and @ColorsUsed = "Spot1" defines a CMYK product with one additional spot color).
ColorPool ? <a href="#">New in JDF 1.1</a>	refelement	Additional details about the colors used. The ColorPool resource MAY include some or all details about both ColorsUsed separation spot colors, spot colors contained in Job files that will be printed using process color equivalents and the ColorStandard process colors.
ColorsUsed ?	element	Array of colorant separation names that are requested. If not specified, the values are implied from ColorStandard. If specified, ColorsUsed SHALL contain a list of all separation names used by the Job. <b>Note:</b> If additional information about the colors and colorants is needed, it can be specified in the referenced ColorPool resource.
SurfaceColor(Back) ?	element	SurfaceColor[@Surface="Back"] describes the color intent of the back surfaces of the final product.
SurfaceColor(Front) ?	element	SurfaceColor[@Surface="Front"] describes the color intent of the front surfaces of the final product.

### 7.6.1 Element: SurfaceColor

This element specifies the color configuration of the desired products surface.

**Table 7-49: SurfaceColor Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Coatings</i> ?	NMTOKENS	<p>Material usually applied to a full surface on press as a protective or gloss-enhancing layer over ink.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Aqueous</i></li> <li><i>DullUV</i></li> <li><i>DullVarnish</i></li> <li><i>GlossUV</i></li> <li><i>GlossVarnish</i></li> <li><i>None</i> – No Coating is requested</li> <li><i>Protective</i></li> <li><i>SatinUV</i></li> <li><i>SatinVarnish</i></li> <li><i>Silicone</i></li> <li><i>UV</i> – Generic UV</li> </ul> <p><b>Note:</b> Multiple NMTOKENS MAY be selected to indicate multiple coatings.</p> <p><b>Note:</b> <i>@Surface</i> specifies the surface to which this coating applies.</p> <p><b>Note:</b> Spot coating is specified in <i>@ColorsUsed</i>.</p>
<i>ColorsUsed</i> ?	NMTOKENS	<p>Array of colorant separation names that are requested for this <i>SurfaceColor</i>. If specified <i>@ColorsUsed</i> SHALL contain a list of all separation names used by the product or a list of spot colors specified by "Spot" which specifies a generic spot color whose details are unknown. "Spot" MAY be specified multiple times in one <i>@ColorsUsed</i> value.</p> <p><b>Note:</b> If additional information about the colors and colorants is needed, it MAY be specified in the <b>Color ResourceSet</b>. These can be process colors, generic spot colors or named spot colors. In addition, partial (spot) coating is specified by adding NMTOKENS with any value from <i>@Coatings</i>:</p> <p><b>Note:</b> If additional information about the colors and colorants is needed, it MAY be specified in the <b>Color ResourceSet</b>. These can be process colors, generic spot colors or named spot colors. In addition, partial (spot) coating SHALL be specified by adding NMTOKENS with any value from the list defined in <i>@Coatings</i>.</p>
<i>Coverage</i> ?	double	<p>Cumulative colorant coverage percentage. For example, a full sheet of 100% deep black in CMYK has <i>@Coverage</i> = "400". Typical coverages based on one color plane are:</p> <ul style="list-style-type: none"> <li><i>Light</i> – 1-9%</li> <li><i>Medium</i> – 10-35%</li> <li><i>Heavy</i> – 36+%</li> </ul> <p><b>Note:</b> <i>@Surface</i> specifies the surface to which this coverage applies.</p>

**Table 7-49: SurfaceColor Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>PrintCondition ?</i>	string	<p>Specifies the Reference Name of a characterization data set. Reference Names are the standard identifiers for printing conditions</p> <p>There are research and trade associations (such as Fogra, IDEAlliance, WAN-IFRA, JPMA, ICC) who provide characterization data sets for standard printing conditions. Most Reference Names of standard printing conditions are registered with the ICC (see <a href="http://www.color.org/chardata">http://www.color.org/chardata</a>).</p> <p>Official Reference Names shall be taken if a standard printing condition exists. Custom Reference Names MAY be introduced if no official standard printing condition exists.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>FOGRA51</i> - Valid for FOGRA51 based profiles such as "PSO Coated v3"</li> <li><i>CGATS21_2_CRPC5</i> - Valid for CGATS21_2 CRPC5 based profiles such as "SWOP2013C3-CPRC5"</li> </ul>
<i>Surface</i>	enumeration	<p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Back</i> – The back of the product. In case of a wrap-around cover, "Back" specifies the inside of the cover.</li> <li><i>Front</i> – The front of the product. In case of a wrap-around cover, "Front" specifies the outside of the cover.</li> </ul>

— Attribute: **ColorStandard**

**Table 7-50: ColorStandard Attribute Values**

Value	Description
<i>CMYK</i>	Generic four color process.
<i>FIRST</i>	Flexographic Image Reproduction Specifications & Tolerances.
<i>GRACOL</i>	General Requirements for Applications in Commercial Offset Lithography
<i>Hexachrome</i>	6 Colors " <i>CMYK</i> " + " <i>Orange</i> " and " <i>Green</i> ".
<i>HIFI</i>	7 Colors " <i>CMYK</i> " + " <i>Red</i> ", " <i>Green</i> " and " <i>Blue</i> ".
<i>ISO12647</i>	[ISO12647-2:2004] offset standard.
<a href="#">Deprecated in JDF 1.2</a>	
<i>JapanColor2001</i>	Japan Color 2001 standard [japancolor].
<i>Monochrome</i>	Generic single color printing condition (e.g., black and white or one single spot color).
<i>None</i>	No marks. Used to define one-sided printing.
<a href="#">Deprecated in JDF 1.2</a>	<b>Deprecation note:</b> starting with JDF 1.2, use <b>LayoutIntent/@Sides</b> instead.
<i>SNAP</i>	Specifications for Newsprint Advertising Production
<i>SWOP</i>	Specifications for Web Offset Publications. Registered by ANSI with the ICC as <i>ICC:CGATS TR001</i> pertaining to printing conditions that conform to ANSI CGATS.6 which is based on Publication printing in the US as defined by SWOP, Inc.

## 7.6.2 Element: ColorsUsed

Table 7-51: ColorsUsed Element

Name	Data Type	Description
SeparationSpec * <a href="#">Modified in JDF 1.2</a>	element	<p>These can be process colors, generic spot colors or named spot colors.</p> <p>In addition, partial (spot) coating is specified by adding a SeparationSpec with anything from Coatings as SeparationSpec/@Name:</p> <ul style="list-style-type: none"> <li><i>Aqueous</i></li> <li><i>Bronzing</i></li> <li><i>DullVarnish</i></li> <li><i>GlossVarnish</i></li> <li><i>SatinVarnish</i></li> <li><i>Silicone</i></li> </ul> <p><i>Spot</i> – Generic spot color of which the details are unknown. Spot MAY be specified multiple times in one ColorsUsed Element. <a href="#">New in JDF 1.2</a></p> <p><i>UV</i></p> <p><i>Varnish</i> – Generic varnish including "<i>DullVarnish</i>", "<i>GlossVarnish</i>" and "<i>SatinVarnish</i>". <a href="#">New in JDF 1.3</a></p>

## 7.7 ContentCheckIntent

This Product Intent element specifies the prepress proofing and preflighting intent for an XJDF Job.

### Intent Properties

Process Resource Pairing: [ApprovalParams](#), [ApprovalDetails](#), [ColorantControl](#),

[ColorSpaceConversionParams](#), [ExposedMedia](#),

[ImageSetterParams](#), [InterpretingParams](#), [Layout](#), [Media](#),

[RenderingParams](#), [ScreeningParams](#),

[SeparationControlParams](#), [StrippingParams](#)

Table 7-52: ContentCheckIntent Element

Name	Data Type	Description
PreflightItem *	element	PreflightItem defines the preflight rules for a range of pages.
ProofItem * <a href="#">New in JDF 1.1</a>	element	Specifies the details of the proofs that are needed. If no ProofItem exists in a ContentCheckIntent, no customer proofs SHALL be provided. <b>Note:</b> ProofItem describes proofs that will be provided to the customer and does not specify internal production proofs.

### 7.7.1 Element: PreflightItem

Table 7-53: PreflightItem Element (Sheet 1 of 2)

Name	Data Type	Description
<a href="#">PageIndex_?</a>	IntegerRangeList	Index of pages that SHALL be proofed in reader order. If @PageIndex is not specified, then all pages SHALL be proofed.

**Table 7-53: PreflightItem Element (Sheet 2 of 2)**

Name	Data Type	Description
PreflightLevel ?	enumeration	<p>Level of content data checking / preflighting. The details are implementation specific.</p> <p><b>Allowed values are:</b></p> <p><i>Basic</i> – Check only for severe errors. Examples include missing fonts, unknown file format, incorrect page size, missing passwords.</p> <p><i>Extended</i> – Check for additional errors that can degrade output quality and can be resolved by the customer. Examples include: low image resolution, unknown color space details.</p> <p><i>Premium</i> - Highest available check for additional errors. This level MAY include manual repairs by the printer</p>

### 7.7.2 Element: **ProofItem**

**Table 7-54: ProofItem Element (Sheet 1 of 2)**

Name	Data Type	Description
Amount ? <i>Amount</i> ? Modified in JDF 1.1	IntegerSpaninteger	Specifies the total number of copies of this proof that is needed. If not specified, it defaults to an IntegerSpan with @Preferred = "1".
BrandName ? <i>BrandName</i> ? Modified in JDF 1.1	StringSpanstring	Brand name of the proof (e.g., Iris).
ColorType ? <i>ColorType</i> ? Modified in JDF 1.1	EnumerationSpanenumeration	<p>Color quality of the proof.</p> <p><b>Allowed values are:</b></p> <p><i>Monochrome</i> – Generic single color printing condition (e.g., black and white or one single spot color).</p> <p><i>BasicColor</i> – Color does not match precisely. This implies the absence of a color matching system.</p> <p><i>MatchedColor</i> – Color is matched to the output of the press using a color matching system.</p>
Contract ?= "false" Modified in JDF 1.1	boolean	Requires proof to be a legally binding, accurate representation of the image to be printed (i.e., color quality requirements have been met when the printed piece acceptably matches the proof).
HalfTone ? <i>HalfTone</i> ? Modified in JDF 1.1	OptionSpanboolean	If @HalfTone = "true", the proof SHALL emulate halftone screens.

Table 7-54: ProofItem Element (Sheet 2 of 2)

Name	Data Type	Description
<a href="#">ImageStrategy ?</a> <a href="#">ImageStrategy ?</a> <a href="#">New in JDF 1.2</a>	EnumerationSpanenumeration	<p>Identifies which images (OPI or other) will be printed on a proof or displayed as a soft proof.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>NoImages</i> – No images are imaged on the proof.</li> <li><i>LowResolution</i> – Low resolution images are imaged on the proof.</li> <li><i>HighResolution</i> – High resolution production images are imaged on the proof, resulting in proofs that accurately represent the final product.</li> </ul>
<a href="#">PageIndex ?</a>	IntegerRange	Index of pages that SHALL be proofed in reader order. If <i>@PageIndex</i> is not specified, then all pages SHALL be proofed.
<a href="#">ProofName ?</a>	NMOKEN	Name of the <b>ProofItem</b> . This field SHALL be specified if delivery of a proof is specified in <b>DeliveryParams</b> .
<a href="#">ProofTarget ?</a>	URL	Identifies a remote target for the proof output in a remote proofing environment. This can be either a soft or a hard proofing target. The file to be displayed or output is to be sent to the URL specified in <i>@ProofTarget</i> .
<a href="#">ProofType ?</a> <a href="#">ProofType ?</a> <a href="#">Modified in JDF 1.1</a>	EnumerationSpanenumeration	<p>The kind of proof.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Page</i> – Page proof</li> <li><i>Imposition</i> – Imposition proof</li> <li><i>None</i> – No proof is needed.</li> </ul>
<a href="#">Technology ?</a> <a href="#">Technology ?</a> <a href="#">Modified in JDF 1.1</a>	NameSpan-NMOKEN	<p>Technology used for making the proof.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>BlueLine</i></li> <li><i>DyeSub</i></li> <li><i>InkJet</i></li> <li><i>Laser</i></li> <li><i>PressProof</i></li> <li><i>SoftProof</i></li> </ul>
<a href="#">ApprovalParams ?</a> <a href="#">ApprovalParamsRef ?</a> <a href="#">New in JDF 1.2</a>	refelementIDREF	List of people (e.g., a customer, printer or manager) who can sign the <b>ApprovalSuccess</b> for this <b>ProofItem</b> .
<a href="#">SeparationSpec *</a> <a href="#">New in JDF 1.1</a>	element	Separations that are to be proofed. If not specified, all separations SHALL be proofed.

## 7.8 DeliveryIntent

Summarizes the options that describe pickup or delivery time and location of the **PhysicalResources** of a Job. It also defines the number of copies that are requested for a specific Job or delivery. This includes delivery of both final products and of proofs. **DeliveryIntent** MAY also be used to describe the delivery of intermediate products such as partial products in a subcontracting description

### Resource Properties

<b>Resource Class:</b>	Intent
<b>Process Resource Pairing:</b>	Address, <b>DeliveryParams</b>
<b>Example Partition:</b>	"Option"

Deprecation

**Table 7-55: DeliveryIntent Resource (Sheet 1 of 3)**

Name	Data Type	Description
<i>Accepted ?</i> <a href="#">Deprecated in JDF 1.3</a>	boolean	The quote that is specified by this <b>DeliveryIntent</b> has been accepted. <b>Deprecation note:</b> starting with JDF 1.3, contract negotiation information has been removed and will be handled by the business wrapper around JDF (e.g., PrintTalk).
<i>AdditionalAmount = "1" New in JDF 1.2 Deprecated in JDF 1.3</i>	integer	Number of components used to calculate the value of the <b>@AdditionalPrice</b> Attribute in the <b>Pricing</b> . This value applies to the number of additional items in one <b>DropIntent/DropItemIntent</b> and not to the total additional number of items. In JDF 1.3 and beyond, pricing information has been removed and will be handled by the business wrapper around JDF (e.g., PrintTalk).
<i>BuyerAccount ?</i>	string	Account ID of the buyer with the delivery service.
<b>Contact *</b> <b>ContactRefs ?</b> <a href="#">New in JDF 1.1</a>	refelement- DREFS	Address and further information of the <b>Contact</b> responsible for the transfer. The actual delivery address is specified as the <b>Contact[contains (@ContactTypes, "Delivery")]/Address</b> . The actual pickup address is specified as the <b>Contact[contains (@ContactTypes, "Pickup")]/Address</b> . At most one <b>Contact</b> [contains (@ContactTypes, X)] SHALL be specified for X equal to "Delivery", "Pickup" or "Billing".
<i>DeliveryCharge ? DeliveryCharge ?<a href="#">New in JDF 1.1</a> Modified in JDF 1.2</i>	EnumerationSpanenumeration	Specifies who pays for a delivery being made by a third party. <b>Allowed values are:</b> <i>Printer</i> – The " <i>Printer</i> " is defined as the person who creates the Resource that is delivered. This includes all suppliers (e.g., binders, prepress suppliers, etc.). <i>Buyer</i> – The customer specified in <b>CustomerInfo</b> . <i>Other</i> – The <b>Contact[@ContactTypes = "DeliveryCharge"]</b> . <a href="#">New in JDF 1.2</a>
<i>Earliest ?Earliest ?</i>	TimeSpandate-Time	Specifies the earliest time after which the transfer is to be made. Within an RFQ or a Quote, at most one of <b>Earliest</b> or <b>EarliestDuration</b> SHALL be specified.
<i>EarliestDuration ?EarliestDuration ?</i>	DurationSpanduration	Specifies the earliest time by which the transfer is to be made relative to the date of the purchase order. Within an RFQ or a Quote, at most one of <b>Earliest</b> or <b>EarliestDuration</b> SHALL be specified. Within a purchase order, <b>EarliestDuration</b> SHALL NOT be specified.
<i>Method ? Method ?<a href="#">Modified in JDF 1.5</a></i>	NameSpan-NMTOKEN	Specifies a delivery method, which can be a generic method. <b>Values include those from:</b> Drop/@Method <b>Modification note:</b> starting in JDF 1.5, values have changed.
<i>Overage ?Overage ?</i>	NumberSpandouble	Percentage value that defines the acceptable upwards variation of <b>@Amount</b> . Defaults to the trade custom defaults as defined by PIA, BVD, etc.

**Table 7-55: DeliveryIntent Resource (Sheet 2 of 3)**

Name	Data Type	Description
<i>Ownership ?= "Origin"</i>	enumeration	<p>Point of transfer of ownership:</p> <p><b>Allowed values are:</b></p> <p><i>Origin</i> – Ownership of goods is transferred upon leaving point of origin.</p> <p><i>Destination</i> – Ownership is transferred upon receipt at destination.</p>
<i>Pickup ?</i> <i>Deprecated in JDF 1.1</i>	boolean	<p>Specifies whether the delivery brings or picks up the merchandise. If <i>@Pickup = "false"</i>, the drop is delivered to the address specified in <b>Company</b>.</p> <p>If <i>@Pickup = "true"</i>, the <b>DeliveryIntent</b> describes an input to the Job (e.g., a CD for inserting, a preprinted cover, etc.). In this case <b>Company</b> describes the location where the merchandise is picked up.</p>
<i>Required ?</i>	<i>TimeSpandate-Time</i>	Specifies the time by which the transfer is to be made. Within an RFQ or a Quote, exactly one of <b>Required</b> or <b>RequiredDuration</b> SHALL be specified.
<i>RequiredDuration ?</i>	<i>DurationSpanduration</i>	Specifies the time by which the transfer is to be made relative to the date of the purchase order. Within an RFQ or a Quote, exactly one of <b>Required</b> or <b>RequiredDuration</b> SHALL be specified. Within a purchase order, <b>RequiredDuration</b> SHALL NOT be specified.
<i>ReturnMethod ?</i> <i>New in JDF 1.1</i>	<i>NameSpan-NMTOKEN</i>	<p>Specifies a delivery method for returning the surplus material and SHALL NOT be specified unless <b>SurplusHandling = "Return"</b>.</p> <p><b>Allowed values are from:</b> Method</p>
<i>ServiceLevel ?</i> <i>New in JDF 1.2</i>	<i>StringSpanstring</i>	<p>The service level of the specific carrier.</p> <p><b>Values include those from:</b> Drop/ServiceLevel</p>
<i>SurplusHandling ?</i> <i>New in JDF 1.1</i>	<i>EnumerationSpanenumeration</i>	<p>Describes what is to happen with unused or redundant parts of the transfer specified with <b>Transfer = "BuyerToPrinterDeliver"</b> or <b>"BuyerToPrinterPickup"</b> after the Job. The return delivery or pickup address is specified by <b>Contact</b>[contains (@<b>ContactTypes</b>, "SurplusReturn")].</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>ReturnWithProduct</i> – The surplus material is delivered back to the customer together with the final product.</li> <li><i>Return</i> – The surplus material is delivered back independently directly after usage.</li> <li><i>Pickup</i> – The customer picks up the surplus material.</li> <li><i>Destroy</i> – The printer destroys the surplus material.</li> <li><i>PrinterOwns</i> – The surplus material belongs to the printer.</li> <li><i>Store</i> – The printer has to store the surplus material for future purposes.</li> </ul>
<i>Transfer ?</i> <i>New in JDF 1.1</i>	<i>EnumerationSpanenumeration</i>	Describes the direction and responsibility of the transfer.
<i>Underage ?</i> <i>?Underage ?</i>	<i>NumberSpandouble</i>	Percentage value that defines the acceptable downwards variation of <b>@Amount</b> . Defaults to the trade custom defaults as defined by PIA, BVD, etc. The value SHALL be nonnegative.

**Table 7-55: DeliveryIntent Resource (Sheet 3 of 3)**

Name	Data Type	Description
Company ? <u>Deprecated in JDF 1.1</u>	refelement	Address and further information of the addressee. In JDF 1.1 and beyond, Company is referenced from Contact.
Contact * ContactRefs ? <u>New in JDF 1.1</u>	refelementIDREFS	Address and further information of the Contact responsible for the transfer. The actual delivery address is specified as the Contact[contains (@ContactTypes, "Delivery")]/Address. The actual pickup address is specified as the Contact[contains (@ContactTypes, "Pickup")]/Address. At most one Contact [contains (@ContactTypes, X)] SHALL be specified for X equal to "Delivery", "Pickup" or "Billing".
DropIntent +	element	Includes all locations where the product will be delivered. Note that multiple DropIntent Elements specify multiple deliveries and not options for delivery.
FileSpec (MailingList) ?	refelementelement	A FileSpec Resource pointing to a mailing list. The format of the referenced mailing list is implementation dependent.
Pricing ? <u>Deprecated in JDF 1.3</u>	element	Pricing Elements that define the pricing of the complete DeliveryIntent including any DropIntent or DropItemIntent Elements that MAY contain further Pricing Elements. In JDF 1.3 and beyond, pricing information has been removed and will be handled by the business wrapper around JDF (e.g., PrintTalk).

This Element contains information about the intended individual drop of a delivery. Attributes that are specified in a DropIntent Element overwrite those that are specified in their parent DeliveryIntent Element. If OPTIONAL values are not specified, they default to the values specified in the DeliveryIntent.

**Table 7-56: DropIntent Element (Sheet 1 of 3)**

Name	Data Type	Description
AdditionalAmount ? <u>New in JDF 1.2</u> <u>Deprecated in JDF 1.3</u>	integer	Number of components used to calculate the value of the @AdditionalPrice Attribute in the Pricing. This value applies to the number of additional items in one DropIntent/ DropItemIntent and not to the total additional number of items. If not specified, defaults to the value of DeliveryIntent/ @AdditionalAmount. In JDF 1.3 and beyond, pricing information has been removed and will be handled by the business wrapper around JDF (e.g., PrintTalk).
BuyerAccount ? <u>New in JDF 1.2</u>	string	Account ID of the buyer with the delivery service. <b>Default value is from:</b> DeliveryIntent/@BuyerAccount
Contact * ContactRefs ? <u>New in JDF 1.1</u>	refelementIDREFS	Address and further information of the Contact responsible for the transfer. The actual delivery address is specified as the Contact[contains (@ContactTypes, "Delivery")]/Address. The actual pickup address is specified as the Contact[contains (@ContactTypes, "Pickup")]/Address. At most one Contact [contains (@ContactTypes, X)] SHALL be specified for X equal to "Delivery", "Pickup" or "Billing". Defaults to the DeliveryIntent/Contact
DropID ? <u>New in JDF 1.5</u>	string	DropIntent Elements with the same @DropID are part of the same drop. This attribute is provided to allow items from multiple individual JDF XJDF jobs to be delivered in one drop.

**Table 7-56: DropIntent Element (Sheet 2 of 3)**

Name	Data Type	Description
Earliest ? <i>Earliest</i> ?	TimeSpan <span style="color:red;">date-Time</span>	Specifies the earliest time after which the transfer is to be made. Within an RFQ or a Quote, at most one of Earliest or EarliestDuration SHALL be specified.
EarliestDuration ? ?EarliestDuration ?	DurationSpan <span style="color:red;">duration</span>	Specifies the earliest time by which the transfer is to be made relative to the date of the purchase order. Within an RFQ or a Quote, at most one of Earliest or EarliestDuration SHALL be specified. Within a purchase order, EarliestDuration SHALL NOT be specified.
Method ? <i>Method</i> ? Modified in JDF 1.5	NameSpan <span style="color:red;">NMTO-KEN</span>	Specifies a delivery method. <b>Values include those from:</b> Drop/@Method. <b>Modification note:</b> starting in JDF 1.5, values have changed.
Pickup ? Deprecated in JDF 1.1	boolean	If "true", the merchandise is picked up. If @Pickup = "false", the DropIntent is delivered to the address specified in Company. If @Pickup = "true", the DropIntent describes an input to the Job (e.g., a CD for inserting, a preprinted cover, etc.). In this case, Company describes the location where the merchandise is picked up.
Required ? <i>Required</i> ?	TimeSpan <span style="color:red;">date-Time</span>	Specifies the time by which the delivery is to be made. Within an RFQ or a Quote, at most one of Required or RequiredDuration SHALL be specified.
RequiredDuration ? ?RequiredDuration ?	DurationSpan <span style="color:red;">duration</span>	Specifies the time by which the delivery is to be made relative to the date of the purchase order. Within an RFQ or a Quote, at most one of Required or RequiredDuration SHALL be specified. Within a purchase order, RequiredDuration SHALL NOT be specified.
ReturnMethod ? <i>ReturnMethod</i> ? New in JDF 1.1	NameSpan <span style="color:red;">NMTO-KEN</span>	Specifies a delivery method for returning the surplus material, and SHALL NOT be specified unless SurplusHandling = "Return". <b>Default value is from:</b> DeliveryIntent/ReturnMethod. <b>Values include those from:</b> DeliveryIntent/ReturnMethod
ServiceLevel ? <i>ServiceLevel</i> ? New in JDF 1.2	StringSpan <span style="color:red;">string</span>	The service level of the specific carrier. <b>Values include those from:</b> Drop/ServiceLevel

**Table 7-56: DropIntent Element (Sheet 3 of 3)**

Name	Data Type	Description
SurplusHandling ? <i>SurplusHandling</i> ?New in JDF 1.1	EnumerationSpanenumeration	<p>Describes what is to happen with unused or redundant parts of the transfer specified with Transfer = "BuyerToPrinterDeliver" or "BuyerToPrinterPickup" after the Job. The return delivery or pickup address is specified by Contact[contains (@ContactTypes, "SurplusReturn")].</p> <p><b>Default value is from:</b> DeliveryIntent/SurplusHandling.</p> <p><b>Allowed values are from:</b> DeliveryIntent/SurplusHandling.</p> <p><i>ReturnWithProduct</i> – The surplus material is delivered back to the customer together with the final product.</p> <p><i>Return</i> – The surplus material is delivered back independently directly after usage.</p> <p><i>Pickup</i> – The customer picks up the surplus material.</p> <p><i>Destroy</i> – The printer destroys the surplus material.</p> <p><i>PrinterOwns</i> – The surplus material belongs to the printer.</p> <p><i>Store</i> – The printer has to store the surplus material for future purposes.</p>
Transfer ? <i>Transfer</i> ?New in JDF 1.1	EnumerationSpanenumeration	<p>Describes the direction and responsibility of the transfer.</p> <p><b>Allowed values are from:</b> Drop/@Transfer.</p>
Company ? Deprecated in JDF 1.1	refelement	Address and further information of the addressee. In JDF 1.1 and beyond Company is a Subelement of Contact.
Contact * <i>ContactRefs</i> ?New in JDF 1.1	refelementIDREFS	<p>Address and further information of the Contact responsible for the transfer. The actual delivery address is specified as the Contact[contains (@ContactTypes, "Delivery")]/Address. The actual pickup address is specified as the Contact[contains (@ContactTypes, "Pickup")]/Address.</p> <p>At most one Contact[contains (@ContactTypes, X)]/ SHALL be specified for X equal to "Delivery", "Pickup" or "Billing". Defaults to the DeliveryIntent/Contact</p>
DropItemIntent +	element	A DropIntent MAY consist of multiple products, which are represented by their respective PhysicalResources Resource Elements. Each DropItemIntent Element describes a number of individual Resources that is part of this DropIntent.
Pricing ? Deprecated in JDF 1.3	element	Pricing Element that defines the pricing of the DropIntent. In JDF 1.3 and beyond, pricing information has been removed and will be handled by the business wrapper around JDF (e.g., PrintTalk).

### 7.8.1 Element: DropItemIntent

**Table 7-57: DropItemIntent Element**

Name	Data Type	Description
<i>AdditionalAmount</i> ? <a href="#">Modified in JDF 1.2</a> <a href="#">Deprecated in JDF 1.3</a>	integer	Number of components used to calculate the value of the <i>@AdditionalPrice</i> Attribute in the Pricing. If not specified, defaults to the value of <i>DropIntent/@AdditionalAmount</i> . In JDF 1.3 and beyond, pricing information has been removed and will be handled by the business wrapper around JDF (e.g., PrintTalk).
<i>Amount</i> ?	integer	Specifies the final number of Resources delivered. If not specified, defaults to the total amount of the Resource that is specified by <a href="#">PhysicalResources Resource Elements</a> or 1 if this <i>DropItemIntent</i> specifies a proof. Note that <i>DropItemIntent/@Amount</i> corresponds semantically to <a href="#">ResourceLink Resource/@ActualAmount</a> and <i>DropItem/@ActualAmount</i> .
<i>DropID</i> ? <a href="#">New in JDF 1.5</a>	string	<i>DropItemIntent</i> Elements with the same <i>@DropID</i> are part of the same drop. This attribute is provided to allow items from multiple individual <a href="#">JDF XJDF</a> jobs to be delivered in one drop.
<i>DropItemRef</i> ?	IDREF	Description of an individual Item, a set of individual items or a product that is delivered. <b>Constraint:</b> exactly one of <i>@DropItemRef</i> or <i>@Proof</i> SHALL be specified.
<i>OrderedAmount</i> ?	integer	Specifies the original number of Resources ordered. If not specified, defaults to the value of <i>@Amount</i> . Note that <i>DropItemIntent/@OrderedAmount</i> corresponds semantically to <a href="#">ResourceLink Resource/@Amount</a> and <i>DropItem/@Amount</i> .
<i>Proof</i> ? <a href="#">New in JDF 1.1</a>	string	This <i>DropItemIntent</i> refers to a proof that is specified in a <a href="#">ProofItem</a> of the <a href="#">ProofingIntent</a> of this Product Intent Node. <b>Constraint:</b> <a href="#">ProofingIntent/ProofItem/@ProofName</a> SHALL match <i>@Proof</i> . Exactly one of <a href="#">PhysicalResource Resource</a> or <i>@Proof</i> SHALL be specified.
<i>Unit</i> ?	string	Unit of measurement for the <i>@Amount</i> specified in the <a href="#">PhysicalResources Resource</a> . <b>Default value is:</b> value of <i>@Unit</i> defined in the Resource described by the <a href="#">PhysicalResource Resource</a>
<i>PhysicalResource</i> ? <a href="#">Modified in JDF 1.1</a>	refelement	Description of the individual item that is delivered. <b>Constraint:</b> exactly one of <a href="#">PhysicalResource</a> or <i>@Proof</i> SHALL be specified. <b>Note:</b> <a href="#">PhysicalResource</a> represents a Resource that SHALL be an instance of a <a href="#">PhysicalResource</a> (e.g., <a href="#">Component</a> ).
<i>Pricing</i> ? <a href="#">Deprecated in JDF 1.3</a>	element	Pricing Element that defines the pricing of the <i>DropItemIntent</i> . <b>Deprecation note:</b> starting with JDF 1.3, pricing information has been removed and will be handled by the business wrapper around JDF (e.g., PrintTalk).

### 7.8.2 Element: Pricing

[Deprecated in JDF 1.3](#)

The table defining the deprecated Pricing Subelement has been moved to Section P.5.2, “DeliveryIntent Deprecated Subelements” on page 1337.

### 7.8.3 Element: **Payment**

[Deprecated in JDF 1.3](#)

The table defining the deprecated **Payment** Subelement has been moved to Section P.5.2, “DeliveryIntent Deprecated Subelements” on page 1337.

### 7.8.4 Element: **CreditCard**

[Deprecated in JDF 1.3](#)

The table defining the deprecated **CreditCard** Subelement has been moved to Section P.5.2, “DeliveryIntent Deprecated Subelements” on page 1337.

## 7.9 EmbossingIntent

[New in JDF 1.1](#)

This **Resource Product Intent element** specifies the embossing and/or foil stamping intent for a **JDF** or **XJDF** Job using information that identifies whether the product is embossed or stamped, and if desired, the complexity of the affected area.

### Resource Intent Properties

**Resource Class:** [Intent](#)

**Process Resource Pairing:** [EmbossingParams](#)

**Example Partition:** ["Option", "PageNumber", "Side"](#)

**Table 7-58: EmbossingIntent Resource Element**

Name	Data Type	Description
EmbossingItem +	element	Each embossed image is described by one EmbossingItem.

### 7.9.1 Element: **EmbossingItem**

**Table 7-59: EmbossingItem Element (Sheet 1 of 3)**

Name	Data Type	Description
<a href="#">Direction</a> <i>Direction</i> ?Modified in JDF 1.3	<a href="#">EnumerationSpan</a> <a href="#">enumeration</a>	The direction of the image. <b>Allowed values are:</b> <i>Both</i> – Both debossing and embossing in one stamp. <i>Depressed</i> – Debossing. <i>Flat</i> – The embossing foil is applied flat. Used for foil stamping. <a href="#">New in JDF 1.3</a> <i>Raised</i> – Embossing.
<a href="#">EdgeAngle</a> <i>EdgeAngle</i> ?	<a href="#">NumberSpan</a> <a href="#">double</a>	The angle of a beveled edge in degrees. Typical values are an angle of: 30, 40, 45, 50 or 60 degrees. If EdgeAngle is specified, EdgeShape = "Beveled" SHALL be specified.
<a href="#">EdgeShape</a> <i>EdgeShape</i> ?	<a href="#">EnumerationSpan</a> <a href="#">enumeration</a>	The transition between the embossed surface and the surrounding media can be rounded or beveled (angled). <b>Allowed values are:</b> <i>Rounded</i> <i>Beveled</i>

**Table 7-59: EmbossingItem Element (Sheet 2 of 3)**

Name	Data Type	Description
EmbossingType <i>EmbossingType</i> ?Modified in JDF 1.4	StringSpanenumeration	<p>The strings defined in EmbossingType are whitespace separated combinations of the following tokens.</p> <p><b>Values include</b> Allowed values are:</p> <ul style="list-style-type: none"> <li><i>Braille</i> – 6 dot "Braille" embossing. <a href="#">New in JDF 1.4</a></li> <li><i>BlindEmbossing</i> – Embossed forms that are not inked or foiled. The color of the image is the same as the paper.</li> <li><i>FoilEmbossing</i> – Combines embossing with foil stamping in one single impression.</li> <li><i>FoilStamping</i> – Using a heated die to place a metallic or pigmented image from a coated foil on the paper.</li> <li><i>RegisteredEmbossing</i> – Creates an embossed image that exactly registers to a printed image.</li> </ul>
FoilColor <i>FoilColor</i> ?	EnumerationSpanNamed-Color	<p>Defines the color of the foil material which is used for embossing.</p> <p><b>Allowed values are from:</b> Table A-3, "NamedColor Enumeration Values" on page 1125.</p>
FoilColorDetails ? <i>FoilColorDetails</i> ?New in JDF 1.4	StringSpanstring	<p>A more specific, specialized or site-defined name for the color. If FoilColorDetails is supplied, FoilColor SHOULD also be supplied. @FoilColorDetails SHOULD be used to specify specialized foil properties such as holographic or transparent foils. Example combinations of @FoilColor and @FoilColorDetails include:</p> <p><b>Holographic foils:</b> @FoilColor = "Silver" and @FoilColorDetails = "Holographic";</p> <p><b>Matte transparent foil:</b> @FoilColor = "white" and @FoilColorDetails = "TransparentMatte".</p>
Height ? <i>Height</i> ?	NumberSpandouble	<p>The height of the levels. This value specifies the vertical distance between the highest and lowest point of the stamp, regardless of the value of Direction.</p>
ImageSize <i>ImageSize</i> ?	XYPairSpanXY-Pair	<p>The size of the bounding box of one single image.</p>
Level ? <i>Level</i> ?	EnumerationSpanenumeration	<p>The level of embossing.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>SingleLevel</i></li> <li><i>MultiLevel</i></li> <li><i>Sculpted</i></li> </ul>
Location ?	enumeration	<p>Position of the embossing on the product.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Back</i> – Back side of a sheet or product</li> <li><i>Bottom</i> – Bottom of a product</li> <li><i>Front</i> – Front side of a sheet or product</li> <li><i>Left</i> – Left side of a product, e.g. the spine of a left bound book.</li> <li><i>Right</i> – Right side of a product, e.g. the spine of a right bound book.</li> <li><i>Top</i> – Top of a product</li> </ul>

**Table 7-59: EmbossingItem Element (Sheet 3 of 3)**

Name	Data Type	Description
Position ?Position ?	XYPairSpanXY-Pair	Position of the <b>center lower left corner</b> of the bounding box of the embossed image in the coordinate system of the <b>surface of the Component</b> that is selected by <b>@Location</b> .
ShapeName ? <a href="#">ShapeName ?New in JDF 1.6</a>	NameSpan-NMTOKEN	Identifier of the embossing tool.
Separation ? <a href="#">New in JDF 1.6</a>	string	<b>@Separation</b> the name of the separation within the PDL whose color values are used as the embossing values. A value of 0 means that there is no embossing, a value of 1.0 specifies embossing with full depth.
ToolName ?	string	Name of the embossing tool.

## 7.10 FoldingIntent

This **Resource Product Intent element** specifies the **straight line folding, creasing and perforating of a product** fold intent for a product excluding folds that are implied by binding. See Section 7.5, “BindingIntent” on page 445 for additional details.

### Resource Intent Properties

**Resource Class:** [Intent](#)

**Process Resource Pairing:** [CreasingParams](#), [CuttingParams](#), [Fold](#), [FoldingParams](#), [PerforatingParams](#)

**Example Partition:** ["Option"](#)

**Table 7-60: FoldingIntent Resource Element (Sheet 1 of 2)**

Name	Data Type	Description
FoldingCatalog <a href="#">FoldCatalog</a>	NameSpan-NMTOKEN	Describes the folding scheme according to the folding catalog in Figure 8-34, “Fold catalog part 1,” on page 664 and Figure 8-35, “Fold catalog part 2,” on page 665. <b>Value format is:</b> <i>"Fn-i"</i> where “n” is the number of finished pages and “i” is either an integer, which identifies a particular fold or the letter “X”, which identifies a generic fold (e.g., <i>"F6-2"</i> describes a Z-fold of 6 finished pages, and <i>"F6-X"</i> describes a generic fold with 6 finished pages). <b>Note:</b> The folding scheme in this context refers to the folding of the finished product as seen after the cutting, not the folding, of the Sheet as seen in production. See <b>LayoutIntent/@FolioCount</b> for a discussion of pagination of folded end products.
FoldingDetails ? <a href="#">New in JDF 1.6</a>	stringNMTOKEN	<b>@FoldingDetails</b> is a system dependent descriptor of the folding. <b>@FoldingDetails</b> MAY be used to differentiate differing fold dimensions with the same general topology, such as asymmetrical Z-folds. <b>@FoldingDetails</b> SHALL NOT be specified if <b>@FoldCatalog</b> is not present
Crease *	element	Crease elements describe the details of any creasing operations in the coordinate system of the final product. If no geometrical details are specified in the Crease element and a <b>@FoldCatalog</b> is specified, the customer is requesting production creasing.

**Table 7-60: FoldingIntent Resource Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Folds ?</i> <small>Degraded in JDF 1.1</small>	XYPair	Number of folds in x and in y direction. This Attribute specifies the number of folds seen in the Sheet after folding, and not the number of fold operations needed to achieve that result. If not specified, it SHALL be inferred from <i>@FoldingCatalog</i> . If X and Y are the number of folds in the x and y directions, respectively, the product $2*(X+1)*(Y+1)$ SHALL always match the <i>n</i> of " <i>Fn-i</i> " of <i>@FoldingCatalog</i> .
<i>Orientation?</i> <i>Orientation?</i> <small>New in JDF 1.6</small>	EnumerationSpan <i>Orientation</i>	<p><i>@Orientation</i> indicates the orientation of the unfolded product with respect to the Lay of the fold. A value of <i>Rotate0</i> SHALL be mapped to the Lay of the Fold on the lower left of the product prior to folding and the front side of the Product oriented in the direction of an upward fold.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Rotate0</i>: The lay of the fold SHALL be the lower left corner of the product, face up.</li> <li><i>Rotate90</i>: The lay of the fold SHALL be the upper left corner of the product, face up.</li> <li><i>Rotate180</i>: The lay of the fold SHALL be the upper right corner of the product, face up.</li> <li><i>Rotate270</i>: The lay of the fold SHALL be the lower right corner of the product, face up.</li> <li><i>Flip0</i>: The lay of the fold SHALL be the upper right corner of the product, face down.</li> <li><i>Flip90</i>: The lay of the fold SHALL be the upper left corner of the product, face down.</li> <li><i>Flip180</i>: The lay of the fold SHALL be the lower left corner of the product, face down.</li> <li><i>Flip270</i>: The lay of the fold SHALL be the lower right corner of the product, face down.</li> </ul>
<i>Fold *</i> <small>New in JDF 1.1</small>	element	This describes the details of folding operations in the sequence described by the value of <i>@FoldingCatalog</i> <i>@FoldCatalog</i> . <i>Fold</i> SHALL be specified if non-symmetrical folds are requested.
<i>Perforate *</i>	element	Perforate elements describe the details of any perforating operations in the coordinate system of the final product. If no geometrical details are specified in the <i>Perforate</i> element and a <i>@FoldCatalog</i> is specified, the customer is requesting production perforation.

## 7.11 HoleMakingIntent

This **Resource Product Intent element** specifies the holemaking intent for a **JDF** or **XJDF** Job, using information that identifies the type of holemaking operation or alternatively, an explicit list of holes. This **Resource Product Intent element** does not specify whether the media will be pre-drilled or the media will be drilled or punched as part of making the product.

### Resource Intent Properties

**Resource Class:** Intent

**Process Resource Pairing:** HolePattern, HoleLine, HoleMakingParams, Media

**Example Partition:** "Option"

**Table 7-61: HoleMakingIntent Resource Element**

Name	Data Type	Description
<i>Extent?</i> <a href="#">New in JDF 1.2</a>	XYPair	Size (bounding box) of the hole in points when specifying a standard hole pattern in <b>HoleType</b> . If not specified the implied default defined in Appendix M, “JDF XJDF/CIP4 Hole Pattern Catalog” on page 1239 is assumed. Ignored when <b>HoleType/@Actual</b> = “ <i>Explicit</i> ”.
<i>HoleReferenceEdge</i> ?= “Left” <a href="#">New in JDF 1.1</a>	enumeration	The edge of the media relative to where the holes are to be punched. Use with <b>HoleType</b> . <b>Allowed values are:</b> <i>Left</i> <i>Right</i> <i>Top</i> <i>Bottom</i> <i>Pattern</i> – Specifies that the reference edge implied by the value of <b>HoleType</b> in Appendix M, “JDF XJDF/CIP4 Hole Pattern Catalog” on page 1239 is used.
<b>HoleType</b> <i>HoleType</i> Modified in JDF 1.1	String- SpanString	Predefined hole pattern. Multiple hole patterns are specified as one NMOKENS string (e.g., 3-hole ring binding and 4-hole ring binding holes on one piece of media). <b>Values include:</b> <i>Explicit</i> – Holes are defined in an array of Hole Elements. <i>2HoleEuro</i> – Replace by either R2m-DIN or R2m-ISO <a href="#">Deprecated in JDF 1.0</a> . <i>3HoleUS</i> – Replace by R3I-US <a href="#">Deprecated in JDF 1.0</a> . <i>4HoleEuro</i> – Replace by R4m-DIN-A4 or R4m-DIN-A5 <a href="#">Deprecated in JDF 1.0</a> . <b>Allowed values are from:</b> Appendix M, “JDF XJDF/CIP4 Hole Pattern Catalog” on page 1239.
<b>HoleList</b> ?HolePattern *	element	Each <b>HolePattern</b> describes a specific set of holes that SHALL be provided. The coordinate system for applying the holes SHALL be the coordinate system of the product. A <b>HoleMakingIntent</b> with no <b>HolePattern</b> is an explicit request not to provide holes. Array of all <b>HolePattern</b> Elements. Used only when <b>HoleType/@Actual</b> = “ <i>Explicit</i> ”, otherwise this Element is not used.

## 7.12 InsertingIntent

This Resource specifies the how to assemble multiple product parts into a final product, using information that identifies page location, position and attachment method. The Containing Product SHALL be referenced in **AssemblingIntent/@Container**. The receiving component is defined by a **@ProcessUsage** Attribute of “**Parent**”. All other input components are mapped to the **Insert** Elements by their ordering in the **ResourceLinkPool**.

### Resource Properties

<b>Resource Class:</b>	Intent
<b>Process Resource Pairing:</b>	<b>InsertingParams</b> , <b>InsertSheet</b>
<b>Example Partition:</b>	“ <i>Option</i> ”

**Table 7-62: InsertingIntent Resource**

Name	Data Type	Description
<a href="#">Container ? New in JDF 1.6</a>	IDREF	<i>@Container</i> SHALL reference the main Product that the additional products that are referenced from AssemblyItem, BindIn, BlowIn or StickOn are assembled with. <i>@Container</i> SHALL NOT reference the parent Product of this AssemblingIntent.
<i>Folio</i>	IntegerRangeList	List of potential Folios where the insert is to be placed. A <i>@Folio</i> is defined by its first page in case Method/@Actual = "BlowIn" and by the page that the glue is applied in case Method/@Actual = "BindIn". In general, a list of Folios will only be supplied for Method/@Actual = "BlowIn".
<a href="#">GlueType ?</a>	EnumerationSpan	Glue used to fasten the insert. <b>Allowed values are:</b> <i>Permanent</i> <i>Removable</i>
<a href="#">Method ?</a>	EnumerationSpan	<b>Allowed values are:</b> <i>BindIn</i> – Apply glue to fasten the insert <i>BlowIn</i> – Loose insert.
InsertList	element	List of individual inserts.

**7.12.1 Element: [InsertList](#)****Table 7-63: InsertList Element**

Name	Data Type	Description
Insert *	element	Individual insert description.

**7.12.2 Element: [Insert](#)****Table 7-64: Insert Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Folio</i>	IntegerRangeList	List of potential Folios where the insert is to be placed. A <i>@Folio</i> is defined by its first page in case Method/@Actual = "BlowIn" and by the page that the glue is applied in case Method/@Actual = "BindIn". In general, a list of Folios will only be supplied for Method/@Actual = "BlowIn". The pages are counted in the order, which is described in <i>@FolioCount</i> of the parent <b>Component/Bundle</b> .
<a href="#">GlueType ?</a>	EnumerationSpan	Glue used to fasten the insert. <b>Default value is from:</b> InsertingIntent/GlueType. <b>Allowed values are:</b> <i>Removable</i> <i>Permanent</i>

**Table 7-64: Insert Element (Sheet 2 of 2)**

Name	Data Type	Description
Method ?	EnumerationSpan	Inserting method. <b>Default value is from:</b> InsertingIntent/Method. <b>Allowed values are:</b> <i>BindIn</i> – Apply glue to fasten the insert. <i>BlowIn</i> – Loose insert.
SheetOffset ? <i>Deprecated in JDF 1.1</i>	XYPair	Offset between the <b>Component</b> to be inserted and finished page identified by Folio in the parent <b>Component</b> . In JDF 1.2 and beyond, the offset is specified in the offset part of <i>@Transformation</i> .
Transformation ?	matrix	Rotation and offset between the <b>Component</b> to be inserted and the parent <b>Component</b> . If not specified, the identity matrix is applied.
WrapPages ? <i>New in JDF 1.1</i>	IntegerRangeList	List of pages of the Cover that wrap around a <b>BindItem</b> after all folds are applied. It is sufficient to specify the pages of the "Front" partition of the cover (e.g. Cover pages 1 and 4). <b>Note</b> that this Attribute SHALL NOT be specified if the position of the Cover can be derived from the folding information
GlueLine * <i>New in JDF 1.1</i>	element	Array of all <b>GlueLine</b> Elements used to glue in the insert. SHALL NOT be specified in conjunction with <i>@GlueType</i> .

## 7.13 LaminatingIntent

This **Resource Product Intent element** specifies the laminating intent for a **JDF** an **XJDF** Job using information that identifies whether or not the product is laminated, and if desired, the temperature and thickness of the laminate.

### Resource Intent Properties

**Resource Class:** Intent

**Process Resource Pairing:** LaminatingParams

**Example Partition:** "Option"

**Table 7-65: LaminatingIntent Resource Element (Sheet 1 of 2)**

Name	Data Type	Description
Laminated ? <i>Deprecated in JDF 1.1</i>	OptionSpan	If "true", the product is laminated. If no <b>LaminatingIntent</b> is specified, the product SHALL NOT be laminated.
Surface ? <i>Surface</i> ?	EnumerationSpanenumeration	The surface to be laminated. <b>Allowed values are:</b> <i>Front</i> <i>Back</i> <i>Both</i>
Temperature ? <i>Temperature</i> <i>?Modified in JDF 1.3</i>	EnumerationSpanenumeration	Temperature used in the <b>Laminating</b> Process. <b>Allowed values are:</b> <i>Hot</i> <i>Cold</i>

**Table 7-65: LaminatingIntent Resource Element (Sheet 2 of 2)**

Name	Data Type	Description
Texture ? <i>Texture ?</i> <small>New in JDF 1.3</small>	NameSpanNMTO-KEN	The intended texture of the laminate. <b>Values include:</b> <i>Antique</i> – Rougher than vellum surface. <i>Calendared</i> – Extra-smooth or polished, uncoated paper. <i>Grain</i> <i>Linen</i> – Texture of coarse woven cloth. <i>Matte</i> <i>Smooth</i> <i>Stipple</i> – Fine pebble finish. <i>Vellum</i> – Slightly rough surface.
Thickness ? <i>Thickness ?</i>	NumberSpandouble	Thickness of the laminating material. Measured in microns [ $\mu\text{m}$ ].

## 7.14 LayoutIntent

Modified in JDF 1.2

This **Resource Product Intent element** records the size of the finished pages for the product component. It does not, however, specify the size of any intermediate results such as press Sheets. It also describes how the finished pages of the product component are to be imaged onto the finished media. The size definition of the finished media describes the size of a Sheet that is folded to create a product, not the size of a production Sheet (e.g., in the press).

### Resource Intent Properties

**Resource Class:** Intent

**Process Resource Pairing:** Layout, LayoutPreparationParams, StrippingParams

**Example Partition:** "Option"

**Table 7-66: LayoutIntent Resource Element (Sheet 1 of 4)**

Name	Data Type	Description
Bleed ? <i>Bleed ?</i> <small>New in JDF 1.5</small>	NumberSpandouble	Bleed of the artwork in points. The value of 0 means NO bleed. A negative value indicates bleed is needed but the value is unknown.
Dimensions ? <i>Dimensions ?</i> <small>New in JDF 1.1</small>	XYPairSpanXY-Pair	Specifies the width (X) and height (Y) in points, respectively, of the trimmed and unfolded (flat) product. For example, Dimensions for a Z-fold is the unfolded dimensions, while <b>FinishedDimensions @FinishedDimensions</b> is the folded dimensions if known. Use Dimensions if <b>FinishedDimensions @FinishedDimensions</b> is not known. The <b>Dimensions @Dimensions</b> Span Element is provided for the rare case that <b>FinishedDimensions @FinishedDimensions</b> does not unambiguously define the finished product, due to complex folding schemes. If both values are specified, <b>FinishedDimensions @FinishedDimensions</b> takes precedence

Table 7-66: LayoutIntent Resource Element (Sheet 2 of 4)

Name	Data Type	Description
<a href="#">FinishedDimensions ?</a> <a href="#">FinishedDimensions ?New in JDF 1.1</a>	<a href="#">ShapeSpanshape</a>	Specifies the width (X), height (Y) and depth (Z) in points, respectively, of the finished product <b>Component</b> after all finishing operations, including folding, trimming, etc. If the Z coordinate is 0, it is <b>SHALL</b> be ignored. Only <a href="#">FinishedDimensions @FinishedDimensions</a> SHOULD be specified if both <a href="#">FinishedDimensions @FinishedDimensions</a> and <a href="#">Dimensions @Dimensions</a> are known
<a href="#">FinishedGrainDirection ?</a> <a href="#">FinishedGrainDirection ?New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>	<a href="#">EnumerationSpanenumeration</a>	Specifies the media grain direction of the finished page with respect to the binding edge. <b>Allowed values are:</b> <i>ParallelToBind</i> – Grain direction is parallel to the binding edge. <i>PerpendicularToBind</i> – Grain direction is perpendicular to the binding edge. <b>Deprecation note:</b> use <a href="#">MediaIntent/GrainDirection</a> .
<a href="#">FinishedPageOrientation ?</a> <a href="#">Deprecated in JDF 1.1</a>	enumeration	Indicates the desired orientation of the finished media. <b>Allowed values are:</b> <i>Portrait</i> – The short edges of the media are the top and bottom. <i>Landscape</i> – The long edges of the media are the top and bottom. <b>Note:</b> In JDF 1.1, the finished page orientation is implied by the value of <a href="#">Dimensions @Dimensions</a> and <a href="#">FinishedDimensions @FinishedDimensions</a> . If height (X) > width (Y), the product is portrait.
<a href="#">FolioCount ?= "Booklet"</a> <a href="#">New in JDF 1.1</a>	enumeration	Defines the method used when counting finished pages. <b>Allowed values are:</b> <i>Booklet</i> – Each sample of the component consists of two finished pages (e.g., a leaf—the front side and the back side of one sample of the component). Folds as specified by <a href="#">FoldingIntent/@FoldingCatalog</a> do not affect pagination. Finished Pages are counted in reader order of the pages of the component in the product. <i>Flat</i> – The number of finished pages of one Sheet of an individual component is given by the product $2*(X+1)*(Y+1)$ , where x denotes the number of folds in x direction and y denotes the number of folds in y direction. The pages are counted from the upper left of the front side of the top media to the lower right of the back side of the bottom media. "Flat" is to be used for non-standard products where the reader order is ambiguous. The page breaks on a Sheet are defined by the folds as specified by <a href="#">FoldingIntent/@FoldingCatalog</a> (see Figure 8-34 and Figure 8-35) for the product. All Sheets are counted, even if they are not included in the product (e.g., due to a <a href="#">ShapeCuttingIntent</a> ).

Table 7-66: LayoutIntent Resource Element (Sheet 3 of 4)

Name	Data Type	Description
<i>NamedDimensions</i> ?  <a href="#">New in JDF 1.6</a>	stringNMTOKEN	Named size (e.g., "A4" or "Letter" that corresponds to the value specified in <i>@FinishedDimensions</i> ). If both <i>@NamedDimensions</i> and <i>@FinishedDimensions</i> are specified, then <i>@FinishedDimensions</i> has precedence. See Appendix G, "Media Sizes" on page 1161 for a list of preferred values.
<i>NumberUp</i> ?= "1 1"  <a href="#">Modified in JDF 1.2</a>	XYPair	Specifies a regular, multi-up grid of page cells into which content pages are mapped. The first value specifies the number of columns of page cells and the second value specifies the number of rows of page cells in the multi-up grid (both numbers are integers).  <b>At most one of Layout or @NumberUp SHALL be specified.</b>
<i>Orientation</i> ?  <a href="#">New in JDF 1.6</a>	orientation	<i>@Orientation</i> SHALL specify the orientation of the artwork on the surface as defined by <i>@Sides</i> . <i>@Orientation</i> is used to define products such as back-lit displays, where the orientation of the image with respect to the final product is rotated or mirrored.
<i>Pages</i> ?  <i>Pages</i> ? <a href="#">New in JDF 1.1</a>  <a href="#">Modified in JDF 1.2</a>	IntegerSpaninteger	Specifies the number of finished pages (surfaces) of the product component, including blank pages.  This value SHALL be an even number. For example, the value for <i>@Pages</i> for a two-sided booklet with seven Reader Pages would be "8", whether the booklet were saddle stitched or glued.
<i>PageVariance</i> ?  <i>PageVariance</i> ? <a href="#">New in JDF 1.1</a>	IntegerSpaninteger	Specifies the number of non-identical finished pages of the product component (i.e., the number of distinct master pages copied to produce the product). If not specified, the value of <i>Pages</i> is used as the default. For example, if there are ten finished pages, in which three are identical, <i>PageVariance/@Actual @PageVariance</i> = "8" since it would take eight master copies to produce the product.
<i>RotatePolicy</i> ?  <a href="#">New in JDF 1.2</a>	enumeration	Specifies the policy to automatically rotate the image to optimize the fit of the image to the page container. For instance, individual landscape pages in a portrait document MAY automatically be rotated. The page container is one cell on the NUp grid of the <i>Media</i> media defined in <i>Dimensions</i> <i>@Dimensions</i> or <i>FinishedDimensions</i> <i>@FinishedDimensions</i>  <b>Allowed values are:</b> <i>NoRotate</i> – Do not rotate. <i>RotateOrthogonal</i> – Rotate by 90° in either direction. <i>RotateClockwise</i> – Rotate clockwise by 90°. <i>RotateCounterClockwise</i> – Rotate counter-clockwise by 90°.

Table 7-66: LayoutIntent Resource Element (Sheet 4 of 4)

Name	Data Type	Description
Sides ? <a href="#">Modified in JDF 1.2</a>	enumerationSides	<p>Sides SHALL specify which side of the product SHALL be printed. Indicates whether contents are to be printed on one or both sides of the media.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>OneSided</i> – Page contents will only be imaged on the front side of the media.</li> <li><i>OneSidedBack</i> – Page contents will only be imaged on the back side of the media. <a href="#">New in JDF 1.2</a></li> <li><i>TwoSidedHeadToHead</i> – Impose pages upon the front and back sides of media Sheets so that the head (top) of page contents back up to each other.</li> <li><i>TwoSidedHeadToFoot</i> – Impose pages upon the front and back sides of media Sheets so that the head (top) of the front backs up to the foot (bottom) of the back.</li> </ul>
SizePolicy ? <i>SizePolicy</i> ? <a href="#">New in JDF 1.2</a>	EnumerationSpanenumeration	<p>Allows printing even if the container size defined in <b>Dimensions</b> @Dimensions or <b>FinishedDimensions</b> @FinishedDimensions. FinishedDimensions does not match the requirements of the data. The page container is one cell on the NUp grid of the <b>Media</b> media defined in Dimensions or <b>FinishedDimensions</b> @FinishedDimensions</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>ClipToMaxPage</i> – The page contents is to be clipped to the size of the container. The printed area is centered in the source image.</li> <li><i>FitToPage</i> – The page contents is to be scaled up or down to fit the container. The aspect ratio is maintained.</li> <li><i>ReduceToFit</i> – The page contents is to be scaled down but not scaled up to fit the container. The aspect ratio is maintained.</li> <li><i>Tile</i> – The page contents is to be split into several tiles, each printed on its own container.</li> </ul>
Layout ? <a href="#">New in JDF 1.1</a>	refelement	Specifies the details of a more complex <b>Layout</b> . At most one of <b>Layout</b> or <b>@NumberUp</b> SHALL be specified. Note that the <b>Layout</b> specified in <b>LayoutIntent</b> specifies the layout definition of the finished product and not the layout of the production Sheets.

## 7.15 MediaIntent

[Modified in JDF 1.2](#)

This **Resource Product Intent element** describes the media to be used for the product component. In some cases, the exact identity of the medium is known, while in other cases, the characteristics are described and a particular stock is matched to those characteristics.

### Resource Intent Properties

Resource Class: [Intent](#)

**Process Resource Pairing:** **Media**  
**Example Partition:** *"Option"*

**Table 7-67: MedialIntent Resource Element (Sheet 1 of 8)**

Name	Data Type	Description
<i>BackCoatings</i> ? <i>BackCoatings</i> ?	Enumera-tionSpanenumer-ation	Identical to <i>FrontCoatings</i> , but applied to the back surface of the media. <b>Default value is from:</b> @ <i>FrontCoatings</i> . <b>Allowed values are from:</b> @ <i>FrontCoatings</i> .
<i>Brand</i> ?	string	Strings providing available brand names. The customer might know exactly what paper is to be used. Example is "Lustro" or "Warren Lustro" even though the manufacturer name is included.
<i>Brightness</i> ? <i>Brightness</i> ?	NumberSpandou-ble	Reflectance percentage of diffuse blue reflectance as defined by [ISO2470:1999]. The reflectance is reported per [ISO2470:1999] as the diffuse blue reflectance factor of the paper or board in percent to the nearest 0.5% reflectance factor.
<i>BuyerSupplied</i> ? <i>BuyerSupplied</i> ?	OptionSpanbool-ean	Indicates whether the customer will supply the media. Note that the <b>Media</b> Resource can be used to specify additional media requirements, particularly when the media is supplied by the customer.
<i>Certification</i> * <i>New in JDF 1.6</i>	element	Each <i>Certification</i> specifies a minimum requested paper certification level.
<i>Dimensions</i> ? <i>Deprecated in JDF 1.2</i>	XYPairSpanXY-Pair	Specifies the size of the supplied media in points if <i>BuyerSupplied</i> evaluates to "true". <i>Dimensions</i> SHALL be ignored if <i>BuyerSupplied</i> evaluates to "false". Note that the size of the finished product is always specified in <b>LayoutIntent/FinishedDimensions</b> .  In JDF 1.2 and beyond the specifics of <i>BuyerSupplied</i> media SHOULD be specified using a <b>Media</b> Resource. The dimensions of the finished product are specified with <b>LayoutIntent/Dimensions</b> or <b>LayoutIntent/FinishedDimensions</b> .
<i>Flute</i> ? ? <i>Flute</i> ? <i>New in JDF 1.4</i>	NameSpan-NMTOKEN	Single, capital letter that specifies the Flute type of corrugated media.  Although the classification of flutes using a letter code "A", "B", etc., are used very frequently (e.g., in the specification of the order for a box), there seems to be no agreement on the exact numerical specification of those categories. Slightly varying numbers for flute size and frequency can be found between regions (European versus US) and between vendors. <b>Values include those from:</b> <b>Media/@Flute</b>

**Table 7-67: MedialIntent Resource Element (Sheet 2 of 8)**

Name	Data Type	Description
<a href="#">FluteDirection ?</a> <i>FluteDirection ?</i> <a href="#">New in JDF 1.4</a>	Enumeration	<p>Direction of the fluting. Values are the same as <a href="#">Media/@FluteDirection</a> with slightly different description.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>LongEdge</i> – Along the longer axis as defined by <a href="#">LayoutIntent/Dimensions@Dimensions</a>.</li> <li><i>ShortEdge</i> – Along the shorter axis as defined by <a href="#">LayoutIntent/Dimensions@Dimensions</a>.</li> <li><i>XDirection</i> – Along the X-axis of the <a href="#">LayoutIntent</a> coordinate system</li> <li><i>YDirection</i> – Along the Y-axis of the <a href="#">LayoutIntent</a> coordinate system</li> </ul>
<a href="#">FrontCoatings ?</a> <i>FrontCoatings ?</i> <a href="#">Modified in JDF 1.2</a>	Enumeration	<p>What pre-process coating has been applied to the front surface of the media.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>None</i></li> <li><i>Coated</i> – A coating of a system specified type. <a href="#">New in JDF 1.2</a></li> <li><i>Glossy</i></li> <li><i>HighGloss</i></li> <li><i>InkJet</i> – A coating intended for use with inkjet technology. <a href="#">New in JDF 1.2</a></li> <li><i>Matte</i></li> <li><i>Satin</i></li> <li><i>Semigloss</i></li> </ul>
<a href="#">Grade ?</a> <i>Grade ?</i> <a href="#">Modified in JDF 1.5</a>	IntegerSpaninteger	<p>The intended grade of the media on a scale of 1 through 5. <b>Grade</b> is ignored if <a href="#">MediaType/@Actual @MediaType</a> is not "Paper". Grade of paper material is defined in accordance with the paper "types" set forth in [ISO12647-2:2004]. Offset printing paper types are defined with integer values. If a workflow supports <a href="#">@ISOPaperSubstrate</a>, and both <a href="#">@Grade</a> and <a href="#">@ISOPaperSubstrate</a> are present, it SHALL use <a href="#">@ISOPaperSubstrate</a>.</p> <p><b>Note:</b> [ISO12647-2:2004] paper grade <a href="#">@Grade</a> values do not align with U.S. GRACOL paper grade <a href="#">@Grade</a> values (e.g., [ISO12647-2:2004] type 1 does not equal U.S. GRACOL grade 1).</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li>1 – Gloss-coated paper</li> <li>2 – Matt-coated paper</li> <li>3 – Gloss-coated, Web paper</li> <li>4 – Uncoated, white paper</li> <li>5 – Uncoated, yellowish paper</li> </ul> <p><b>Modification note:</b> starting with JDF 1.5, condition for new <a href="#">@ISOPaperSubstrate</a> added.</p>

**Table 7-67: MedialIntent Resource Element (Sheet 3 of 8)**

Name	Data Type	Description
<a href="#">GrainDirection ?</a> <i>GrainDirection ?</i> <a href="#">New in JDF 1.2</a> <a href="#">Modified in JDF 1.5</a>	<a href="#">EnumerationSpanenumeration</a>	<p>Direction of the grain in the coordinate system defined by <a href="#">LayoutIntent/Dimensions @Dimensions</a> or <a href="#">LayoutIntent/FinishedDimensions@FinishedDimensions</a>.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Any</i> – No restrictions apply to grain direction. <a href="#">New in JDF 1.5</a></li> <li><i>ShortEdge</i> – Parallel to the shorter axis of the finished page. <a href="#">Deprecated in JDF 1.5</a></li> <li><i>LongEdge</i> – Parallel to the longer axis of the finished page. <a href="#">Deprecated in JDF 1.5</a></li> </ul> <p><i>SameDirection</i> – All ordered items SHALL have the same grain direction relative to the finished product. The printer may choose which one. <a href="#">New in JDF 1.5</a></p> <p><i>XDirection</i> – Along the X-axis of the <a href="#">LayoutIntent</a> coordinate system <a href="#">New in JDF 1.4</a></p> <p><i>YDirection</i> – Along the Y-axis of the <a href="#">LayoutIntent</a> coordinate system. <a href="#">New in JDF 1.4</a></p> <p><b>Deprecation note:</b> for "ShortEdge", use "YDirection" if the product is landscape, and use "XDirection" if the product is portrait. For "LongEdge", use "XDirection" if the product is landscape, use "YDirection" if the product is portrait.</p>
<a href="#">HoleCount ?</a> <a href="#">Deprecated in JDF 1.1</a>	<a href="#">IntegerSpaninteger</a>	The intended number of holes that are to be punched in the media (either pre- or post-punched). Starting with JDF/1.1, use <a href="#">HoleType</a> which includes the number of holes.
<a href="#">HoleType ?</a> <i>HoleType ?</i> <a href="#">New in JDF 1.1</a>	<a href="#">StringSpanstring</a>	<p>Predefined hole pattern that specifies the pre-punched holes in the media. Multiple hole patterns are specified as one NMTO-KENS string (e.g., 3-hole ring binding and 4-hole ring binding holes on one piece of media).</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>None</i> – no holes</li> </ul> <p><b>Values include those from:</b> Appendix M, “JDF XJDF/CIP4 Hole Pattern Catalog” on page 1239.</p>

**Table 7-67: MedialIntent Resource Element (Sheet 4 of 8)**

Name	Data Type	Description
<a href="#">ISOPaperSubstrate ?</a> <a href="#">ISOPaperSubstrate ? New in JDF 1.5</a>	EnumerationSpanenumeration	<p>The Paper Substrate Type of the Medium from "PS1" through "PS8".</p> <p>@ISOPaperSubstrate supersedes @Grade and adds new values to allow for improved papers.</p> <p>If a workflow supports @ISOPaperSubstrate, and both @Grade and @ISOPaperSubstrate are present, it SHALL use @ISOPaperSubstrate.</p> <p>@ISOPaperSubstrate type of paper material is defined in accordance with the Print Substrate set forth in [ISO12647-2:2013].</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li>PS1 – Premium Coated</li> <li>PS2 – Improved Coated</li> <li>PS3 – Standard Coated Glossy</li> <li>PS4 – Standard Coated Matte</li> <li>PS5 – Wood-free Uncoated</li> <li>PS6 – Super Calendered</li> <li>PS7 – Improved Uncoated</li> <li>PS8 – Standard Uncoated</li> </ul> <p><b>Note:</b> here in no direct mapping of the 8 values defined in ISO12647-2:2013 to the 5 paper grade values define in ISO12647-2:2004 and earlier. If a legacy implementation requires such mapping, Then the following table MAY be applied.</p>
<a href="#">ISOPaperSubstrateBack ?</a>	enumeration	<p>The Paper Substrate Type of the Medium from "PS1" through "PS8".</p> <p>@ISOPaperSubstrateBack supersedes @BackGrade and adds new values to allow for improved papers.</p> <p>@ISOPaperSubstrate type of paper material is defined in accordance with the Print Substrate set forth in [ISO12647-2:2013].</p> <p><b>Allowed values are from:</b> @ISOPaperSubstrate.</p>
<a href="#">MediaColor ?</a> <a href="#">MediaColor ? New in JDF 1.2</a>	EnumerationSpanNamed-Color	<p>Color of the media. If more-specific, specialized or site-specific media color names are needed, use MediaColorDetails.</p> <p><b>Allowed values are from:</b> Table A-3, "NamedColor Enumeration Values" on page 1125.</p>
<a href="#">MediaColorDetails ?</a> <a href="#">New in JDF 1.2</a>	StringSpanstring	<p>A more specific, specialized or site-defined name for the media color. If MediaColorDetails is supplied, MediaColor SHOULD also be supplied. Note that there is a one-to-many relationship between entries in MediaColor and MediaColorDetails (e.g., MediaColorDetails values of "Burgundy" and "Ruby" both correspond to a MediaColor of "DarkRed").</p>

**Table 7-67: MedialIntent Resource Element (Sheet 5 of 8)**

Name	Data Type	Description
<i>MediaQuality</i> ? <a href="#">New in JDF 1.4</a>	<i>StringSpan</i> <i>string</i>	Named quality description of the media. For folding carton quality, multiple named quality description systems are in use (e.g., GC1, SBB, etc.). For an overview see <a href="http://www.procarton.com/?section=fact_file_publications">http://www.procarton.com/?section=fact_file_publications</a> . When used in a general product description, Media with the same <i>@MediaQuality</i> are identical from the customer point of view. Thus Characteristics such as weight, coatings or recycling percentage are identical whereas lot or sheet dimension may vary based on production or warehousing requirements.
<i>MediaSetCount</i> ?	integer	When the input media is grouped in sets, identifies the number of pieces of media in each set. For example, if the <i>@UserMediaType</i> is "PreCutTabs", a <i>@MediaSetCount</i> of 5 would indicate that each set includes 5 tab Sheets.
<i>MediaType</i> ? <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.5</a>	<i>NameSpan</i> - <i>NMTOKEN</i>	Describes the medium being employed. <b>Allowed values are:</b> <i>CorrugatedBoard</i> <a href="#">New in JDF 1.3</a> <i>Disc</i> – CD or DVD disc to be printed on. <a href="#">New in JDF 1.2</a> <i>Other</i> – Any other media. For this value <i>MediaTypeDetails</i> SHOULD also be specified <i>Paper</i> <i>SelfAdhesive</i> <a href="#">New in JDF 1.3</a> <i>Textile</i> <a href="#">New in JDF 1.5</a> <i>Transparency</i> <i>Vinyl</i> <a href="#">New in JDF 1.5</a>
<i>MediaTypeDetails</i> ? <a href="#">New in JDF 1.3</a>	<i>NameSpan</i> - <i>NMTOKEN</i>	Describes additional details of the medium described in <i>MediaType</i> . <b>Values include those from:</b> <i>Media/@MediaTypeDetails</i> <b>Note:</b> values from <i>Media/@MediaTypeDetails</i> are RECOMMENDED. However, some Process related values, such as "DryFilm", SHOULD NOT be used for this Attribute.
<i>MediaUnit</i> ? <a href="#">Deprecated in JDF 1.2</a>	<i>EnumerationSpan</i> <i>enumeration</i>	Describes the format of the media as it is delivered to the Device. <b>Allowed values are:</b> <i>Roll</i> <i>Sheet</i> <b>Deprecation note:</b> deprecated because Intent Attributes and Span Elements pertain to finished product, not the raw media format. If <i>BuyerSupplied</i> = "true", then the <b>Media</b> Resource can be used to provide this Span Element.
<i>NamedWeight</i> ?	<i>string</i>	<i>@NamedWeight</i> from Appendix F, "North American and Japanese Media Weight Explained" on page 1157. <i>@NamedWeight</i> is for display purposes and SHOULD NOT be specified unless <i>@Weight</i> is also specified.

**Table 7-67: MedialIntent Resource Element (Sheet 6 of 8)**

Name	Data Type	Description
Opacity ? <i>Opacity</i> ? <a href="#">Modified in JDF 1.2</a>	EnumerationSpanenumeration	<p>The opacity of the media. See OpacityLevel to specify the degree of opacity for any of these values.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Opaque</i> – The media is opaque. With two-sided printing the printing on the other side does not show through under normal incident light.</li> <li><i>Translucent</i> – The media is translucent <a href="#">to a system specified amount</a>. For example, translucent media can be used for back lit viewing. <a href="#">New in JDF 1.2</a></li> <li><i>Transparent</i> – The media is transparent <a href="#">to a system specified amount</a>.</li> </ul>
OpacityLevel ? <i>OpacityLevel</i> ? <a href="#">New in JDF 1.2</a>	NumberSpandouble	Normalized TAPPI opacity, (Cn), as defined and computed in [ISO2471:1998]. Refer also to [TAPPI T519] for calculation examples.
PrePrinted ? = "false"	boolean	Indicates whether the media is preprinted.
Recycled ? <i>Recycled</i> ? <a href="#">Deprecated in JDF 1.2</a>	OptionSpanboolean	If "true", recycled media is requested. In JDF 1.2 and beyond, use RecycledPercentage.
RecycledPercentage ? <i>RecycledPercentage</i> ? <a href="#">New in JDF 1.2</a>	NumberSpandouble	The percentage, between 0 and 100, of recycled material that the media is expected to contain.
StockBrand ?	StringSpan	Strings providing available brand names. The customer might know exactly what paper is to be used. Example is "Lustro" or "Warren Lustro" even though the manufacturer name is included.
StockType ? <i>StockType</i> ?	NameSpan-NMTOKEN	<p>Strings describing the available stock. @StockType defines the base size when calculating North American or Japanese paper weights. See Section F, "North American and Japanese Media Weight Explained" on page 1157.</p> <p><b>Values include those from:</b> <b>Media/@StockType</b></p>
Texture ? <i>Texture</i> ?	NameSpan-NMTOKEN	<p>The intended texture of the media.</p> <p><b>Values include those from:</b> <b>Media/@Texture</b>.</p>
Thickness ? <i>Thickness</i> ? <a href="#">New in JDF 1.1</a>	NumberSpandouble	The thickness of the chosen medium. Measured in microns [ $\mu\text{m}$ ].

**Table 7-67: MedialIntent Resource Element (Sheet 7 of 8)**

Name	Data Type	Description
<i>UserMediaType ?</i> <a href="#">Deprecated in JDF 1.2</a>	NMTOKEN	<p>A human-readable description of the type of media. The value can be used by an operator to select the correct media to load. The semantics of the values will be site-specific.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Continuous</i> – Continuously connected Sheets of an opaque material. Which edge is connected is not specified.</li> <li><i>ContinuousLong</i> – Continuously connected Sheets of an opaque material connected along the long edge.</li> <li><i>ContinuousShort</i> – Continuously connected Sheets of an opaque material connected along the short edge.</li> <li><i>Envelope</i> – Envelopes that can be used for conventional mailing purposes.</li> <li><i>EnvelopePlain</i> – Envelopes that are not preprinted and have no windows.</li> <li><i>EnvelopeWindow</i> – Envelopes that have windows for addressing purposes.</li> <li><i>FullCutTabs</i> – Media with a tab that runs the full length of the medium so that only one tab is visible extending out beyond the edge of non-tabbed media.</li> <li><i>Labels</i> – Label stock (e.g., a Sheet of peel-off labels).</li> <li><i>Letterhead</i> – Separately cut Sheets of an opaque material including a letterhead.</li> <li><i>MultiLayer</i> – Form medium composed of multiple layers which are preattached to one another (e.g., for use with impact printers).</li> <li><i>MultiPartForm</i> – Form medium composed of multiple layers not preattached to one another; each Sheet MAY be drawn separately from an input source.</li> <li><i>Photographic</i> – Separately cut Sheets of an opaque material to produce photographic quality images.</li> <li><i>PreCutTabs</i> – Media with tabs that are cut so that more than one tab is visible extending out beyond the edge of non-tabbed media.</li> <li><i>Stationery</i> – Separately cut Sheets of an opaque material.</li> <li><i>TabStock</i> – Media with tabs (either precut or full-cut).</li> <li><i>Transparency</i> – Separately cut Sheets of a transparent material.</li> </ul> <p><b>Deprecation note:</b> starting with JDF 1.6, use <i>@MediaTypeDetails</i>.</p>
<i>USWeight ?</i> <a href="#">Deprecated in JDF 1.2</a>	NumberSpannable	The intended weight of the media, measured in pounds per ream of basis size. At most one of <i>Weight</i> or <i>USWeight</i> SHALL be specified. If known, <i>Weight</i> SHOULD be specified in grammage ( $\text{g}/\text{m}^2$ ). In JDF 1.2 and beyond, use <i>Weight</i> .

**Table 7-67: MedialIntent Resource Element (Sheet 8 of 8)**

Name	Data Type	Description
Weight ?Weight ?	NumberSpan <b>ble</b>	The intended weight of the media, measured in grammage (g/m <sup>2</sup> ) of the media. See Appendix F, “North American and Japanese Media Weight Explained” on page 1157 for an explanation of how to calculate the US weight from the grammage for different stock types.
MediaLayers ? New in JDF 1.4	element	Subelement describing the layer structure of media such as corrugated or self adhesive materials.

## 7.16 NumberingIntent

Deprecated in JDF 1.5

The table defining the deprecated NumberingIntent Subelement has been moved to Section P.5.3, “NumberingIntent” on page 1338.

## 7.17 PackingIntent

This Resource specifies the packaging intent for a **JDF Job**, using information that identifies the type of package, the wrapping used, and the shape of the package. Note that this specifies packing for shipping only, not packing of items into custom boxes, etc. Boxes are convenience packaging and are not envisioned to be protection for shipping. Cartons perform this function. All quantities are specified as finished pieces per wrapped/boxed/carton or palletized package. The model for packaging is that products are wrapped together, wrapped packages are placed in *boxes*, boxes are placed in *cartons*, and cartons are stacked on *pallets*.

### Resource Properties

**Resource Class:** Intent

**Process Resource Pairing:** **BoxPackingParams, Bundle, Component, PalletizingParams, Pallet, ShrinkingParams, StackingParams, Strap, StrappingParams, WrappingParams**

**Example Partition:** *"Option"*

**Table 7-68: PackingIntent Resource (Sheet 1 of 2)**

Name	Data Type	Description
BoxedQuantity ?	IntegerSpan	How many units of <i>product</i> in a box.
BoxShape ?	ShapeSpan	Describes the length, width and height of the box, in points.
CartonMaxWeight ?	NumberSpan	Maximum gross weight of an individual carton, in kilograms.
CartonQuantity ?	IntegerSpan	How many units of <i>product</i> in a carton.
CartonShape ?	ShapeSpan	Describes the length, width and height of the carton, in points. For example, 288 544 1012
CartonStrength ?	NumberSpan	Strength of the carton, in kilograms.

**Table 7-68: PackingIntent Resource (Sheet 2 of 2)**

Name	Data Type	Description
FoldingCatalog ?	NameSpan	<p>Describes the folding scheme for folding the product for packaging as specified in the folding catalog in Figure 8-34, “Fold catalog part 1,” on page 664 and Figure 8-35, “Fold catalog part 2,” on page 665.</p> <p><b>Value format is:</b> "<math>Fn-i</math>" where "n" is the number of finished pages and "i" is either an integer, which identifies a particular fold or the letter "X", which identifies a generic fold (e.g., "<math>F6-2</math>" describes a Z-fold of 6 finished pages, and "<math>F6-X</math>" describes a generic fold with 6 finished pages).</p> <p><b>Note:</b> The folding scheme in this context refers to the folding of the finished product for packaging only. The folding has no effect on the page/Folio definition.</p>
PalletCornerBoards ? <small>New in JDF 1.3</small>	NameSpan	<p>Additional protective corner boards for packaging on a pallet:</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Corners</i> – Corner boards on 8 corners of the pallet.</li> <li><i>VerticalEdge</i> – Corner boards along the 4 vertical edges.</li> </ul>
PalletMaxHeight ?	NumberSpan	Maximum height of a loaded pallet, in points.
PalletMaxWeight ?	NumberSpan	Maximum weight of a loaded pallet, in kilograms.
PalletQuantity ?	IntegerSpan	Number of <i>product</i> per pallet
PalletSize ?	XYPairSpan	Describes the length and width of the pallet, in points (e.g., "3500 3500").
PalletType ?	NameSpan	<p>Type of pallet used.</p> <p><b>Values include:</b> those from: <i>Pallet/@PalletType</i></p>
PalletWrapping ?	NameSpan	<p>Wrapping of the completed pallet.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Banding</i></li> <li><i>None</i> – explicitly requests no wrapping.</li> <li><i>StretchWrap</i></li> </ul>
WrappedQuantity ?	IntegerSpan	Number of units of product per wrapped package.
WrappingMaterial ?	NameSpan	<p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>None</i> – explicitly requests no wrapping.</li> <li><i>PaperBand</i></li> <li><i>Polyethylene</i></li> <li><i>RubberBand</i></li> <li><i>ShrinkWrap</i></li> </ul>

## 7.18 ProductionIntent

This **Resource Product Intent element** specifies the manufacturing intent and considerations for a **JDF** and **XJDF** Job using information that identifies the desired result or specified manufacturing path.

### Resource Intent Properties

**Resource Class:** Intent

**Process Resource Pairing:** All

**Example Partition:** "*Option*"

**Table 7-69: ProductionIntent Resource Element**

Name	Data Type	Description
PrintPreference ?PrintPreference ?	EnumerationSpanenumeration	<p>Intended result or goal.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Balanced</i> – Request for a manufacturing process that balances the requirements for cost, speed and quality.</li> <li><i>CostEffective</i> – Request for the most cost effective manufacturing process.</li> <li><i>Fastest</i> – Request for the most time effective manufacturing process. Cost and Quality can be sacrificed for a fast turn-around time.</li> <li><i>HighestQuality</i> – Request for the manufacturing process which will result in the highest quality.</li> </ul>
PrintProcess ? PrintProcess ?Modified in JDF 1.3	NameSpan-NMTOKEN	<p>Print Process requested.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Electrophotography</i></li> <li><i>Flexography</i></li> <li><i>Gravure</i></li> <li><i>Inkjet</i></li> <li><i>Lithography</i> – Includes offset printing</li> <li><i>Letterpress</i></li> <li><i>Screen</i></li> <li><i>Thermography</i></li> </ul> <p><b>Modification Note:</b> starting with JDF 1.3, the data type of PrintProcess is expanded from EnumerationSpan to NameSpan.</p>
Resource * ProductionResources ?New in JDF 1.3	refelementIDREFS	Any production Resources that are provided by the customer. Some examples include buyer specified media or ink or specific parameter setups. Note that <b>DeliveryIntent</b> SHALL be specified for any <b>PhysicalResource</b> Resource Elements that are physically supplied by the customer.

## 7.19 ProofingIntent

This Resource Product Intent element specifies the prepress proofing intent for a **JDF Job** using information that identifies the type, quality, brand name and overlay of the proof. The proofs defined in **ProofingIntent** define the proofs that will be provided to the customer and does not specify internal production proofs. The delivery options of proofs MAY be specified in **DeliveryIntent**.

### Resource Properties

**Resource Class:**

Intent

**Process Resource Pairing:**

**ApprovalParams, ApprovalSuccess, ColorantControl,**  
**ColorSpaceConversionParams, ExposedMedia,**  
**ImageSetterParams, InterpretingParams, Layout, Media,**  
**RenderingParams, ScreeningParams,**  
**SeparationControlParams, StrippingParams**

**Example Partition:**

"Option"

**Table 7-70: ProofingIntent Resource Element**

Name	Data Type	Description
PreflightItem *	element	PreflightItem defines the preflight rules for a range of pages.
ProofItem *	element	Specifies the details of the proofs that are needed. If no ProofItem exists in a <b>ProofingIntent</b> , it explicitly specifies that no proofs are desired. <i>New in JDF 1.1</i>

### 7.19.1 Element: **PreflightItem**

**Table 7-71: PreflightItem Element**

Name	Data Type	Description
<i>PageIndex</i> ?	IntegerRangeList	Index of pages that SHALL be proofed in reader order. If <i>@PageIndex</i> is not specified, then all pages SHALL be proofed.
<i>PreflightLevel</i> ?	enumeration	<p>Level of content data checking / preflighting. The details are implementation specific.</p> <p><b>Allowed values are:</b></p> <p><i>Basic</i> – Check only for severe errors. Examples include missing fonts, unknown file format, incorrect page size, missing passwords.</p> <p><i>Extended</i> – Check for additional errors that can degrade output quality and can be resolved by the customer. Examples include: low image resolution, unknown color space details.</p> <p><i>Premium</i> - Highest available check for additional errors. This level MAY include manual repairs by the printer</p>

### 7.19.2 Element: **ProofItem**

All parameters of **ProofingIntent** have been moved into ProofItem in JDF 1.1

**Table 7-72: ProofItem Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Amount</i> ? <i>Amount</i> ? <i>Modified in JDF 1.1</i>	IntegerSpaninteger	Specifies the total number of copies of this proof that is needed. If not specified, it defaults to an IntegerSpan with <i>@Preferred = "1"</i> .
<i>BrandName</i> ? <i>BrandName</i> ? <i>Modified in JDF 1.1</i>	StringSpanstring	Brand name of the proof (e.g., Iris).
<i>ColorType</i> ? <i>ColorType</i> ? <i>Modified in JDF 1.1</i>	EnumerationSpanenumeration	<p>Color quality of the proof.</p> <p><b>Allowed values are:</b></p> <p><i>Monochrome</i> – Generic single color printing condition (e.g., black and white or one single spot color).</p> <p><i>BasicColor</i> – Color does not match precisely. This implies the absence of a color matching system.</p> <p><i>MatchedColor</i> – Color is matched to the output of the press using a color matching system.</p>

Table 7-72: ProofItem Element (Sheet 2 of 2)

Name	Data Type	Description
<a href="#">Contract ?= "false"</a> <a href="#">Modified in JDF 1.1</a>	boolean	Requires proof to be a legally binding, accurate representation of the image to be printed (i.e., color quality requirements have been met when the printed piece acceptably matches the proof).
<a href="#">HalfTone ?</a> <a href="#">HalfTone ?</a> <a href="#">Modified in JDF 1.1</a>	OptionSpanboolean	Specifies whether the proof is to emulate halftone screens.
<a href="#">ImageStrategy ?</a> <a href="#">ImageStrategy ?</a> <a href="#">New in JDF 1.2</a>	EnumerationSpanenumeration	<p>Identifies which images (OPI or other) will be printed on a proof or displayed as a soft proof.</p> <p><b>Allowed values are:</b></p> <p><i>NoImages</i> – No images are imaged on the proof.</p> <p><i>LowResolution</i> – Low resolution images are imaged on the proof.</p> <p><i>HighResolution</i> – High resolution production images are imaged on the proof, resulting in proofs that accurately represent the final product.</p>
<a href="#">PageIndex ?</a> <a href="#">New in JDF 1.1</a>	IntegerRangeListIntegerRange	<p>Index list of pages that are to be proofed in the <b>ArtDeliveryIntent/RunList/PageList</b>. If no range is specified then all pages SHALL be proofed.</p>
<a href="#">ProofName ?</a> <a href="#">New in JDF 1.1</a>	stringNMTOKEN	Name of the <b>ProofItem</b> . This field SHALL be specified if delivery of a proof is specified in <b>DeliveryIntent DeliveryParams</b> .
<a href="#">ProofTarget ?</a> <a href="#">Modified in JDF 1.1</a>	URL	Identifies a remote target for the proof output in a remote proofing environment. This can be either a soft or a hard proofing target. The file to be displayed or output is to be sent to the URL specified in <i>@ProofTarget</i> .
<a href="#">ProofType ?</a> <a href="#">ProofType ?</a> <a href="#">Modified in JDF 1.1</a>	EnumerationSpanenumeration	<p>The kind of proof.</p> <p><b>Allowed values are:</b></p> <p><i>Page</i> – Page proof</p> <p><i>Imposition</i> – Imposition proof</p> <p><i>None</i> – No proof is needed.</p>
<a href="#">Technology ?</a> <a href="#">Technology ?</a> <a href="#">Modified in JDF 1.1</a>	NameSpan-NMTOKEN	<p>Technology used for making the proof.</p> <p><b>Values include:</b></p> <p><i>BlueLine</i></p> <p><i>DyeSub</i></p> <p><i>InkJet</i></p> <p><i>Laser</i></p> <p><i>PressProof</i></p> <p><i>SoftProof</i></p>
<a href="#">ApprovalParams ?</a> <a href="#">ApprovalParamsRef ?</a> <a href="#">New in JDF 1.2</a>	refelementIDREF	List of people (e.g., a customer, printer or manager) who can sign the <b>ApprovalSuccess</b> for this <b>ProofItem</b> .
<a href="#">SeparationSpec *</a> <a href="#">New in JDF 1.1</a>	element	Separations that are to be proofed. If not specified, all separations SHALL be proofed.

## 7.20 PublishingIntent

New in JDF 1.3

**PublishingIntent** specifies publishing metadata that are of general interest for prepress, press and postpress. The data include details on the general structure of product being published.

### Resource Properties

Resource Class: Intent

Process Resource Pairing:

Example Partition: "Edition"

Table 7-73: PublishingIntent Resource Element

Name	Data Type	Description
Circulation ?Circulation ?	IntegerSpaninteger	Specifies the number of copies to be published.
ContentDataRefs ? New in JDF 1.4	IDREFS	IDs of ContentData Elements in the referenced ContentList. ContentData Elements provide metadata related to the product to be published. @ContentDataRefs SHALL NOT be specified if no ContentList is specified.
IssueDateIssueDate	TimeSpandate-Time	Publication date of the issue.
IssueNameIssueName	StringSpanstring	The name of the publication.
IssueType IssueTypeModified in JDF 1.4	NameSpan-NMTOKEN	Defines the product type of the issue. <b>Values include:</b> <i>Magazine</i> – The publication is a magazine <i>Newspaper</i> – The publication is a newspaper <i>Supplement</i> – The publication is a supplement to a magazine or newspaper. New in JDF 1.4.
ContentList ? ContentRef ?New in JDF 1.4	refelementIDREF	ContentList with additional metadata.

## 7.21 ScreeningIntent

New in JDF 1.2

This Resource specifies the screening intent parameters desired for a JDF Job.

### Resource Properties

Resource Class: Intent

Process Resource Pairing: ScreeningParams, SeparationControlParams

Example Partition: "Option"

Table 7-74: ScreeningIntent Resource (Sheet 1 of 2)

Name	Data Type	Description
DotSize ?DotSize ?	NumberSpandouble	Specifies the dot size of the screen in microns [ $\mu\text{m}$ ] when FM screening is used, otherwise DotSize is ignored.
Frequency ?Frequency ?	NumberSpandouble	Specifies the line frequency of the screen in lines per inch (lpi) when AM screening is used, otherwise Frequency is ignored.

**Table 7-74: ScreeningIntent Resource (Sheet 2 of 2)**

Name	Data Type	Description
FrequencySelection ? <i>FrequencySelection ?</i>	EnumerationSpanenumeration	Selects the AM or FM frequency range. <b>Allowed values are:</b> <i>LowestFrequency</i> – Lowest AM or FM frequency supported. <i>MiddleFrequency</i> – Middle AM or FM frequency supported <i>HighestFrequency</i> – Highest AM or FM frequency supported
ScreeningType ? <i>ScreeningType ?</i>	EnumerationSpanenumeration	General type of screening. <b>Allowed values are:</b> <i>AM</i> – Can be line or dot. <i>FM</i>

## 7.22 ShapeCuttingIntent

This Resource specifies form and line cutting for a **JDF Job**. The cutting Processes are applied for producing special shapes like an envelope window or a heart-shaped beer mat. Information that identifies the type and shape of cuts can be described. The **Cutting** Process(es) can be performed using tools such as hollow form punching, perforating or die-cutting equipment.

**ShapeCuttingIntent** describes finishing of products with irregular shapes, including diecutting and adding windows to envelopes.

### Resource Intent Properties

**Resource Class:** Intent

**Process Resource Pairing:** CuttingParams, ShapeCuttingParams

**Example Partition:** "Option"

**Table 7-75: ShapeCuttingIntent Resource Element**

Name	Data Type	Description
ShapeCut *	element	Array of all ShapeCut Elements. Used when each shape is exactly specified.

### 7.22.1 Element: ShapeCut

**Table 7-76: ShapeCut Element (Sheet 1 of 2)**

Name	Data Type	Description
CutBox ?	rectangle	Specification of a rectangular window. See Section A.2.32, “rectangle” for a definition of the rectangle data type. An orthogonal line MAY be defined by specifying a Rectangle with identical dimensions.
CutDepth ? <i>New in JDF 1.6</i>	enumeration	<b>Allowed values are:</b> <i>Full</i> – The form is completely cut out or perforated. <i>Partial</i> – The form is not completely cut out or perforated. The exact depth MAY be specified in <b>ShapeCuttingParams</b> .
CutOut ?= "false"	boolean	If "true", the inside of a specified shape is to be removed. If "false", the outside of a specified shape is to be removed. An example of an inside shape is a window, while an example of an outside shape is a shaped greeting card.

**Table 7-76: ShapeCut Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>CutPath</i> ? <i>Modified in JDF 1.2</i>	PDFPath	Specification of a complex path. This MAY be an open path in the case of a single line.
<i>CutType</i> ? <i>CutType</i> ? <i>Modified in JDF 1.1</i>	EnumerationSpanenumeration	Type of cut or perforation used. <b>Allowed values are:</b> <i>Cut</i> – Full cut. <i>Perforate</i> – Interrupted perforation that does not span the entire Sheet.
<i>Material</i> ? <i>MediaRef</i> ?	StringSpanIDREF	TransparentReferences the material that fills a shape (e.g., an envelope window) that was cut out when <i>@CutOut</i> = "true".
<i>Pages</i> ?	IntegerRangeList	List of Finished Pages to which this shape is to be applied. Only the recto finished page of a leaf SHOULD be specified.
<i>ShapeDepth</i> ? <i>ShapeDepth</i> ? <i>New in JDF 1.1</i>	NumberSpandouble	Depth of the shape cut. Measured in microns [ $\mu\text{m}$ ]. If not specified, the shape is completely cut.
<i>ShapeType</i> <i>ShapeType</i> ? <i>Modified in JDF 1.3</i>	EnumerationSpanenumeration	Describes any precision cutting other than hole making. <b>Allowed values are:</b> <i>Line</i> – The coordinates specified in <i>@CutBox</i> specify the end points of a straight line. <i>Path</i> <i>Rectangular</i> – The coordinates specified in <i>@CutBox</i> specify the lower left and upper right coordinates of a rectangle. <i>Round</i> <i>RoundedRectangle</i> – Rectangle with rounded corners. The coordinates specified in <i>@CutBox</i> specify the outer bounds of the rectangle. <i>New in JDF 1.3</i>
<i>TeethPerDimension</i> <i>TeethPerDimension</i> ?	NumberSpandouble	Number of teeth in a given perforation extent in teeth/point. MicroPerforation is defined by specifying a large number of teeth ( $n > 1000$ ).

## 7.23 SizeIntent

*Deprecated in JDF 1.1*

*SizeIntent* has been deprecated in JDF 1.1. All contents have been moved to **LayoutIntent**.

## 7.24 VariableIntent

This resource specifies the variations of the content for printed data with variable content such as lottery tickets or direct mail.

**Table 7-77: VariableIntent Element**

Name	Data Type	Description
<i>Area</i> ?	double	Percentage of the document that can contain variable content
<i>AveragePages</i> ?	integer	<i>AveragePages</i> SHALL specify the average number of printed pages in each record.

**Table 7-77: VariableIntent Element**

Name	Data Type	Description
<i>ChildRefs</i> ?	IDREFS	Product/@ <i>ID</i> of the product elements that describe individual finishing variants. <i>ChildRefs</i> SHALL NOT be specified if <b>InsertingIntent</b> or <b>BindingIntent</b> are specified for this product.
<i>ColorsUsedFront</i> ?	NMTOKENS	Array of colorant separation names that are required to print the variable part of the documents. The values that are specified in @ <i>ColorsUsedFront</i> SHALL also be specified in <b>ColorIntent/SurfaceColor/@ColorsUsed</b> . See <b>ColorIntent/SurfaceColor/@ColorsUsed</b> for additional details.
<i>ColorsUsedBack</i> ?	NMTOKENS	Array of colorant separation names that are required to print the variable part of the documents. The values that are specified in @ <i>ColorsUsedBack</i> SHALL also be specified in <b>ColorIntent/SurfaceColor/@ColorsUsed</b> . See <b>ColorIntent/SurfaceColor/@ColorsUsed</b> for additional details.
<i>MaxPages</i> ?	integer	@ <i>MaxPages</i> SHALL specify the maximum number of printed pages in each record. @ <i>MaxPages</i> SHALL NOT be smaller than @ <i>AveragePages</i> .
<i>MinPages</i> ?	integer	@ <i>MinPages</i> SHALL specify the minimum number of printed pages in each record. @ <i>MinPages</i> SHALL NOT be larger than @ <i>AveragePages</i> .
<i>NumberOfCopies</i> ?	integer	Average number of copies of each record. This value SHALL equal "1" for fully variable data.
<i>VariableType</i> ?	enumeration	Type of variable content. <b>Allowed Values are (in order of rising complexity):</b> <i>OneLine</i> – A single line of text data is variable. OneLine includes simple numbering applications. <i>AddressField</i> – Multiple lines of text data are variable. <i>IdentificationField</i> – The variable data includes a Barcode or QR-Code. <i>Area</i> – The area as defined in Area is fully variable.
<i>VariableQuality</i> ?	enumeration	VariableQuality specifies the desired quality of the variable data. <b>Allowed Values are:</b> <i>Simple</i> – The variable text MAY be recognized as printed by a different technology such as dot matrix or simple inkjet overprints. <i>Imprint</i> – The variable data SHOULD be similar to the non-variable part but MAY be imprinted. <i>Full</i> – All data SHOULD be printed with the same technology.

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# Chapter 8 Resources

This chapter provides a list (in alphabetical order) of all Resources.

## 8.1 Resource

**Resource** elements represent the “things”, such as inks, plates or glue that are produced or consumed by Processes. **Resource** elements also define the details of Processes, as well as any non-physical computer data such as files used by a Process. They are usually associated with a specific Process. For example, a required Input **Resource** of the **DigitalPrinting** Process is the **DigitalPrintingParams Resource**. Most predefined **Resource** elements contain the suffix “Params” in their titles. Examples of **Resource** elements include **FoldingParams** and **ConventionalPrintingParams**.

Table 8-1: Resource Element (Sheet 1 of 3)

Name	Data Type	Description
<i>AgentName</i> ?	string	The name of the Agent application that created the <b>Resource</b> . Both the company name and the product name MAY appear, and SHOULD be consistent between versions of the application.
<i>AgentVersion</i> ?	string	The version of the Agent application that created the <b>Resource</b> . The format of the version string MAY vary from one application to another, but SHOULD be consistent for an individual application.
<i>Brand</i> ?	string	Information, such as the model, part number and/or type, about the <b>Resource</b> being used. Some examples are as follows. <ul style="list-style-type: none"><li>• Premium InkProp Glossy 6x642A</li><li>• Premium Multipurpose 1234, 88 Bright 24 lb. Bond, 8-1/2 x 11, White Copy Paper Reorder 4711</li></ul>
<i>CommentURL</i> ?	URL	URL to an external, human-readable description of the <b>Resource</b> .
<i>ContactRef</i> ?	IDREF	@ <i>ContactRef</i> shall reference the <b>Contact</b> that represents the owner of the <b>Resource</b> .
<i>DescriptiveName</i> ?	string	Human-readable descriptive name of the <b>Resource</b> . It is strongly RECOMMENDED to supply @ <i>DescriptiveName</i> in <b>Resource</b> Elements (for example: <b>Resource</b> and <b>ExposedMedia</b> ) for communication from applications to humans in order to reference the <b>Resource</b> .
<i>Duration</i> ?	duration	Estimated duration during which the <b>Resource</b> will be used.
<i>ExternalID</i> ?	NMTOKEN	An ID of the Resource as defined in the MIS system. For instance item codes or article numbers or identifiers on semi-finished products or <b>Resource</b> elements.
<i>GrossWeight</i> ?	double	Gross weight of a single <b>Resource</b> , as counted in @ <i>Amount</i> , in grams.
<i>ID</i>	ID	Unique identifier of a <b>Resource</b> .

**Table 8-1: Resource Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>Orientation</i> ?	Orientation	Named orientation describing the transformation of the orientation of a <b>Resource</b> relative to the ideal Process coordinate that uses this <b>Resource</b> as input or output. If <i>@Orientation</i> is specified for an Output <b>Resource</b> , the Node that processes the <b>Resource</b> is to manipulate the <b>Resource</b> in such a way as to reflect the transformation. The coordinate system of the <b>Resource</b> itself is <i>not</i> modified. At most one of <i>@Orientation</i> or <i>@Transformation</i> SHALL be specified. For details on coordinate systems, see Section 2.5, “Coordinate Systems in JDF XJDF”.
<i>ResourceWeight</i> ?	double	Net weight of a single <b>Resource</b> , as counted in <i>@Amount</i> , in grams.
<i>Start</i> ?	dateTime	Time and date when the usage of the <b>Resource</b> starts.
<i>StartOffset</i> ?	duration	Offset time when the <b>Resource</b> is needed after processing has begun. If both <i>@Start</i> and <i>@StartOffset</i> are specified, <i>@Start</i> has precedence.
<i>Transformation</i> ?	matrix	Matrix describing the transformation of the orientation of a <b>Resource</b> relative to the ideal Process coordinate using this <b>Resource</b> as input or output. If <i>@Transformation</i> is specified for an Output <b>Resource</b> , the Node that processes the <b>Resource</b> is to manipulate the <b>Resource</b> in such a way as to reflect the transformation. The coordinate system of the <b>Resource</b> itself is <i>not</i> modified. At most one of <i>@Orientation</i> or <i>@Transformation</i> SHALL be specified. For details on coordinate systems, see Section 2.5, “Coordinate Systems in JDF XJDF”.
<i>AmountPool</i> ?	element	Definition of partial amounts and pipe parameters for this <b>Resource</b> . The allowed contents of the <b>AmountPool</b> are described in the sections below.
<i>Comment</i> *	element	Any human-readable text that describes the <b>Resource</b> .
<i>GeneralID</i> *	element	Additional identifiers related to the <b>Resource</b> .
<i>IdentificationField</i> *	element	<b>IdentificationField</b> associates bar codes or labels with this <b>Resource</b> .
<i>Location</i> ?	element	Description of details of the location of this <b>Resource</b> . <b>Note:</b> in order to describe multiple locations, <b>Resource</b> MAY be Partitioned by the <i>@Location</i> Partition Key as described in Section 3.13.2.2, “Selecting a Partition”.

**Table 8-1: Resource Element (Sheet 3 of 3)**

Name	Data Type	Description
Part *	element	The Part Elements identify the parts of a Partitioned <b>Resource</b> that are specified by the <b>Resource</b> element. The structure of the Part Element is defined in Table 3-15, “Part Element” on page 85. For details on Partitioned <b>Resource</b> elements, see Section 3.13.2.2, “Selecting a Partition”. If no Part element is specified, then the <b>Resource</b> applies to the entire ResourceSet. If Multiple Part elements are specified, the <b>Resource</b> describes one physical entity that applies to multiple partitions (e.g., the color plates that apply to all versions of a multi version job)
Specific Resourcer?	element	Details of the <b>Resource</b> . The node name of the element <b>SHALL</b> be the value of ..//ResourceSet/@Name.

### 8.1.1 Element: **Location**

**Table 8-2: Location Element**

Name	Data Type	Description
AddressRef	elementI-DREF	Address of the storage facility. For more information, see Section 10.1, “Address”.
LocationName ? <a href="#">New in JDF 1.1</a>	string	Name of the location (e.g., in MIS). This allows the user to describe distributed Resources. <b>Values include those from:</b> Table C-21, “Input Tray and Output Bin Names” on page 1147. <b>Note:</b> the specified values are for printer locations.
LocID ?	NMTOKEN	Location identifier (e.g., within a warehouse system).
AddressRef	elementI-DREF	Address of the storage facility. For more information, see Section 10.1, “Address”.

### 8.1.2 Element: **Specific Resourcer**

A **Specific Resourcer** is any element defined in a level 2 section of this chapter (e.g., **ColorantControl**). A **Specific Resourcer** is a child of a **Resource** Element.

## 8.2 AdhesiveBindingParams

[Deprecated in JDF 1.1](#)

See Section P.6.1, “AdhesiveBindingParams” on page 1340 for details of this deprecated Resource.

## 8.3 ApprovalParams

This **Resource** provides the details of an **Approval** Process.

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

ProofItem, ProofItem, ConventionalPrintingParams,  
DigitalPrintingParams

Intent Pairing:	<b>ProofingIntentContentCheckIntent</b>
Example Partition:	
Input of Processes:	<b>Approval</b>
Output of Processes:	—

**Table 8-3: ApprovalParams Resource**

Name	Data Type	Description
<i>MinApprovals</i> ?= "1" <a href="#">New in JDF 1.2</a>	integer	Minimum number of ApprovalPerson[@ApprovalRole = "Group"] whose associated person SHALL sign the <b>ApprovalSuccess</b> for the <b>ApprovalSuccess</b> to be "Available".
ApprovalPerson *	element	List of people (e.g., a customer, printer or manager) who can sign the approval.

### 8.3.1 Element: ApprovalPerson

**Table 8-4: ApprovalPerson Element**

Name	Data Type	Description
<i>ApprovalRole</i> ?= "Obligated" <a href="#">New in JDF 1.2</a> <a href="#">Modified in JDF 1.3</a>	enumeration	<p>Role of the ApprovalPerson.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Approvator</i> – The decision of this approver immediately overrides the decisions of the other approvers and ends the approval cycle. The "Approvator" NEED NOT sign for the approval to become valid. <a href="#">New in JDF 1.3</a></li> <li><i>Group</i> – The approver belongs to a group of which @<i>MinApprovals</i> members SHALL sign.</li> <li><i>Informative</i> – The approver is informed of the <b>Approval</b> Process, but the approval is still valid, even without his approval.</li> <li><i>Obligated</i> – The approver SHALL sign the approval.</li> </ul>
<i>ApprovalRoleDetails</i> ? <a href="#">New in JDF 1.3</a>	string	Additional details on the @ <i>ApprovalRole</i> .
<i>Obligated</i> ? <a href="#">Deprecated in JDF 1.2</a>	boolean	If "true", the person has to sign this approval. In JDF 1.2 and beyond, use @ <i>ApprovalRole</i> .
<b>Contact</b> <b>ContactRef</b>	refelementIDREF	Contact (e.g., a customer, printer or manager) who SHALL sign the approval. There SHALL be a <b>Contact</b> [contains (@ <i>ContactTypes</i> , "Approver")].

## 8.4 ApprovalSuccess

### 8.5 ApprovalDetails

The signed **ApprovalSuccessApprovalDetails** Resource provides the signature that indicates that a Resource has been approved. This is frequently used to model the success of a soft proof, color proof, printing proof or any other sort of proof.

#### Resource Properties

Resource Class:	Parameter
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**Resource referenced by:****Example Partition:**

"DocIndex", "DocRunIndex", "RunIndex", "RunPage", "RunTags",  
 "DocTags", "PageTags", "SetTags", "SetIndex",  
 "SheetName", "Side", "SignatureName", "TileID"

**Input of Processes:****Any Process****Output of Processes:****Approval, Verification****Table 8-5: ApprovalSuccess Resource**

Name	Data Type	Description
ApprovalDetails *	element	Container for details about the decision for each approver.  <a href="#">New in JDF 1.3</a>
Contact *	refelement	List of contacts that have signed off on this approval. Use ApprovalDetails/Contact in JDF 1.3 and above.  <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.3</a>
FileSpec ?	refelement	The file that contains the approval signature. If FileSpec does not exist, ApprovalSuccess is a logical placeholder. Use ApprovalDetails/FileSpec in JDF 1.3 and above.  <a href="#">Deprecated in JDF 1.3</a>

**8.5.1 Element: ApprovalDetails**[New in JDF 1.3](#)**Table 8-6: ApprovalDetails Element Resource**

Name	Data Type	Description
ApprovalState ?	enumeration	Decision made by the approver specified in this ApprovalDetails/Contact ApprovalDetails/ApprovalPerson.  <b>Allowed values are:</b> <i>Approved</i> – approver approved the Resource. <i>ApprovedWithComment</i> – approver approved the Resource but still had some comments. <i>Rejected</i> – approver rejected the Resource.
ApprovalStateDetails ?	string	Additional details on the decision made by the approver are specified in this ApprovalDetails/Contact ApprovalDetails/ApprovalPerson. This value provides additional machine readable details of @ApprovalState. Hand written comments and notes MAY be specified in ApprovalDetails/ApprovalDetails/Comment or ApprovalDetails/ApprovalDetails/@CommentURL.
ApprovalPerson ?	element	Details of the person (e.g., a customer, printer or manager) who processed the approval.
Contact ? ContactRef ?	refelementI-DREF	Contact that signed off on this approval.
Comment ?	element	This Comment provides a container for human readable notes that are provided by the approver.
FileSpec ?	refelementelement	The file that contains the approval signature. If FileSpec does not exist is not specified, ApprovalSuccess ApprovalDetails is a logical placeholder.

## 8.6 Assembly

[New in JDF 1.2](#)

**Assembly** describes how the sections of one or multiple Jobs or Job Parts are bound together.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	Component, <b>CutBlock</b> , <b>CutBlock</b> , <b>PageList</b>
<b>Example Partition:</b>	
<b>Input of Processes:</b>	<i>Collecting, Gathering, SheetOptimizing, Stripping, WebInlineFinishing</i>
<b>Output of Processes:</b>	—

Table 8-7: Assembly Resource (Sheet 1 of 2)

Name	Data Type	Description
<a href="#"><u>AssemblyID ?</u></a> <a href="#"><u>Deprecated in JDF 1.3</u></a>	string	Identification of the <b>Assembly</b> if <b>Stripping</b> produces multiple Assembly Elements.
<a href="#"><u>AssemblyIDs ?</u></a> <a href="#"><u>New in JDF 1.3</u></a>	NMTOKENS	Identification of the <b>Assembly</b> Elements if <b>Stripping</b> describes an imposition scheme for multiple <b>Assembly</b> Elements. @AssemblyIDs MAY contain multiple NMTOKENS, when the <b>Assembly Resource</b> specifies an intermediate product that contains multiple final assemblies or when multiple <b>BinderySignature</b> elements are bound into one <b>Assembly</b> .
<a href="#"><u>BinderySignatureIDs ?</u></a>	NMTOKENS	@BinderySignatureIDs specifies an ordered list of <b>BinderySignature</b> that SHALL be assembled by the method specified in @Order. @BinderySignatureIDs SHALL NOT be present, if @Order = "List".
<a href="#"><u>BindingSide ?= "Left"</u></a>	enumeration	Indicates which side is to be bound. @BindingSide is ignored when @Order = "None". <b>Allowed values are:</b> <i>Left</i> <i>Right</i> <i>Top</i> <i>Bottom</i>
<a href="#"><u>JobID ?</u></a>	string	Identification of the original Job the <b>Assembly</b> belongs to. If not specified, it defaults to the value specified or implied in the <b>JDF XJDF</b> Node.
<a href="#"><u>JogSide ?= "Top"</u></a> <a href="#"><u>New in JDF 1.3</u></a>	enumeration	@JogSide specifies the side on which the <b>AssemblySection</b> Elements will be aligned. <b>Allowed values are:</b> <i>Left</i> <i>Right</i> <i>Top</i> <i>Bottom</i> <i>None</i>

**Table 8-7: Assembly Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>Order ?= "Gathering"</i>	enumeration	<p>Ordering of the individual <b>AssemblySection</b> Elements. Order specifies the topology of the final <b>Assembly</b>.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Collecting</i> – The sections are placed within one another. The first section <b>BinderySignature</b> specified in <i>@BinderySignatureIDs</i> is on the outside. An example is a saddle-stitched brochure. See Section 6.6.10, “Collecting” on page 400.</li> <li><i>Gathering</i> – The sections are placed on top of one another. The first section <b>BinderySignature</b> specified in <i>@BinderySignatureIDs</i> is on the top. An example is a perfect bound magazine. See Section 6.6.20, “Gathering” on page 406.</li> <li><i>None</i> – The sections are not bound. Typically used for flatwork Jobs.</li> <li><i>List</i> – The <b>Assembly</b> SHALL be fully described with <b>AssemblySection</b> elements. More complex ordering of the sections. If multiple child <b>AssemblySection</b> Elements are provided, these are gathered on top of one another. The first <b>AssemblySection</b> is on the top. If nested <b>AssemblySection</b> Elements are provided, these are Collected into each other. The first <b>AssemblySection</b> is on the outside.</li> </ul>
<i>PhysicalSection ? New in JDF 1.3</i>	IntegerList	<p>Specifies the physical structure of a newspaper. The structure is based on a broadsheet production.</p> <p>For instance, <i>@PhysicalSection = "8 6 8 6"</i> represents a 4 book production with 8 pages in the first physical section, 6 in the second one and so on.</p>
<b>AssemblySection *</b>	element	<p>Individual <b>Each AssemblySection Elements which are represents one section that SHALL be gathered. The first AssemblySection SHALL be placed on top, i.e. it is the front of the Assembly.</b></p> <p>AssemblySection Elements SHALL NOT be specified unless <i>@Order = "List"</i> and SHALL be specified if <i>@Order = "List"</i>.</p>
<i>PageAssignedList * New in JDF 1.3</i>	element	<p>Defines the page sequence for of an <b>Assembly</b>. One PageAssignedList Element corresponds to one or more consecutive Reader Pages. The order of the PageAssignedList Elements specifies the reader order of the assigned pages within the <b>Assembly</b>. PageAssignedList SHALL NOT be specified if <i>@Order = "List"</i>.</p>
<i>PageList ?</i> <i>PageListRef ? New in JDF 1.3</i>	refelement-DREF	Reference to the <b>PageList</b> that describes the pages used in this <b>Assembly</b> .

### 8.6.1 Element: **AssemblySection**

An **AssemblySection** represents a recursive set of **BinderySignature** elements. The topology of the **AssemblySection** elements represents the topology of the binding, where sibling **AssemblySection** elements SHALL be gathered from top to bottom and and child **AssemblySection** elements SHALL be collected from outside to inside.

**Table 8-8: AssemblySection Element**

Name	Data Type	Description
<i>AssemblyID</i> ? <a href="#">Deprecated in JDF 1.3</a>	string	Identification of the AssemblySection if <b>Stripping</b> produces a multi-section <b>Assembly</b> . If not specified, it defaults to the value specified or implied in the parent <b>Assembly</b> or AssemblySection.
<i>AssemblyIDs</i> ? <a href="#">New in JDF 1.3</a>	NMTOKENS	Identification of the AssemblySection Elements if <b>Stripping</b> describes an imposition scheme for a multi-section <b>Assembly</b> . If not specified, it defaults to the value specified or implied in the parent <b>Assembly</b> or AssemblySection. In general AssemblySection/@ <i>AssemblyIDs</i> will contain only a single NMOKEN value. @ <i>AssemblyIDs</i> MAY contain multiple NMOKENS, when the AssemblySection specifies an intermediate product that contains multiple final products.
<i>BinderySignatureID</i> ?	NMOKEN	@ <i>BinderySignatureID</i> identifies the <b>BinderySignature</b> that this AssemblySection represents. @ <i>BinderySignatureID</i> SHALL be provided if no AssemblySection child elements are provided. @ <i>BinderySignatureID</i> SHALL NOT be provided if AssemblySection child elements are provided.
<i>JobID</i> ?	string	Identification of the original Job the AssemblySection belongs to. If not specified, it defaults to the value specified or implied in the parent <b>Assembly</b> or AssemblySection.
<i>Order</i> = "Gathering" <a href="#">Deprecated in JDF 1.4</a>	enumeration	Ordering of the child AssemblySection Elements. <b>Allowed values are:</b> <i>Collecting</i> – The child AssemblySection Elements are placed within one another. The first section is on the outside. <i>Gathering</i> – The child AssemblySection Elements are placed on top of one another. The first section is on the top. <b>Deprecation note:</b> starting with JDF 1.4, Sibling AssemblySection Elements are gathered whereas Child AssemblySection Elements are collected. Thus the Relationship of the AssemblySection Elements directly reflects the structure of the <b>Assembly</b> .
AssemblySection *	element	Additional child AssemblySection Elements which are collected to create SHALL be gathered. The resulting set of AssemblySection elements SHALL be collected inside this AssemblySection.
PageAssignedList * <a href="#">New in JDF 1.</a>	element	Defines the page sequence for of an AssemblySection. One PageAssignedList Element corresponds to one or more consecutive Reader Pages. The order of the PageAssignedList Elements specifies the reader order of the assigned pages within the AssemblySection. PageAssignedList SHALL NOT be specified if child AssemblySection Elements are present in this AssemblySection.

### 8.6.2 Element: **PageAssignedList**

[New in JDF 1.3](#)

PageAssignedList specifies the metadata related to assigned pages.

**Table 8-9: PageAssignedList Element**

Name	Data Type	Description
<i>BroadsheetNumber</i> ?	integer	Specifies a broadsheet position within a single Web product. Several <b>PageAssignedList</b> Elements MAY show the same value for this Attribute (e.g., in a 'tabloid-' or 'magazine production' on a newspaper press).
<i>LogicalPrinterSection</i> ?	string	Specifies a logical grouping of page-placement positions from the press managers point of view (see <i>@PagePlacementName</i> for details). A logical section NEED NOT correspond to a physical section.
<i>PageListIndex</i>	IntegerRangeList	List of the indices of the <b>PageData</b> Elements of the <b>Assembly/ PageList</b> specified in this <b>AssemblySection</b> .
<i>PagePlacementName</i> ?	string	Specifies the name of a position in a Web product where a Reader Page is placed on a Web Press. In contrast to <b>PageList/ PageData/@PageLabel</b> , <i>@PagePlacementName</i> specifies an identifier for a single page on a Web-product level. Therefore, different <i>@PagePlacementName</i> values might be assigned to one single <b>PageList/PageData</b> Element.

**Example 8-1: Perfect Bound (Gathering)**[New in JDF 1.4](#)

Cover wrapped around a perfect bound (gathering) body

TBD 2.x Example.

```
<Assembly BindingSide="Left" Class="Parameter" ID="ASM000" Order="List"
  Status="Available">
  <AssemblySection AssemblyIDs="Ass_Cover" >
    <AssemblySection AssemblyIDs="Ass_Body1"/>
    <AssemblySection AssemblyIDs="Ass_Body2"/>
    <AssemblySection AssemblyIDs="Ass_Insert"/>
    <AssemblySection AssemblyIDs="Ass_Body3"/>
    <AssemblySection AssemblyIDs="Ass_Body4"/>
  </AssemblySection>
</Assembly>
```

**Example 8-2: Saddle-Stitched Brochure (Collecting)**[New in JDF 1.4](#)

TBD 2.x Example.

```
<Assembly BindingSide="Left" Class="Parameter" ID="ASM000" Order="List"
  Status="Available">
  <AssemblySection AssemblyIDs="Ass_Cover" >
    <AssemblySection AssemblyIDs="Ass_Body1" >
      <AssemblySection AssemblyIDs="Ass_Body2" >
        <AssemblySection AssemblyIDs="Ass_Body3" >
          <AssemblySection AssemblyIDs="Ass_Body4" >
            </AssemblySection>
        </AssemblySection>
      </AssemblySection>
    </AssemblySection>
  </AssemblySection>
</Assembly>
```

## 8.7 AssetListCreationParams

[New in JDF 1.2](#)

This Resource provides controls for the **AssetListCreation** Process.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Example Partition:	—
Input of Processes:	<b>AssetListCreation</b>
Output of Processes:	—

**Table 8-10: AssetListCreationParams Resource**

Name	Data Type	Description
<i>AssetTypes</i> ?	regExp	Specifies what type of assets are to be listed. The regular expression represents the <i>@MimeType</i> of the assets to be listed. The default behavior is to list everything. In case an asset requires a plug-in or extension in order to be opened in an application, this plug-in or extension SHOULD be listed as an asset.
<i>ListPolicy</i> ? = "All"	enumeration	Policy that defines which assets SHALL be added to the output <b>RunList</b> . <b>Allowed values are:</b> <i>All</i> – List all referenced assets, including those that are unavailable. <i>Available</i> – List all referenced assets, excluding those that are unavailable.
<i>FileSpec</i> ( <i>SearchPath</i> ) *	referencetelement	An ordered list of search paths that indicates where to search for referenced assets if they are not located in the same directory as the input asset. If no <b>FileSpec</b> is specified, the search path is the directory in which the input asset resides and SHALL NOT be searched recursively.

## 8.8 BendingParams

[New in JDF 1.3](#)

**BendingParams** describes the parameter set for a plate bending and punching Device. A plate is bent and/or punched to fit the press cylinder.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Example Partition:	—
Input of Processes:	<b>Bending</b>
Output of Processes:	—

**Table 8-11: BendingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>Bend</i> = "true" ?	boolean	If "true", indicates that the Device SHALL bend.
<i>Punch</i> = "true" ?	boolean	If "true", indicates that the Device SHALL create registration punch holes.

**Table 8-11: BendingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
PunchType ?	stringN-MTOKEN	Name of the registration punch scheme (e.g., Bacher).

## 8.9 BinderySignature

New in JDF 1.2

A **BinderySignature** represents both sides of an explicit folding signature with one or more pages. A page typically represents a page in a bound product but MAY also represent a die cut piece of packaging or a single surface of a flat piece such as a postcard.

The **BinderySignature** is conceptually a folding dummy. It represents multiple pieces of paper, which are folded together in the folder. It is a reusable, size-independent object.

One **BinderySignature** (when used with stripping) consists of one or more Strip Cells, which are created either explicitly (via SignatureCell elements) or implicitly (via the *@FoldCatalog* attribute or the Fold elements). **StrippingParams** describes some attributes for Strip Cells (using StripCellParams SignatureCell). The Strip Cells by themselves belong to a **BinderySignature**.

Each **BinderySignature** consumes a number of Pages from the **PageList**. If no SignatureCell Elements are specified, each **BinderySignature** consumes the number of pages as calculated from *@NumberUp* ( $X*Y*2$ ) or *@FoldCatalog* (The integer value after the *F* (e.g., "F16-x" consumes 16 pages). If SignatureCell Elements are specified, the number of pages consumed is the sum of the number of pages for all unique SignatureCell/*@SectionIndex*. The number of pages for each SignatureCell/*@SectionIndex* is one more than the maximum value of any SignatureCell/*@FrontPages* or SignatureCell/*@BackPages* for that SignatureCell/*@SectionIndex* (it is one more because SignatureCell/*@FrontPages* and SignatureCell/*@BackPages* begin at zero)

### 8.9.1 Pagination for BinderySignatureType Fold

If *@BinderySignatureType* = "Fold", the distribution of the selected pages on a **BinderySignature** is determined by the 2 attributes: *@FoldCatalog* and *@BinderyOrientation*. The default orientation assumes the **Binding Side** on the left and the **Jog Edge** at the bottom.

#### Resource Properties

Resource Class:	Parameter
Resource referenced by:	StrippingParams
Example Partition:	"WebName"
Input of Processes:	—
Output of Processes:	—

**Table 8-12: BinderySignature Resource (Sheet 1 of 6)**

Name	Data Type	Description
AlignmentReferenceWeb ?	NMTOKEN	The Partition <i>@WebName</i> value of the reference web that <i>@WebCellAlignment</i> refers to. New in JDF 1.4
BinderySignatureSize ?	XYPair	Size of the <b>BinderySignature</b> including Trim. See Figure 8-1, "BinderySignature Trims," on page 519 for details.

Table 8-12: BinderySignature Resource (Sheet 2 of 6)

Name	Data Type	Description
<i>BinderySignatureType</i> ?= "Fold" <a href="#">New in JDF 1.3</a>	enumeration	<p><i>@BinderySignatureType</i> specifies the type of <b>BinderySignature</b> and the pagination rules.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Fold</i> – a folding dummy (as defined in JDF 1.2). The <b>BinderySignature</b> represents a folding dummy. Pagination SHALL be calculated according to Appendix J, “Pagination Catalog” on page 1175.</li> <li><i>Grid</i> – a grid based layout. The <b>BinderySignature</b> represents a grid based layout. The Pagination SHALL be explicitly specified in <i>SignatureCell/@FrontPages</i> and <i>SignatureCell/@BackPages</i>. Grid SHALL be used for flatwork.</li> <li><i>Die</i> – a layout defined by an existing die.</li> </ul>
<i>BindingEdge</i> ?= "Left"	enumeration	<p>Specifies the binding edge of this <b>BinderySignature</b>. <i>@BindingEdge</i> defines the Spine side the folded <b>BinderySignature</b>. The opposite side defines the Face side.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Left</i></li> <li><i>Right</i></li> <li><i>Top</i></li> <li><i>Bottom</i></li> <li><i>None</i> – The Spine is assumed to be at the left side of the <i>SignatureCell</i> and the Face is assumed to be at the right side of the <i>SignatureCell</i></li> </ul>
<i>BindingOrientation</i> ? <a href="#">New in JDF 1.3</a>	Orientation	<p>After folding a <b>BinderySignature</b>, the default coordinate system SHALL be the coordinate system with the binding edge on the left side and the jog edge at the top. <i>@BinderyOrientation</i> defines the transformation that SHALL be applied to the <b>BinderySignature</b> prior to calculating pagination. For Example, a value of "Rotate180" would rotate every page by 180° but retain the pagination whereas a value of "Flip180" would reverse the pagination while retaining the page orientation.</p> <p>After folding a <b>BinderySignature</b>, the default reference corner is the lower left corner of the <b>BinderySignature</b>. The side coinciding with the last fold is the <i>@BindingEdge</i>, the other side of the reference corner the <i>@JogEdge</i>. <i>@BinderyOrientation</i> is the named orientation describing the transformation of the default reference corner to the new reference corner defined by <i>@BindingEdge</i> and <i>@JogEdge</i>.</p> <p>For <b>BinderySignature</b> Elements defined by <i>@FoldCatalog</i> or Fold Elements, the default value of <i>@BindingOrientation</i> = "Rotate0" if the folded <b>BinderySignature</b> has a closed head, otherwise <i>@BindingOrientation</i> = "Flip0".</p> <p>For <b>BinderySignature</b> Elements defined by <i>SignatureCell</i> Elements, the default value <i>@BindingOrientation</i> = "Rotate0".</p> <p>For details, see Table 2-4, “Matrices and Orientation values for describing the orientation of a Component” on page 39.</p>

**Table 8-12: BinderySignature Resource (Sheet 3 of 6)**

Name	Data Type	Description
<i>BleedBottom</i> ? <a href="#">New in JDF 1.5</a>	double	Value for the bleed at the bottom side of the <b>BinderySignature</b> . <b>Note:</b> See Section 8.9.2, “On the use of Bleed” on page 518.
<i>BleedLeft</i> ? <a href="#">New in JDF 1.5</a>	double	Value for the bleed at the left side of the <b>BinderySignature</b> . <b>Note:</b> See Section 8.9.2, “On the use of Bleed” on page 518.
<i>BleedRight</i> ? <a href="#">New in JDF 1.5</a>	double	Value for the bleed at the right side of the <b>BinderySignature</b> . <b>Note:</b> See Section 8.9.2, “On the use of Bleed” on page 518.
<i>BleedTop</i> ? <a href="#">New in JDF 1.5</a>	double	Value for the bleed at the top side of the <b>BinderySignature</b> . <b>Note:</b> See Section 8.9.2, “On the use of Bleed” on page 518.
<i>Bottling</i> ?	enumeration	Bottling SHALL specify the method to use for compensating the bottle angle, which is the slight rotation of a page needed to compensate for the rotation fault introduced when making cross-folds. <b>Allowed values are:</b> <i>All</i> - Compensate all cross-folds <i>Last</i> - Compensate only the bottle angle caused by the final fold <i>None</i> - Do not compensate
<i>DieLayout</i> ? <i>DieLayoutRef</i> ? <a href="#">New in JDF 1.3</a>	refelementI-DREF	The layout as defined by <i>@DieLayoutRef</i> references a pre-existing die. <b>DieLayout</b> SHALL be present when <i>@BinderySignatureType = "Die"</i> . The content SHALL be imposed to fit the shapes of the referenced <b>DieLayout</b> . <b>DieLayout</b> SHALL NOT be present unless <i>@BinderySignatureType = "Die"</i> .
<i>FoldCatalog</i> ?	string <i>Fold-Catalog</i>	<i>@FoldCatalog</i> describes the type of fold folding of the <b>BinderySignature</b> . Values are defined in according to the folding catalog in Figure 8-34, “Fold catalog part 1,” on page 664 and Figure 8-35, “Fold catalog part 2,” on page 665. <b>Value format is:</b> “Fn-i” where “n” is the number of finished pages and “i” is either an integer, which identifies a particular fold or the letter “X”, which identifies a generic fold (e.g., “F6-2” describes a Z-fold of 6 finished pages, and “F6-X” describes a generic fold with 6 finished pages). <b>Constraint:</b> At least one of <i>SignatureCell</i> , <i>@FoldCatalog</i> or <i>Fold DieLayoutRef</i> SHALL be specified. <i>@FoldCatalog</i> SHALL NOT be specified unless <i>@BinderySignatureType = "Fold"</i> .
<i>FoldLay</i> ? <a href="#">New in JDF 1.4</a>	Orientation	Specification of the orientation applied to the substrate of all stacked webs before applying folding (only specified at root <b>BinderySignature</b> node, and would default to Rotate0).

**Table 8-12: BinderySignature Resource (Sheet 4 of 6)**

Name	Data Type	Description
<a href="#"><i>JogEdge</i> ?= "Top"</a> <a href="#">New in JDF 1.3</a>	enumeration	Specifies the <i>@JogEdge</i> of the folded <b>BinderySignature</b> . The <i>@JogEdge</i> defines the Head side of the folded <b>BinderySignature</b> . The opposite side defines the Foot side. <b>Allowed values are:</b> <i>Left</i> <i>Right</i> <i>Top</i> <i>Bottom</i> <i>None</i> – The Head side is the top of the SignatureCell, the Foot side is the bottom of the SignatureCell.
<a href="#"><i>NumberUp</i> ?= "1 1"</a> <a href="#">Modified in JDF 1.3</a>	XYPair	Specifies a regular, multi-up grid of <b>SignatureCell</b> Elements into which content pages are mapped. The first value specifies the number of columns of <b>SignatureCell</b> Elements, and the second value specifies the number of rows of <b>SignatureCell</b> Elements in the multi-up grid (both numbers are integers). When the <b>BinderySignature</b> is Partitioned (e.g., by <i>@WebName</i> ), <i>@NumberUp</i> MAY be different from leaf to leaf. When the <b>BinderySignature</b> is Partitioned (e.g., by <i>@WebName</i> ), <i>@NumberUp</i> MAY be different from leaf to leaf.
<a href="#"><i>OutsideGutter</i> ?</a> <a href="#">New in JDF 1.3</a>	boolean	If <i>@BinderySignatureType</i> is " <i>Grid</i> ", this boolean defines whether the outside margins of strip cells have to be taken into account (e.g., if <i>@OutsideGutter</i> is " <i>false</i> ", the Spine (S2) of the strip cells at the left border of the grid is considered to be 0).
<a href="#"><i>StaggerColumns</i> ?</a> <a href="#">New in JDF 1.3</a>	DoubleList	A list of doubles describing the staggering for subsequent columns. The number of entries in the list describes the periodicity of the staggering. Each value gives a factor of the strip cell height ((y value of <i>@TrimSize</i> ) + <i>@TrimHead</i> + <i>@TrimFoot</i> ) by which to shift the corresponding column (can be negative) (e.g., <i>@StaggerColumns</i> = "0.0 0.333 0.666" specifies to shift each) <ul style="list-style-type: none"> <li>– 3*n column up by 0%</li> <li>– 3*n+1 column up by 33.3% of the strip cell height</li> <li>– 3*n+2 column up by 66.6% of the strip cell height</li> </ul> This Element SHALL NOT be present unless <i>@BinderySignatureType</i> = " <i>Grid</i> ". At most one of <i>@StaggerColumns</i> or <i>@StaggerRows</i> SHALL be specified.

**Table 8-12: BinderySignature Resource (Sheet 5 of 6)**

Name	Data Type	Description
<i>StaggerContinuous</i> ? <a href="#">New in JDF 1.3</a>	boolean	Indicates if the <b>BinderySignature</b> has to be considered as a continuous repetition for staggering. This Attribute SHALL NOT be present unless exactly one of <i>@StaggerRows</i> or <i>@StaggerColumns</i> is specified. Consider a grid with $m$ columns and $n$ rows with <i>@StaggerContinuous</i> = "true". If <i>@StaggerColumns</i> is specified, the <b>BinderySignature</b> SHALL be considered continuous with a height $H$ equal to $n$ multiplied by the strip cell height. If <i>@StaggerColumns</i> has a value of $y$ for a certain column, that column is shifted up (assuming $y > 0$ ) by an amount equal to $y$ multiplied by the strip cell height (in the same way as described for <i>@StaggerColumns</i> ). All content (even partial cells) that falls above $H$ (the top of <b>BinderySignature</b> ) is shifted to the bottom such that the top of the shifted content is just below the original bottom cell in the column. For example, if $y$ is 0.666, then the top 66.6% of the top cell is shifted to be just below the original bottom cell. Analogous for <i>@StaggerRows</i> .
<i>StaggerRows</i> ? <a href="#">New in JDF 1.3</a>	DoubleList	A list of doubles describing the staggering for subsequent rows. The number of entries in the list describes the periodicity of the staggering. Each value gives a factor of the strip cell width (( $x$ value of <i>@TrimSize</i> ) + <i>@TrimFace</i> + <i>@Spine</i> ) by which to shift the corresponding row (can be negative) (e.g., "0.0 0.333 0.666" specifies to shift each) <ul style="list-style-type: none"> <li>– 3*n row right by 0%</li> <li>– 3*n+1 row right by 33.3% of the strip cell width</li> <li>– 3*n+2 row right by 66.6% of the strip cell width</li> </ul> This Element SHALL NOT be present unless <i>@BinderySignatureType</i> = "Grid". At most one of <i>@StaggerColumns</i> or <i>@StaggerRows</i> SHALL be specified.
<i>TrimBottom</i> ? <a href="#">New in JDF 1.5</a>	double	Value for cutoff at the bottom side of the <b>BinderySignature</b> . <b>Note:</b> See Section 8.9.3, "On the use of Trim" on page 518.
<i>TrimLeft</i> ? <a href="#">New in JDF 1.5</a>	double	Value for the cutoff at the left side of the <b>BinderySignature</b> . <b>Note:</b> See Section 8.9.3, "On the use of Trim" on page 518.
<i>TrimRight</i> ? <a href="#">New in JDF 1.5</a>	double	Value for the cutoff at the right side of the <b>BinderySignature</b> . <b>Note:</b> See Section 8.9.3, "On the use of Trim" on page 518.
<i>TrimTop</i> ? <a href="#">New in JDF 1.5</a>	double	Value for the cutoff at the top side of the <b>BinderySignature</b> . <b>Note:</b> See Section 8.9.3, "On the use of Trim" on page 518.
<i>WebCellAlignment</i> ? <a href="#">New in JDF 1.4</a>	XYPair	Zero based <b>SignatureCell</b> index (coordinate) that the bottom left <b>SignatureCell</b> in this web is aligned with in the full web (only specified at the <i>@WebName</i> Partition, and would default to "0 0"). See Figure 8-2, "WebCellAlignment, Example 1," on page 520, Figure 8-3, "WebCellAlignment Example 2," on page 521 and Figure 8-4, "WebCellAlignment Example 3," on page 522. Also, the "stacking" of the webs is implied by the order of the webs within the <b>BinderySignature</b> . The back side of a <i>@WebName</i> Partition of a <b>BinderySignature</b> will be touching the front side of the <i>@WebName</i> partition of the <b>BinderySignature</b> that follows it in the <b>JDF XJDF</b> file.

**Table 8-12: BinderySignature Resource (Sheet 6 of 6)**

Name	Data Type	Description
<a href="#">DieLayout ? DieLayoutRef ? New in JDF 1.3</a>	refelementI-DREF	The layout as defined by a pre-existing die. <b>DieLayout</b> SHALL be present when <i>@BinderySignatureType = "Die"</i> .
Fold *	element	Describes the folding operations in the sequence in which they are to be carried out. When both <b>Fold</b> and <i>@FoldCatalog</i> are specified, <i>@FoldCatalog</i> defines the topology of the folding scheme, and the specifics of each individual fold are described by the <b>Fold</b> Elements. The <b>Fold</b> Elements have precedence. <b>Fold</b> SHALL NOT be specified if <b>SignatureCell</b> Elements are present. <b>Fold</b> SHALL NOT be specified unless <i>@BinderySignatureType = "Fold"</i> .
SignatureCell *	element	Describes the <b>SignatureCell</b> Elements used in this <b>BinderySignature</b> . <b>SignatureCell</b> Elements are ordered in X-Y direction starting at the lower left-hand corner of the <b>BinderySignature</b> . When both <b>SignatureCell</b> and <i>@FoldCatalog</i> are specified, <i>@FoldCatalog</i> defines the topology of the folding scheme, and the specifics of each individual <b>SignatureCell</b> are described by the <b>SignatureCell</b> Elements. The <b>SignatureCell</b> Elements SHALL have precedence. <b>SignatureCell</b> SHALL NOT be specified if <b>Fold</b> Elements are present.

### 8.9.2 On the use of Bleed

[New in JDF 1.5](#)

If any Strip Cell belonging to the **BinderySignature** has any bleed value > 0, where a bleed value is **StripCellParams SignatureCell/@BleedFace**, **StripCellParams SignatureCell/@BleedSpine**, **StripCellParams SignatureCell/@BleedHead** or **StripCellParams SignatureCell/@BleedFoot**, then none of the **BinderySignature /@BleedLeft**, **BinderySignature /@BleedRight**, **BinderySignature /@BleedTop** and **BinderySignature /@BleedBottom** SHALL be applied.

If any Strip Cell belonging to the **BinderySignature** has a **StripCellParams SignatureCell**/margin value > 0 (where margin value is: *@Spine*, *@TrimFace*, *@TrimFoot*, *@TrimHead*, *@TrimSize*, *@BackOverfold*, *@FrontOverfold*, *@CutWidthFoot*, *@CutWidthHead* or *@MillingDepth*), then none of **BinderySignature/@BleedLeft**, **BinderySignature /@BleedRight**, **BinderySignature /@BleedTop** and **BinderySignature /@BleedBottom** SHALL be applied.

### 8.9.3 On the use of Trim

[New in JDF 1.5](#)

The attributes *@TrimBottom*, *@TrimLeft*, *@TrimRight* and *@TrimTop* are added around the rectangle that is composed of the Strip Cells belonging to the **BinderySignature**. The Strip Cell includes the margins specified by **StripCellParams SignatureCell**. The Position/*@Orientation* is applied to the **BinderySignature /@TrimLeft**, **BinderySignature /@TrimRight**, **BinderySignature /@TrimTop** and **BinderySignature /@TrimBottom** too.

Figure 8-1: BinderySignature Trims

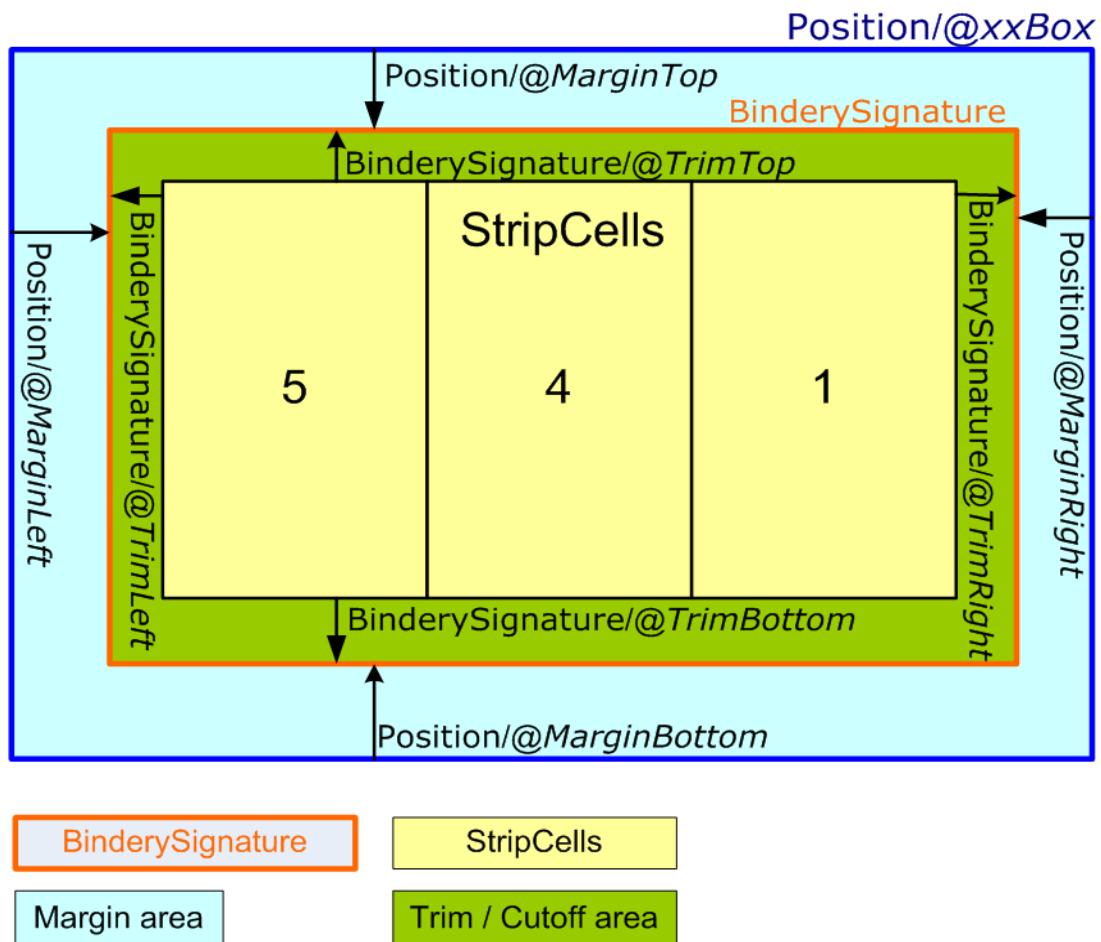


Figure 8-2: WebCellAlignment, Example 1

```
<BinderySignature PartIDKeys="WebName" FoldCatalog="F16-6" AlignmentReferenceWeb="Web1">
  <BinderySignature NumberUp="4 2" WebCellAlignment="0 0" WebName="Web1"/>
  <BinderySignature NumberUp="4 2" WebCellAlignment="0 0" WebName="Web2"/>
</BinderySignature>
```

Web 1




Web 2

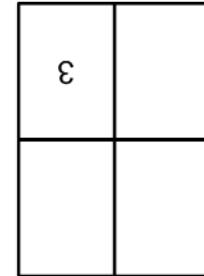
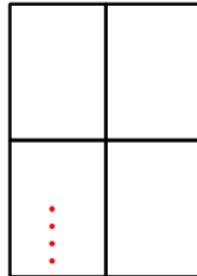


1	32		

**Figure 8-3: WebCellAlignment Example 2**

```
<BinderySignature PartIDKeys="WebName" FoldCatalog="F16-6" AlignmentReferenceWeb="Web1">
  <BinderySignature NumberUp="2 2" WebCellAlignment="1 0" WebName="Web1"/>
  <BinderySignature NumberUp="4 2" WebCellAlignment="0 0" WebName="Web2"/>
</BinderySignature>
```

Web 1



Web 2

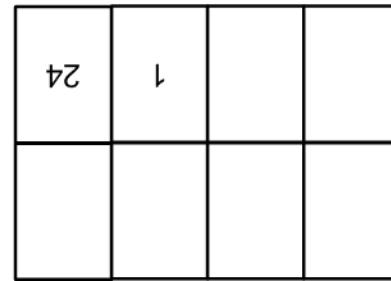
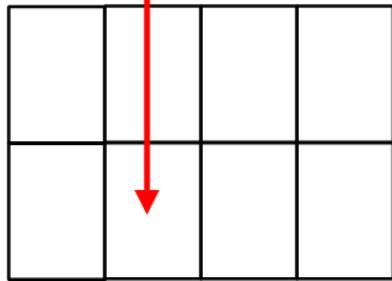
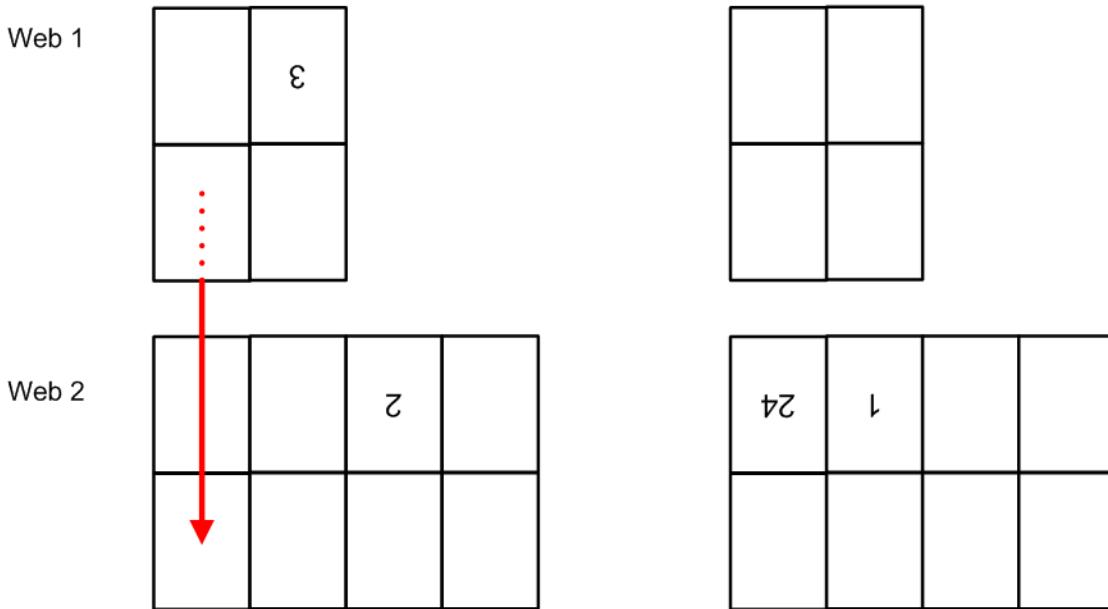


Figure 8-4: WebCellAlignment Example 3

```
<BinderySignature PartIDKeys="WebName" FoldCatalog="F16-6" AlignmentReferenceWeb="Web1">
  <BinderySignature NumberUp="2 2" WebCellAlignment="0 0" WebName="Web1"/>
  <BinderySignature NumberUp="4 2" WebCellAlignment="0 0" WebName="Web2"/>
</BinderySignature>
```



### Example 8-3: Pseudo Code to Generate Page Count from SignatureCell Elements

New in JDF 1.4

```
maxSectionIndexSeen = 0
maxSectionPages = [0]
for sc in BinderySignature/SignatureCell
    si = sc@SectionIndex
    if ( si > maxSectionIndexSeen)
        for index from maxSectionIndexSeen to si - 1:
            maxSectionPages.append(0)
        maxSectionIndexSeen = si
    for page in sc@FrontPages
        maxSectionPages[si] = max(maxSectionPages[si],page)
    for page in sc@BackPages
        maxSectionPages[si] = max(maxSectionPages[si],page)
totalPages = 0
for sectionIndex from 0 to maxSectionIndexSeen
    totalPages += 1 + maxSectionPages[sectionIndex]
return totalPages
```

#### 8.9.4 Element: SignatureCell

SignatureCell Elements describe a set of individual page cells in a **BinderySignature**.

**Note:** “Page number” in the table below refers to finished pages from the **PageList** numbered from 0 to n, as opposed to Folio pages, which are the numbers that appear in print with the content of the document; the difference being that pages without Folio numbering are counted. As the **BinderySignature** is a reusable object, the page numbers refer to finished pages numbered from 0 to n as if this **BinderySignature** were the only section of the **Assembly**. The consuming Device needs to calculate the final product page number using the **Assembly** and

**StrippingParams/@SectionList**. The **BinderySignature** cells SHALL NOT contain final page numbers unless **Assembly/@Order = "None"**

The **SignatureCell** allow the specification of various distances implicitly defined by the use of a **BinderySignature**. The picture in Figure 8-5 below shows a cell and the different distances inside it leading to the final trim box of the cell in which content will be placed. The size of a strip cell in a Grid is defined by the outermost margin as specified in Figure 8-5.

**Note:** In practice, **SignatureCell** values will usually be greater than or equal to zero and have no default.

For more information on spine and trim, see Appendix J, “Pagination Catalog” on page 1175.

The meaning of some attributes in **SignatureCell** is specified in Appendix J, “Pagination Catalog” on page 1175.

**Table 8-13: SignatureCell Element (Sheet 1 of 3)**

Name	Data Type	Description
<i>BackFacePages ?</i> <small>Deprecated in JDF 1.4</small>	IntegerList	Page numbers for the back finished pages forming a foldout. <b>Deprecation note:</b> starting with JDF 1.4, use <b>@FaceCells</b> to describe foldouts.
<i>BackOverflow ?</i>	double	(F3) Value for the overfold at the back side.
<i>BackPages ?</i>	IntegerList	Page numbers of the back finished pages of a <b>SignatureCell</b> . The number of entries in <b>@FrontPages</b> and <b>@BackPages</b> SHALL be identical. The entries with an identical index in <b>@FrontPages</b> and <b>@BackPages</b> are back-to-back in the layout. If not specified, the layout is one-sided.
<i>BackSpread ?</i> <small>New in JDF 1.5</small>	IntegerList	Index of <b>SignatureCell</b> Elements that are combined into a spread on the back side.
<i>BleedFace ?</i>	double	(F1) Value for the bleed at the face side.
<i>BleedFoot ?</i>	double	(T1) Value for the bleed at the foot side.
<i>BleedHead ?</i>	double	(H1) Value for the bleed at the head side.
<i>BleedSpine ?</i>	double	(S1) Value for the bleed at the spine side.
<i>BottleAngle ?</i>	double	Indicates the bottle angle, which is the slight rotation of the <b>SignatureCell</b> needed to compensate for the rotation fault introduced when making cross-folds.
<i>BottleAxis ?</i>	enumeration	Indicates the point around which the cell is bottled. <b>Allowed values are:</b> <i>FaceFoot</i> <i>FaceHead</i> <i>SpineFoot</i> <i>SpineHead</i>
<i>CutWidthFoot ?</i>	double	(T3) Amount of paper lost by cutting at the foot side.
<i>CutWidthHead ?</i>	double	(H3) Amount of paper lost by cutting at the head side.
<i>FaceCells ?</i> <small>New in JDF 1.4</small>	IntegerList	List of indices of <b>SignatureCell</b> Elements that form a foldout together with this <b>SignatureCell</b> . The <b>SignatureCell</b> that contains <b>@FaceCells</b> is the parent of the foldout, typically the Page that is attached to the spine. Details of each foldout Page are described by a <b>SignatureCell</b> Element.

**Table 8-13: SignatureCell Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>FrontFacePages</i> ? <a href="#">Deprecated in JDF 1.4</a>	IntegerList	Page numbers for the front finished pages forming a foldout. <b>Deprecation note:</b> starting with JDF 1.4, use <i>@FaceCells</i> to describe foldouts.
<i>FrontOverflow</i> ?	double	(F3) Value for the overfold at the front side.
<i>FrontPages</i> ?	IntegerList	Page numbers of the front finished pages of a <i>SignatureCell</i> . Multiple page cells with the same properties except for the finished pages to which they are assigned MAY be summarized as one <i>SignatureCell</i> with multiple entries in <i>@FrontPages</i> .
<i>FrontSpread</i> ? <a href="#">New in JDF 1.5</a>	IntegerList	Index of <i>SignatureCell</i> Elements that are combined into a spread on the front side.
<i>Mask</i> ? <a href="#">New in JDF 1.3</a>	enumeration	The definition of the clipping mask for the placed graphics. <b>Allowed values are:</b> <i>None</i> – No mask <i>TrimBox</i> – The mask is derived from the TrimBox as defined by the <i>SignatureCell</i> . <i>BleedBox</i> – The mask is derived from the BleedBox as defined by the <i>SignatureCell</i> . <i>SourceTrimBox</i> – The mask is derived from the TrimBox of the graphical element placed in the <i>SignatureCell</i> . <i>SourceBleedBox</i> – The mask is derived from the BleedBox of the graphical element placed in the <i>SignatureCell</i> . <i>PDL</i> – The mask is derived from the PDL of the graphics. The Attribute <i>@MaskSeparation</i> determines which separation is to be used as the clipping mask for the graphics. <i>DieCut</i> – The mask is the cut line as defined in the <i>DieLayout</i> . <i>DieBleed</i> – The mask is the bleed line as defined in the <i>DieLayout</i> .
<i>MaskBleed</i> ? <a href="#">New in JDF 1.3</a>	double	The distance over which to expand the mask in points.
<i>MaskSeparation</i> ? <a href="#">New in JDF 1.3</a>	stringN-MTOKEN	<i>Color</i> ../Resource/Part/@ <i>Separation</i> of the <i>Color</i> that specifies <i>@Mask</i> . <i>@MaskSeparation</i> SHALL be specified if and only if <i>@Mask</i> = "PDL". <i>Color</i> /@ <i>ColorType</i> of this separation SHALL be "DieLine".
<i>MillingDepth</i> ?	double	(S3) Amount of paper cut-off from the spine.
<i>Orientation</i> ?= "Up" <a href="#">Modified in JDF 1.3</a>	enumeration	Indicates the orientation of the <i>SignatureCell</i> <b>on the BinderySignature</b> . <b>Allowed values are:</b> <i>Down</i> – 180° rotation. <i>Left</i> – 90° counter-clockwise rotation. <a href="#">New in JDF 1.3</a> <i>Right</i> – 270° counter-clockwise rotation <a href="#">New in JDF 1.3</a> <i>Up</i> – 0° rotation.
<i>SectionIndex</i> ?= "0"	integer	Unique logical index of the page section that are to fill this <i>SignatureCell</i> . This is an indirect logical index. The actual section index is defined in <i>StrippingParams</i> /@ <i>SectionList</i> .
<i>Sides</i> ?	Sides	Sides SHALL specify which side of the Media SHALL be printed.

**Table 8-13: SignatureCell Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>Spine</i> ?	double	(S2) Amount of paper which is not cut-off from the spine. When no <b>Folding</b> is done, this is the left margin. When <b>@BinderySignatureType = "Grid"</b> , the horizontal gutter between cells is <b>@TrimFace + @Spine</b> .  Note: see Appendix J, “Pagination Catalog” on page 1175.
<i>StationName</i> ? <a href="#">New in JDF 1.3</a>	string	The name of the 1-up station in the die layout. <b>Constraint:</b> if <b>BinderySignature/@BinderySignatureType = "Die"</b> , this Element SHOULD be specified. <b>Constraint:</b> if <b>BinderySignature/@BinderySignatureType = "Die"</b> and <b>BinderySignature/DieLayout</b> contains more than 1 Station, this Attribute SHALL be specified.
<i>TrimFace</i> ?	double	(F2) Value for the trim distance at the face side. When no <b>Folding</b> is done, this is the right margin. When <b>@BinderySignatureType = "Grid"</b> , the horizontal gutter between cells is <b>@TrimFace + @Spine</b> .
<i>TrimFoot</i> ?	double	(T2) Value for the trim distance at the foot side. When no <b>Folding</b> is done, this is the bottom margin. When <b>@BinderySignatureType = "Grid"</b> , the vertical gutter between cells is <b>@TrimHead + @TrimFoot</b> .
<i>TrimHead</i> ?	double	(H2) Value for the trim distance at the head side. When no <b>Folding</b> is done, this is the top margin. When <b>@BinderySignatureType = "Grid"</b> , the vertical gutter between cells is <b>@TrimHead + @TrimFoot</b> .  Note: see Appendix J, “Pagination Catalog” on page 1175.
<i>TrimSize</i> ?	XYPair	Defines the dimensions of the trim box.

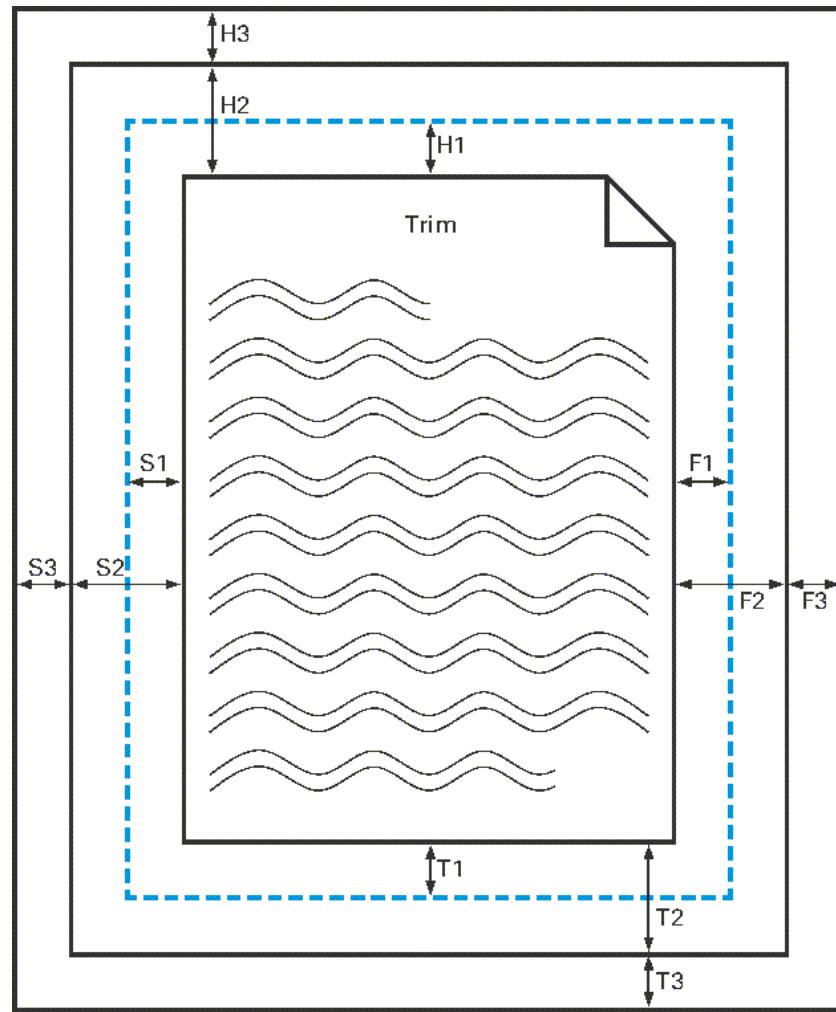
**Example 8-4: StrippingParams: Foldout Using FaceCells**[New in JDF 1.4](#)

```
<!--Stripping Foldout example corresponding to spec example O-24 - with new
attribute FaceCells-->
<StrippingParams Class="Parameter" ID="r000005"
      PartIDKeys="CellIndex" Status="Available">
  <BinderySignatureRef rRef="r000006"/>
  <StrippingParams CellIndex="0">
    <!--stripcell for the folded out foldout(front page=4)-->
    <StripCellParams TrimSize="200 400"/>
  </StrippingParams>
  <StrippingParams CellIndex="1">
    <!--stripcell for the inner page of the foldout foldout(front page=5)-->
    <StripCellParams TrimSize="300 400"/>
  </StrippingParams>
  <StrippingParams CellIndex="2">
    <!--stripcell for the inner page of the foldout foldout(front page=0)-->
    <StripCellParams TrimSize="320 400"/>
  </StrippingParams>
</StrippingParams>
<BinderySignature Class="Parameter" ID="r000006" Status="Available">
  <!--this is the foldout foldout cell-->
  <SignatureCell BackPages="3" FrontPages="4"/>
  <!--this cell is the inner page of the foldout, i.e. the page that is
```

attached to the spine. The new attribute FaceCells refers to the cell(s) that describe the foldout; in this case the cell to the left. The front and back pages of the foldout are listed in the respective cell(s).

```
-->
<SignatureCell BackPages="2" FaceCells="0" FrontPages="5"/>
<!--this is the cell that has no foldout-->
<SignatureCell BackPages="1" FrontPages="0"/>
</BinderySignature>
```

**Figure 8-5: Definition of margins in SignatureCell**



## 8.10 BlockPreparationParams

New in JDF 1.1

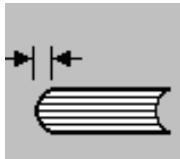
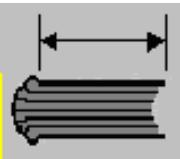
This Resource describes the settings of a **BlockPreparation** Process. For the tightbacking there are four different kinds of book forms as shown in Figure 8-6.

**Figure 8-6: Tightbacking for Block Preparation**

Kinds of Book Forms	Flat	Round	Flat and Backed	Rounded and Backed
<code>@TightBacking =</code>	<code>"Flat"</code>	<code>"Round"</code>	<code>"FlatBacked"</code>	<code>"RoundBacked"</code>
				

For the rounding and for the backing there are two additional measurement as shown in Figure 8-7.

**Figure 8-7: Rounding and Backing for Block Preparation**

Measurement Attribute	Rounding Way <code>@Rounding= "m"</code>	Backing Way <code>@Backing= "n"</code>
		

### Resource Properties

**Resource Class:** Parameter

**Resource referenced by:**

**Intent Pairing:** BindingIntent

**Example Partition:**

**Input of Processes:** BlockPreparation

**Output of Processes:** —

**Table 8-14: BlockPreparationParams Resource**

Name	Data Type	Description
<i>Backing ?</i>	double	Backing distance in points.
<i>Rounding ?</i>	double	Rounding distance in points.
<i>TightBacking ?</i>	enumeration	<p>Definition of the geometry of the back of the book block.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Flat</i></li> <li><i>FlatBacked</i> – Backing way</li> <li><i>Round</i> – Rounding way</li> <li><i>RoundBacked</i> – Rounding way, backing way</li> </ul>
<i>RegisterRibbon *</i>	refelement	Description of the register ribbons that are included within the book block.

## 8.11 BoxFoldingParams

[New in JDF 1.3](#)

This Resource defines the parameters for folding and gluing blanks to folded flat boxes in a box folder-gluer Device.

### Resource Properties

**Resource Class:** Parameter

**Resource referenced by:**

**Example Partition:****Input of Processes:*****BoxFolding*****Output of Processes:****Table 8-15: BoxFoldingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>BlankDimensionsX</i> ?	DoubleList	X position of folds for an unfolded box beginning from the origin of the coordinate system (left side) increasing from minimum to maximum (expressed in points). See Figure 8-9, “BoxFoldingType Attribute for values of Type00, Type01 and Type02,” on page 531 through Figure 8-12, “BoxFoldingType Attribute for values of Type15 and Type20,” on page 533. The first value of <i>@BlankDimensionsX</i> is the position of the fold marked by X0 in a diagram (e.g., Figure 8-9). The second value of <i>@BlankDimensionsX</i> is the position of the fold marked by X1, and so on. <i>@BlankDimensionsX</i> SHALL NOT be specified unless <i>@BoxFoldingType</i> is also specified.
<i>BlankDimensionsY</i> ?	DoubleList	Y position of folds for of an unfolded box beginning from the origin of the coordinate system (bottom side) increasing from minimum to maximum (expressed in points). See Figure 8-9, “BoxFoldingType Attribute for values of Type00, Type01 and Type02,” on page 531 through Figure 8-12, “BoxFoldingType Attribute for values of Type15 and Type20,” on page 533. The first value of <i>@BlankDimensionsY</i> is the position of the fold marked by Y0 in a diagram (e.g., Figure 8-9). The second value of <i>@BlankDimensionsY</i> is the position of the fold marked by Y2, and so on. <i>@BlankDimensionsY</i> SHALL NOT be specified unless <i>@BoxFoldingType</i> is also present.
<i>BoxFoldingType</i> ?	enumeration	Basic predefined folding types. See the drawings referenced from each defined value below. Each drawing is shown from the print side with the lid at the top. Each type is described with a sequence of <i>BoxFoldAction</i> Elements. The most common sequences (folding types) are predefined, All other are 'special' and SHALL be described in detail. <b>Allowed values are:</b> Type00 – Special type for boxes that are not pre-defined. See Figure 8-9. Type01 – see Figure 8-9. Type02 – see Figure 8-9. Type03 – see Figure 8-10. Type04 – see Figure 8-10. Type10 – see Figure 8-10. Type11 – see Figure 8-11. Type12 – see Figure 8-11. Type13 – see Figure 8-11. Type15 – see Figure 8-12. Type20 – see Figure 8-12.

**Table 8-15: BoxFoldingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
BoxApplication *	element  <a href="#">Deprecated in JDF 1.4</a>	Application work step in a Box folder-gluer. The sequence of BoxFoldAction, BoxApplication and GlueLine Elements defines the sequence of work steps. The first Element is applied first. Application SHOULD be described with a combined <b>Inserting</b> process. <b>Deprecation note:</b> starting with JDF 1.4, a Combined Process that includes the <b>BoxFolding</b> and <b>Inserting</b> Processes replaces <b>BoxApplication</b> .
BoxFoldAction *	element	Individual work step in a Box folder-gluer. The sequence of BoxFoldAction, BoxApplication and GlueLineGlue Elements defines the sequence of work steps. The first Element is applied first.
GlueLine *Glue *	element	Specification of a glue line. The GlueLineGlue is applied to the blank in the coordinate system of the folder gluer at the state after all prior BoxFoldAction and BoxApplication Elements have been applied. The sequence of BoxFoldAction, BoxApplication and GlueLineGlue Elements defines the sequence of work steps. The first Element is applied first.

**8.11.1 Element: BoxApplication**[Deprecated in JDF 1.4](#)

The table defining the deprecated BoxApplication Subelement has been moved to Section P.6.2.1, “BoxApplication” on page 1341.

**8.11.2 Element: BoxFoldAction**

BoxFoldAction describes an action in the folder-gluer that is perpendicular or diagonal to the movement path of the blank.

**Table 8-16: BoxFoldAction Element**

Name	Data Type	Description
FoldIndex	XYPair	Identification of the upper right corner of the flap or fold that is affected by this BoxFoldAction. The first value of the XYPair refers to an indexed fold in @BlankDimensionsX; the second value of the XYPair refers to an indexed fold in @BlankDimensionsY. If either X or Y spans multiple flaps, it SHALL be set to -1.
Action	enumeration	Individual Action in the folder gluer. <b>Allowed values are from:</b> Table 8-17, “Action Attribute Values” on page 529.
GlueLine *	element	Specification of a glue lines needed to glue the Component described in this BoxApplication. The GlueLines are applied to the Component in the coordinate system of the BoxApplication/Component. The GlueLines applied to the blank are specified in BoxFoldingParams/GlueLine.

**— Attribute: Action****Table 8-17: Action Attribute Values (Sheet 1 of 2)**

Value	Description
LongFoldLeftToRight	For a drawing, see Figure 8-8, “Folding examples for some values of BoxFoldAction/@Action,” on page 531.
LongFoldRightToLeft	
LongPreFoldLeftToRight	

**Table 8-17: Action Attribute Values (Sheet 2 of 2)**

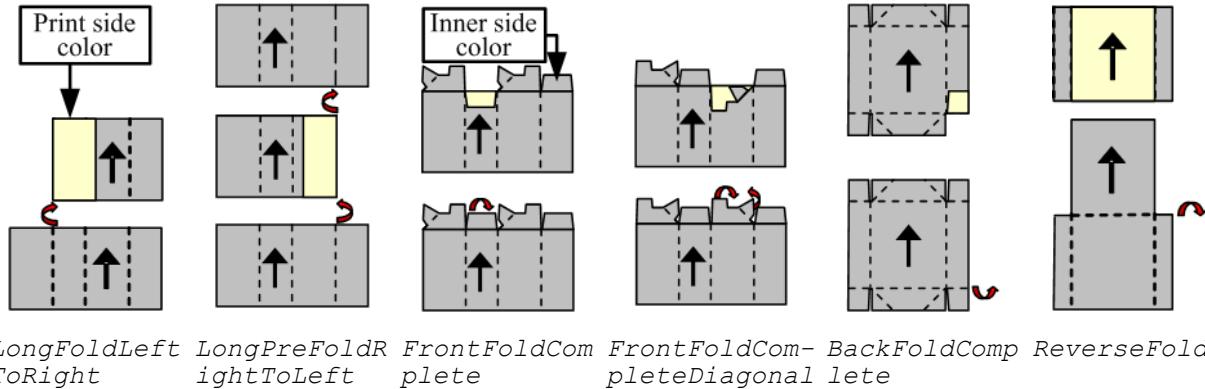
Value	Description
<i>LongPreFoldRightToLeft</i>	For a drawing, see Figure 8-8, “Folding examples for some values of BoxFoldAction/@Action,” on page 531.
<i>FrontFoldComplete</i>	For a drawing, see Figure 8-8, “Folding examples for some values of BoxFoldAction/@Action,” on page 531.
<i>FrontFoldDiagonal</i>	
<i>FrontFoldCompleteDiagonal</i>	For a drawing, see Figure 8-8, “Folding examples for some values of BoxFoldAction/@Action,” on page 531.
<i>BackFoldComplete</i>	For a drawing, see Figure 8-8, “Folding examples for some values of BoxFoldAction/@Action,” on page 531.
<i>BackFoldDiagonal</i>	
<i>BackFoldCompleteDiagonal</i>	
<i>ReverseFold</i>	A “ <i>ReverseFold</i> ” is topologically equivalent to “ <i>FrontFoldDiagonal</i> ” but uses different equipment with other restrictions on Media weight and size and is therefore specified individually. For a drawing, see Figure 8-8, “Folding examples for some values of BoxFoldAction/@Action,” on page 531.
<i>Milling</i>	
<i>Rotate90</i>	90° counter-clockwise rotation
<i>Rotate180</i>	180° rotation
<i>Rotate270</i>	90° clockwise rotation

**Example 8-5: BoxFoldingParams/BoxFoldAction**

For instance, processing a Type01 blank (Figure 8-9, “BoxFoldingType Attribute for values of Type00, Type01 and Type02,” on page 531) has the following actions:

**TBD 2.x Example.**

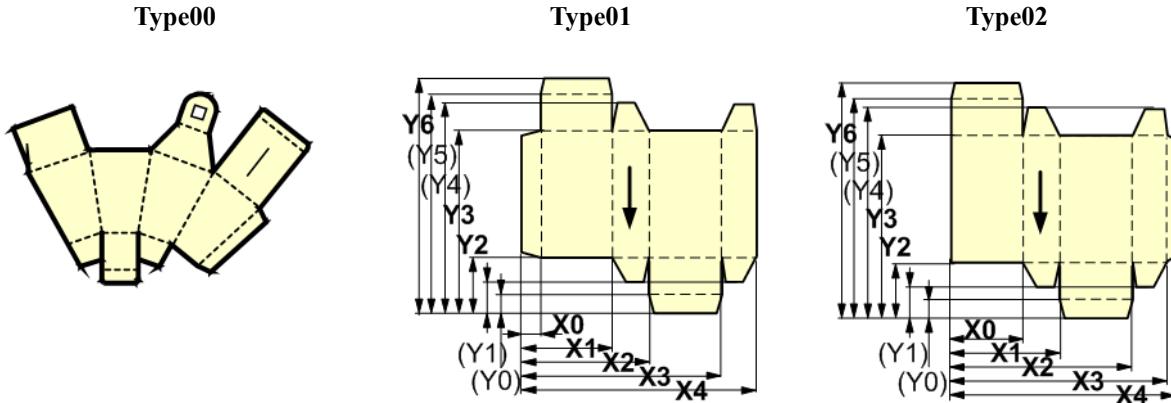
```
<BoxFoldingParams Class="Parameter" ID="BFP000" Status="Available">
  <BoxFoldAction FoldIndex="0 -1" Action="LongPreFoldLeftToRight"/>
  <BoxFoldAction FoldIndex="2 -1" Action="LongPreFoldRightToLeft"/>
  <BoxFoldAction FoldIndex="1 -1" Action="LongFoldLeftToRight"/>
  <BoxFoldAction FoldIndex="3 -1" Action="LongFoldRightToLeft"/>
</BoxFoldingParams>
```

**Figure 8-8: Folding examples for some values of BoxFoldAction/@Action**

*LongFoldLeft LongPreFoldR FrontFoldCom FrontFoldCom- BackFoldComp ReverseFold  
ToRight ightToLeft plete plete pleteDiagonal late*

### Dimensions and Actions for below Figures:

- Shown from print side, lid at the top, Arrow is transport direction in folder-gluer.
- In the folder-gluer the blank box is fed with the print side down.
- From this point of view all folds are made toward the -z axis.
- For front and back folds, pay attention to transport direction

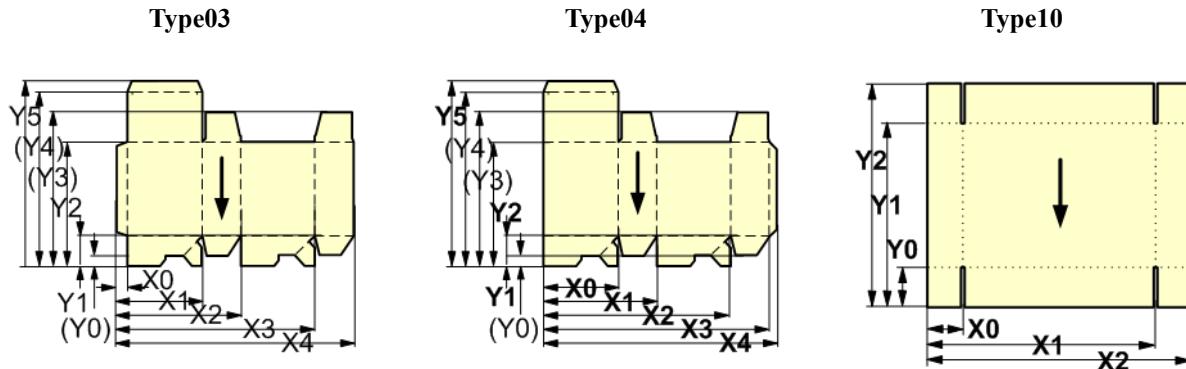
**Figure 8-9: BoxFoldingType Attribute for values of Type00, Type01 and Type02**

Individual shape with customer defined dimensions and actions

X0 LongPreFoldLeftToRight  
X2 LongPreFoldRightToLeft  
X1 LongFoldLeftToRight  
X3 LongFoldRightToLeft

X3 LongPreFoldLeftToRight  
X1 LongPreFoldRightToLeft  
X0 LongFoldLeftToRight  
X2 LongFoldRightToLeft

**Figure 8-10: BoxFoldingType Attribute for values of Type03, Type04 and Type10**

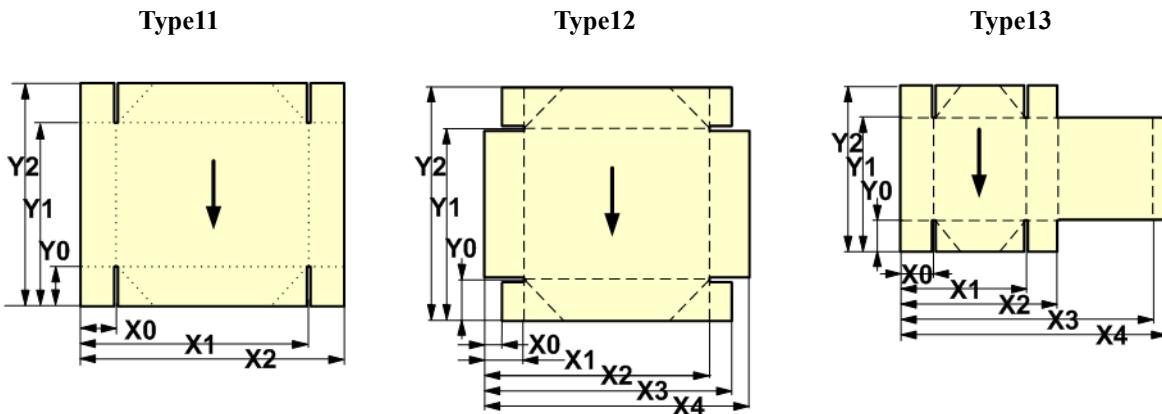


`X0 LongPreFoldLeftToRight`  
`X2 LongPreFoldRightToLeft`  
`X2/Y1: FrontFoldComplete`  
`X4/Y1: FrontFoldComplete`  
`X1/Y1:`  
`FrontFoldCompleteDiagonal`  
`X3/Y1:`  
`FrontFoldCompleteDiagonal`  
`X1 LongFoldLeftToRight`  
`X3 LongFoldRightToLeft`

`X3 LongPreFoldLeftToRight`  
`X1 LongPreFoldRightToLeft`  
`X1/Y1: FrontFoldComplete`  
`X3/Y1: FrontFoldComplete`  
`X0/Y1:`  
`FrontFoldCompleteDiagonal`  
`X2/Y1:`  
`FrontFoldCompleteDiagonal`  
`X0 LongFoldLeftToRight`  
`X2 LongFoldRightToLeft`

`X0 LongPreFoldLeftToRight`  
`X1 LongPreFoldRightToLeft`

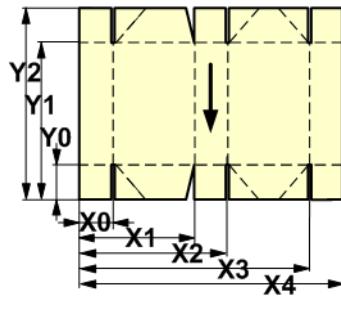
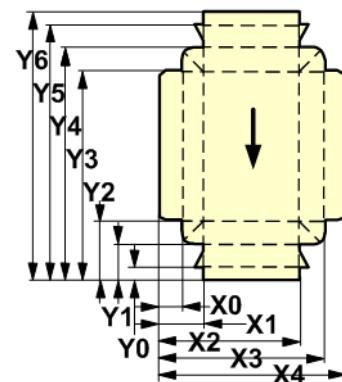
**Figure 8-11: BoxFoldingType Attribute for values of Type 11, Type12 and Type13**



`X0/Y0: FrontFoldComplete`  
`X2/Y0: FrontFoldComplete`  
`X0/Y2: BackFoldComplete`  
`X2/Y2: BackFoldComplete`  
`X1/Y0:`  
`FrontFoldCompleteDiagonal`  
`X1/Y2:`  
`BackFoldCompleteDiagonal`  
`X0 LongFoldLeftToRight`  
`X2 LongFoldRightToLeft`

`X1/Y0:`  
`FrontFoldCompleteDiagonal`  
`X1/Y2:`  
`BackFoldCompleteDiagonal`  
`X0 LongFoldLeftToRight`  
`X2 LongFoldRightToLeft`

`X0/Y0: FrontFoldComplete`  
`X2/Y0: FrontFoldComplete`  
`X0/Y2: BackFoldComplete`  
`X2/Y2: BackFoldComplete`  
`X1/Y0:`  
`FrontFoldCompleteDiagonal`  
`X1/Y2:`  
`BackFoldCompleteDiagonal`  
`X0 LongFoldLeftToRight`  
`X2 LongFoldRightToLeft`

**Figure 8-12: BoxFoldingType Attribute for values of Type15 and Type20****Type15****Type20**X0/Y0: *FrontFoldComplete*

(continued from previous column)

X2/Y0 *FrontFoldComplete*X3/Y0 *FrontFoldCompleteDiagonal*X4/Y0 *FrontFoldComplete*X1/Y2 *BackFoldCompleteDiagonal*X0/Y2 *BackFoldComplete*X3/Y2 *BackFoldCompleteDiagonal*X2/Y2 *BackFoldComplete*X0 *LongFoldLeftToRight*X4/Y2 *BackFoldComplete*X3 *LongFoldRightToLeft*

X1/Y0

X2 *LongFoldRightToLeft**FrontFoldCompleteDiagonal*X0 *LongFoldLeftToRight*X3 *LongFoldRightToLeft*

## 8.12 BoxPackingParams

New in JDF 1.1

This Resource defines the parameters for packing a box of components. Details of the box used for **BoxPacking** can be found in the **Component (Box)** Resource that is also an input of the **BoxPacking** Process.

### Resource Properties

**Resource Class:**

Parameter

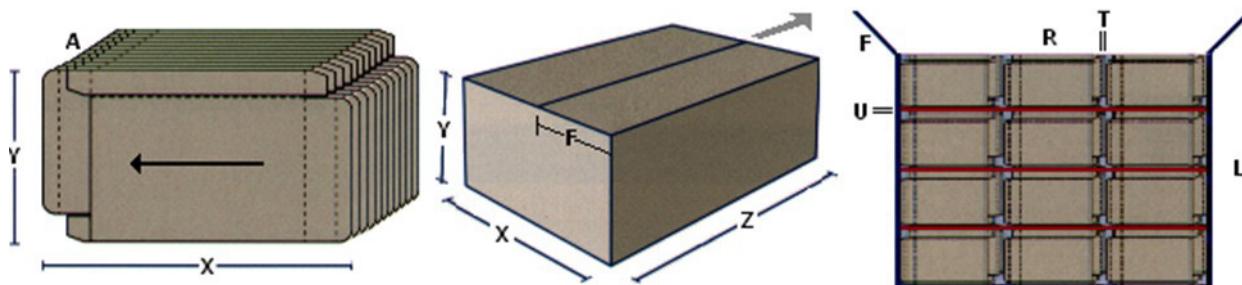
**Resource referenced by:****Intent Pairing:****PackingIntent****Example Partition:****Input of Processes:****BoxPacking****Output of Processes:**

**Table 8-18: BoxPackingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>BoxType</i> ?  <a href="#">New in JDF 1.3</a>	enumeration	<p><i>@BoxType</i> specifies the general category of the package to be packed.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Box</i> – Boxes are convenience packaging and are not envisioned to be protection for shipping.</li> <li><i>Carton</i> – Cartons envisioned to be protection for shipping.</li> <li><i>Envelope</i> – Envelopes are packages that are envisioned for shipping.</li> <li><i>Roll</i> – Rolls are cylinder shaped cartons that are envisioned for shipping.</li> </ul>
<i>BoxTypeDetails</i> ?  <a href="#">New in JDF 1.4</a>	string	<p>Additional details of <i>@BoxType</i>. <i>@BoxType</i> MAY be a site specific identifier.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>NeutralCarton</i></li> <li><i>BrandedCarton</i></li> <li><i>EasterBunnyBox</i></li> </ul>
<i>ComponentsPerRow</i> ?  <a href="#">New in JDF 1.3</a>	integer	<b>Components</b> per row in the shipping box, as illustrated by A in Figure 8-13. If the <b>Components</b> represent <b>Bundles</b> , the number of <b>Bundles</b> is specified.
<i>Columns</i> ?  <a href="#">New in JDF 1.4</a>	integer	Columns per shipping box. Columns are in the 3rd Dimension in Figure 8-13, and are thus not illustrated.
<i>ComponentOrientation</i> ?  <a href="#">New in JDF 1.4</a>	enumeration	<p>Defines the coordinate pair that is facing the bottom of the box, defining the horizontal plane.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>XY</i> – Axis X and Y</li> <li><i>XZ</i> – Axis X and Z</li> <li><i>YZ</i> – Axis Y and Z</li> </ul>
<i>Copies</i> ?  <a href="#">New in JDF 1.4</a>	integer	Number of copies in the box. <i>@Copies</i> SHALL NOT be specified if <i>@MaxWeight</i> is present.
<i>FillMaterial</i> ?  <a href="#">New in JDF 1.3</a>	NMTOKEN	<p>Material to fill boxes that are not completely filled, as illustrated by F in Figure 8-13.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Any</i> – Explicit request for system specified filling.</li> <li><i>BlisterPack</i></li> <li><i>None</i> – Explicit request for no filling.</li> <li><i>Paper</i></li> <li><i>Styrofoam</i></li> </ul>
<i>Layers</i> ?  <a href="#">New in JDF 1.3</a>	integer	Layers per shipping box, as illustrated by L in Figure 8-13.
<i>MaxWeight</i> ?  <a href="#">New in JDF 1.4</a>	double	Maximum weight of a packed box in grams. <i>@MaxWeight</i> SHALL NOT be specified if <i>@Copies</i> is present.

**Table 8-18: BoxPackingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>Pattern</i> ?	stringN-MTOKEN	Name of the box packing pattern. Used to store a predefined pattern that defines the layers and positioning of individual component in the box or carton.
<i>Rows</i> ? <a href="#">New in JDF 1.3</a>	integer	Rows per shipping box, as illustrated by R in Figure 8-13.
<i>Ties</i> ? <a href="#">New in JDF 1.3</a>	IntegerList	Number of tie Sheets at each row. The first value is outside the first row, the next value between the first and second row and so forth. If more rows than values are specified, counting restarts at the 0 position. If fewer layers than values are specified, all tie Sheets that are not adjacent to a row are ignored.
<i>UnderLays</i> ? <a href="#">New in JDF 1.3</a>	IntegerList	Number of underlay Sheets at each layer, as illustrated by U in Figure 8-13. The first value is underneath the bottom layer, the next value above the first layer and so forth. If more layers than values are specified, counting restarts at the 0 position. If less layers than values are specified, all underlay Sheets that are not adjacent to a layer are ignored.

**Figure 8-13: Box packing**

## 8.13 BufferParams

[New in JDF 1.1](#)

This Resource provides controls for **Buffer** Process.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	Buffer
<b>Output of Processes:</b>	—

**Table 8-19: BufferParams Resource**

Name	Data Type	Description
<i>MinimumWait</i> ?	duration	Minimum amount of time that an individual Resource SHALL be buffered.

## 8.14 Bundle

[New in JDF 1.1](#)

Bundles are used to describe various kinds of sets of **Bundles**. Note that **Bundle** Resources **can MAY** be created by many press or postpress Processes and not only **Bundling**.

### Resource Properties

<b>Resource Class:</b>	Quantity
<b>Resource referenced by:</b>	Bundle, <b>PalletizingParams</b>
<b>Example Partition:</b>	
<b>Input of Processes:</b>	—
<b>Output of Processes:</b>	—

**Table 8-20: Bundle Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>BundleType</i> ?= <a href="#">"Stack"</a> <a href="#">Modified in JDF 1.5</a>	enumeration	<b>Allowed values are:</b> <i>BoundSet</i> – Stack of components that are bound together. <i>Box</i> <i>Carton</i> <i>CollectedStack</i> – Components collected on a saddle, result of <b>Collecting</b> Process <i>CompensatedStack</i> – Loose stack of compensated components <i>Pallet</i> <i>Roll</i> – Rolled components on a print Roll. <i>Sheet</i> – Multiple individual items printed onto one Sheet. <i>SheetStream</i> – Stream of individual sheets that are continuously moved from one device to another (e.g., in an inline digital finishing device). <a href="#">New in JDF 1.5</a> <i>Stack</i> – Loose stack of equally stacked components. <i>StrappedStack</i> – Strapped stack of equally stacked components. <i>StrappedCompensatedStack</i> – Strapped stack of compensated components. <i>WrappedBundle</i>
<i>FolioCount</i> ?	integer	Total amount of individual finished pages that this bundle contains. If not specified, it SHALL be calculated from the individual <b>BundleItem</b> Elements.
<i>ReaderPageCount</i> ?	integer	Total amount of individual Reader Pages that this bundle contains. If not specified, it SHALL be calculated from the individual <b>BundleItem</b> Elements.
<i>SheetCount</i> ? <a href="#">New in JDF 1.5</a>	integer	Total number of physical sheets that this <b>Bundle</b> contains.

**Table 8-20: Bundle Resource (Sheet 2 of 2)**

Name	Data Type	Description
TotalAmount ?	integer	Total amount of individual products that this bundle contains. If the bundle contains one or more <b>Bundle</b> [xecontains (@ComponentType, "FinalProduct")], @TotalAmount refers to the number of final products. Note that this is neither always the next level of BundleItem nor the lowest level of BundleItem. For instance, the next level MAY be the boxes in a carton, whereas the lowest level MAY be the Sheets comprising the brochure. The correct number in this example would be the number of Brochures. If not specified, it SHALL be calculated from the individual BundleItem Elements.
BundleItem *	element	References to the individual items that form this <b>Bundle</b> .

#### 8.14.1 Element: **BundleItem**

A **Bundle** is described as a set of **BundleItem** Elements. Since **BundleItem** elements reference **Bundle** resources which themselves can reference further **Bundle** resources, the structure is recursive.

**Table 8-21: BundleItem Element**

Name	Data Type	Description
Amount	integer	Number of this type of items.
BundleRef	IDREF	Reference to a <b>Bundle</b> that is part of this <b>Bundle</b> .
ItemName ? <i>New in JDF 1.2</i>	NMTOKEN	Name of the bundle item. Used for referencing individual <b>BundleItem</b> Elements in a <b>Bundle</b> .
Orientation ?	Orientation	Named Orientation of the <b>Bundle</b> respective to the <b>Bundle</b> coordinate system. For details, see Table 2-4, “Matrices and Orientation values for describing the orientation of a Component” on page 39. At most one of @Orientation or @Transformation SHALL be specified.
Transformation ?	matrix	Orientation of the <b>Bundle</b> respective to the <b>Bundle</b> coordinate system. At most one of @Orientation or @Transformation SHALL be specified.
Bundle	refelement	Reference to a <b>Bundle</b> that is part of this <b>Bundle</b> .

#### Example 8-6: **Bundle**: Boxing and Palletizing

The following example code shows a **JDF** an **XJDF** that describes boxing and palletizing for 4200 books. The appropriate **Bundle** Elements have orange tags and magenta Attributes. The Resources have not yet been completely filled in.

##### TBD 2.x Example

```
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="Bundle" Status="Waiting"
      Type="ProcessGroup" JobPartID="ID20" Version="1.4">
  <!-- The BoxPacking Process consumes the thing to pack and the boxes-->
  <!-- The BoxPacking Process creates packed boxes -->
  <JDF ID="n0235" Status="Waiting" Type="BoxPacking" JobPartID="ID21" >
    <ResourceLinkPool>
      <ComponentLink ProcessUsage="Box" Usage="Input" rRef="BoxID"/>
      <BoxPackingParamsLink Usage="Input" rRef="BoxParamsID"/>
      <ComponentLink Usage="Input" rRef="ComponentID"/>
      <ComponentLink Usage="Output" rRef="PackedBoxID"/>
    </ResourceLinkPool>
    <!-- The BoxPacking Process has the following local resources -->
    <ResourcePool>
      <BoxPackingParams Class="Parameter" ID="BoxParamsID"
                        Status="Available"/>
```

```

<Component Amount="100" Class="Quantity" ID="BoxID"
            Status="Available" ComponentType="Sheet"/>
</ResourcePool>
</JDF>
<ResourcePool>
    <!-- This Component describes a Box with 42 Books -->
    <Component Amount="100" Class="Quantity" ID="PackedBoxID"
                Status="Unavailable" ComponentType="Sheet" >
        <Bundle BundleType="Box" TotalAmount="42">
            <BundleItem Amount="42">
                <ComponentRef rRef="ComponentID"/>
            </BundleItem>
        </Bundle>
    </Component>
    <Component Amount="4200" Class="Quantity" ID="ComponentID"
                Status="Available" ComponentType="Sheet" />
        <!-- This Component describes the contents of the pallet: 100
            Boxes w. 42 Books -->
        <Component Amount="10" Class="Quantity" ID="palletContentsID"
                    Status="Unavailable" ComponentType="Sheet" >
            <Bundle BundleType="Pallet" TotalAmount="420">
                <BundleItem Amount="10">
                    <ComponentRef rRef="PackedBoxID"/>
                </BundleItem>
            </Bundle>
        </Component>
    </ResourcePool>
<JDF ID="n0239" Status="Waiting" Type="Palletizing" JobPartID="ID22">
    <ResourceLinkPool>
        <ComponentLink Usage="Input" rRef="PackedBoxID"/>
        <PalletLink Usage="Input" rRef="palletID"/>
        <PalletizingParamsLink Usage="Input" rRef="palletParamsID"/>
        <ComponentLink Usage="Output" rRef="palletContentsID"/>
    </ResourceLinkPool>
    <ResourcePool>
        <Pallet Amount="10" Class="Consumable" ID="palletID"
               Status="Available" PalletType="Euro800x600"/>
        <PalletizingParams Class="Parameter" ID="palletParamsID"
                           Status="Available" />
    </ResourcePool>
</JDF>
</JDF>

```

## 8.15 BundlingParams

[New in JDF 1.2](#)

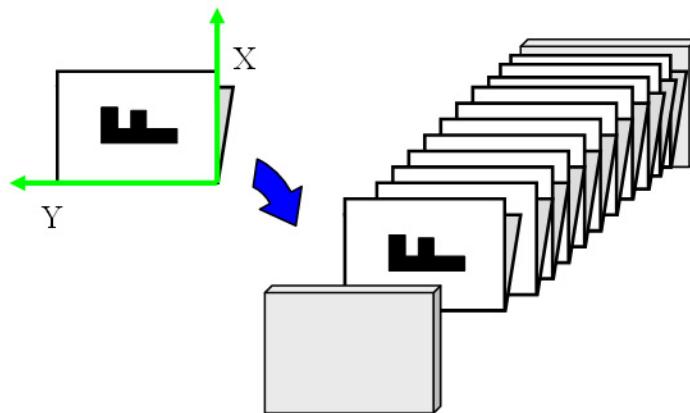
**BundlingParams** describes the details of a **Bundling** Process.

### Resource Properties

Resource Class:	Parameter
Resource references:	—
Example Partition:	—
Input of Processes:	<b>Bundling</b>
Output of Processes:	—

**Table 8-22: BundlingParams Resource**

Name	Data Type	Description
<i>Copies</i> ?	integer	Number of <i>copies products</i> within a bundle. <i>@Copies</i> SHALL NOT be specified if <i>@Length</i> is present.
<i>Length</i> ?	double	Length of a bundle. <i>@Length</i> SHALL NOT be specified if <i>@Copies</i> is present.

**Figure 8-14: BundlingParams Coordinate System**

## 8.16 ByteMap

This Resource specifies the structure of bytemaps produced by various Processes within a JDF system. A **ByteMap** represents a raster of image data. This data MAY have multiple bits per pixel, MAY represent a varying set of color planes, and MAY be interleaved. A Bitmap is a special case of a **ByteMap** in which each pixel is represented by a single bit per color.

Personalized printing requires that certain regions of a given page be dynamically replaced. The OPTIONAL mask associated with each band of data allows for omitting certain pixels from the base image represented by the **ByteMap** so that they can be replaced.

### Resource Properties

Resource Class:	Parameter
Resource references:	<b>RunList</b>
Example Partition:	
Input of Processes:	
Output of Processes:	

**Table 8-23: ByteMap Resource**

Name	Data Type	Description
<i>BandOrdering</i> ?  <a href="#">New in JDF 1.4</a>	enumeration	Identifies the precedence given when ordering the produced bands. {@BandOrdering} is REQUIRED for non-interleaved data and SHALL be ignored for interleaved data if specified. <b>Allowed values are:</b> <i>BandMajor</i> – The position of the bands on the page is prioritized over the color. <i>ColorMajor</i> – All bands of a single color are played in order before progressing to the next plane. This is only possible with non-interleaved data.
<i>ElementType</i> ?  <a href="#">New in JDF 1.4</a>	enumeration	<b>Allowed values are from:</b> Table 8-179, “ElementType Attribute Values” on page 753. <b>Note:</b> values are the same as <b>LayoutElement@ElementType</b> .
<i>FrameHeight</i> ?  <a href="#">Modified in JDF 1.4</a>	integer	Height of the overall image that MAY be broken into multiple bands. <b>Modification note:</b> starting with JDF 1.4, {@FrameHeight} is optional.
<i>FrameWidth</i> ?  <a href="#">Modified in JDF 1.4</a>	integer	Width of overall image that MAY be broken into multiple columns. <b>Modification note:</b> starting with JDF 1.4, {@FrameWidth} is optional.
<i>Halftoned</i> ?  <a href="#">Modified in JDF 1.4</a>	boolean	Indicates whether or not the data has been halftoned. <b>Modification note:</b> starting with JDF 1.4, {@Halftoned} is optional.
<i>Interleaved</i> ?  <a href="#">Modified in JDF 1.4</a>	boolean	If “true”, the data are interleaved or chunky. Otherwise the data are non-interleaved or planar. <b>Modification note:</b> starting with JDF 1.4, {@Interleaved} is optional.
<i>PixelSkip</i> ?	integer	Number of bits to skip between pixels of interleaved data.
<i>Resolution</i> ?  <a href="#">Modified in JDF 1.4</a>	XYPair	Output resolution. <b>Modification note:</b> starting with JDF 1.4, {@Resolution} is optional.
<i>Band</i> *  <a href="#">Modified in JDF 1.4</a>	element	Array of bands containing raster data. <b>Modification note:</b> starting with JDF 1.4, Band is optional.
<i>ColorPool</i> ?  <i>ColorRef</i> ? <a href="#">New in JDF 1.2</a>	refelementI-DREF	Reference to a <b>ResourceSet[@Name="Color"]</b> . Details of the colors represented in this <b>ByteMap</b> .
<i>FileSpec</i> ( <i>RasterFileLocation</i> )?	refelement	A <b>FileSpec</b> Resource pointing to a location where the raster is stored or is to be stored shortly.
<i>PixelColorant</i> *  <a href="#">Modified in JDF 1.4</a>	element	Ordered list containing information about which colorants are represented and how many bits per pixel are used. <b>Modification note:</b> starting with JDF 1.4, PixelColorant is optional.

**8.16.1 Element: Band****Table 8-24: Band Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Data</i> ?  <a href="#">Modified in JDF 1.4</a>	URL	Actual bytes of data. <b>Modification note:</b> starting with JDF 1.4, {@Data} is optional.

**Table 8-24: Band Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Height</i> ? <a href="#">Modified in JDF 1.4</a>	integer	Height in pixels of the band. <b>Modification note:</b> starting with JDF 1.4, @ <i>Height</i> is optional.
<i>Mask</i> ?	URL	1-bit mask of raster data indicating which bits of the band data to use. The mask dimensions and resolution SHALL be equivalent to the contents of the band itself.
<i>WasMarked</i> ? <a href="#">Modified in JDF 1.4</a>	boolean	Indicates whether any rendering marks were made in this band. This Attribute allows a band to be skipped if no marks were made in the band. <b>Modification note:</b> starting with JDF 1.4, @ <i>WasMarked</i> is optional.
<i>Width</i> ? <a href="#">Modified in JDF 1.4</a>	integer	Width in pixels of the band <b>Modification note:</b> starting with JDF 1.4, @ <i>Width</i> is optional.

### 8.16.2 Element: **PixelColorant**

**Table 8-25: PixelColorant Element**

Name	Data Type	Description
<i>ColorantName</i>	string	Name of colorant.
<i>PixelDepth</i>	integer	Number of bits per pixel for each colorant.

## 8.17 CaseMakingParams

[New in JDF 1.1](#)

This Resource describes the settings of a **CaseMaking** Process.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	BindingIntent
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	<i>CaseMaking</i>
<b>Output of Processes:</b>	—

Figure 8-15: CaseMakingParams

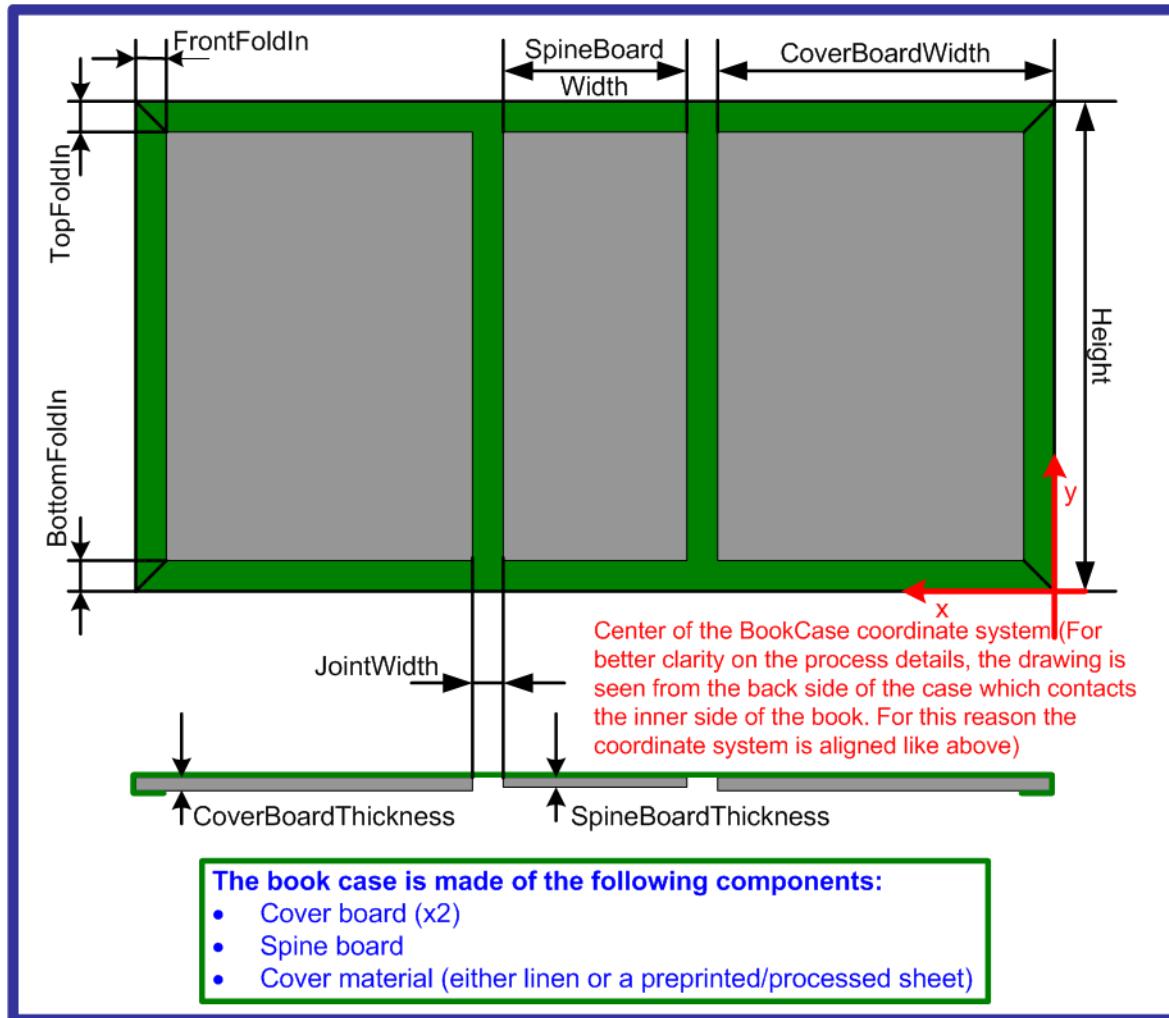


Table 8-26: CaseMakingParams Resource (Sheet 1 of 2)

Name	Data Type	Description
<i>BottomFoldIn</i> ?	double	Defines the width of the part of the CoverMaterial on the lower edge inside of the case. If not specified, defaults to @ <i>TopFoldIn</i> .
<i>CornerType</i> ?	NMTOKEN	Method of wrapping the corners of the cover material around the corners of the board. <b>Values include:</b> <i>LibraryCorner</i> – The American Library Corner style.
<i>CoverWidth</i> ?	double	Width of the cover cardboard in points.
<i>FrontFoldIn</i> ?	double	Defines the width of the part of the cover material on the front edges inside of the case.
<i>Height</i> ?	double	Height of the book case, in points.
<i>JointWidth</i> ?	double	Width of the joint as seen when laying the cardboard on the cover material, in points.

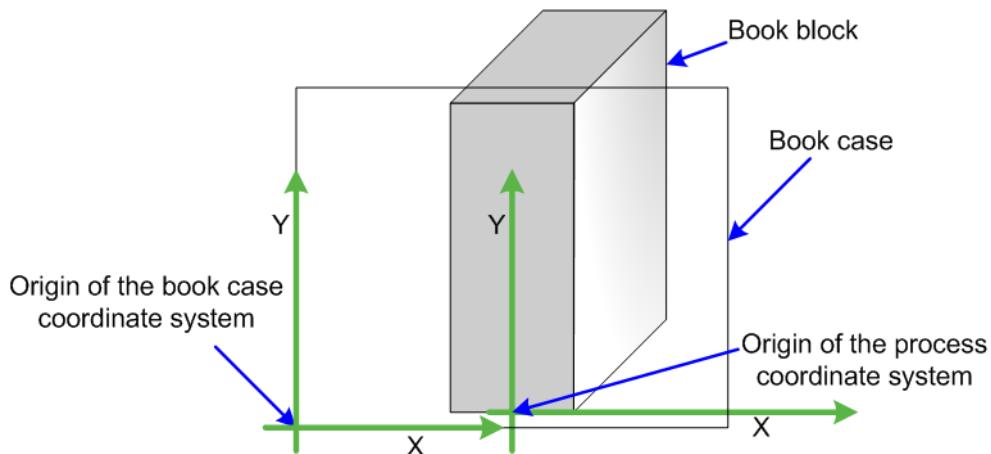
**Table 8-26: CaseMakingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>SpineWidth ?</i>	double	Width of the spine cardboard, in points.
<i>TopFoldIn ?</i>	double	Defines the width of the cover material on the top edge inside of the case.
<i>GlueLine ?Glue ?</i>	element	Details of the glue. Because the glue is applied to the whole back side of the cover material, <i>GlueLineGlue/@AreaGlue</i> SHALL be set to "true".

## 8.18 CasingInParams

[New in JDF 1.1](#)

This Resource describes the settings of a **CasingIn** Process. The geometry is always centered See Figure 8-16.

**Figure 8-16: Parameters and coordinate system for CasingIn**

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

—

**Intent Pairing:**

BindingIntent

**Example Partition:**

—

**Input of Processes:**

CasingIn

**Output of Processes:**

—

**Table 8-27: CasingInParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>CaseRadius ?</i>	double	Inner radius of the case spine rounding. If not specified, no rounding of the case spine is performed.
<i>CoverBoardWidth ?</i> <a href="#">New in JDF 1.5</a>	double	Width of the CoverBoard. Note that Height and total Case Dimensions are specified in the <b>Component(Case)</b> of the <b>CasingIn</b> process. For details of <i>@CoverBoardWidth</i> , see also Figure 8-15, "CaseMakingParams," on page 542.

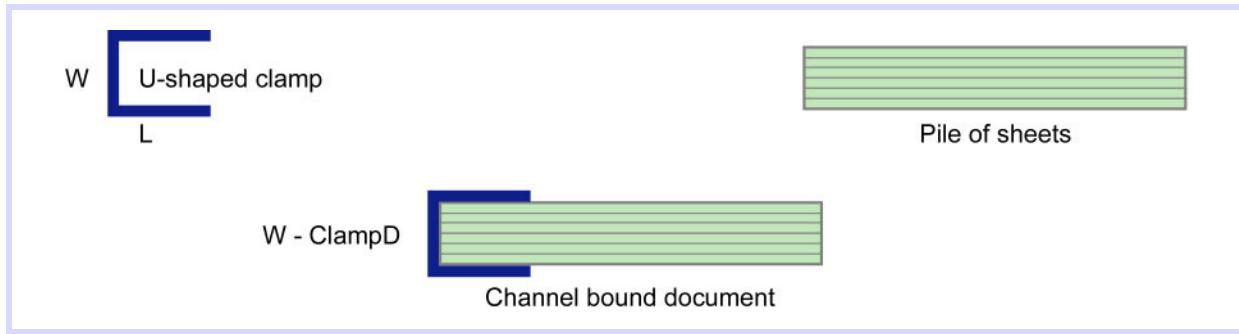
**Table 8-27: CasingInParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>SpineBoardWidth</i> ? <a href="#">New in JDF 1.5</a>	double	Width of the SpineBoard. Note that Height and total Case Dimensions are specified in the <b>Component</b> (Case) of the <b>CasingIn</b> process. For details of @ <i>SpineBoardWidth</i> , see also Figure 8-15, “CaseMakingParams,” on page 542.
<b>GlueApplication</b> * <b>Glue</b> * <a href="#">New in JDF 1.4</a>	refelement element	Properties of the glue to attach the case.
<i>GlueLine</i> + <a href="#">Deprecated in JDF 1.4</a>	element	Properties of the glue used. <b>Deprecation note:</b> starting with JDF 1.4, use <b>GlueApplication</b> .

## 8.19 ChannelBindingParams

This Resource describes the details of the **ChannelBinding** Process.

Figure 8-17 depicts the **ChannelBinding** Process.

**Figure 8-17: Parameters used for channel binding**

The symbols *W*, *L* and *ClampD* of Figure 8-17 are described by the Attributes *@ClampD* and *@ClampSize* of the table below.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	
Intent Pairing:	<b>BindingIntent</b>
Example Partition:	
Input of Processes:	<b>ChannelBinding</b>
Output of Processes:	

**Table 8-28: ChannelBindingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>Brand</i> ?	string	The name of the clamp (or preassembled cover with clamp) manufacturer and the name of the specific item.
<i>ClampColor</i> ?	NamedColor	Determines the color of the clamp/cover. If @ <i>ClampSystem</i> = "true", then the color of the cover is also meant.
<i>ClampColorDetails</i> ? <a href="#">New in JDF 1.4</a>	string	A more specific, specialized or site-defined name for the color. If @ <i>ClampColorDetails</i> is supplied, @ <i>ClampColor</i> SHOULD also be supplied.

**Table 8-28: ChannelBindingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>ClampD</i> ?	double	The distance of the clamp that was “pressed away” (see Figure 8-17). Parameters used for channel binding).
<i>ClampSize</i> ?	shape	The shape size of the clamp. The first number of the shape data type corresponds to the clamp width W (see Figure 8-17) which is determined by the final height of the block of Sheets to be bound. The second number corresponds to the length L (see Figure 8-17). The third corresponds to the spine length (not visible in Figure 8-17). The spine length is perpendicular on the paper plane.
<i>ClampSystem</i> = “ <i>false</i> ”	boolean	If “ <i>true</i> ” the clamp is inside of a preassembled cover.

## 8.20 CoilBindingParams

This Resource describes the details of the **CoilBinding** Process.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Intent Pairing:	<b>BindingIntent</b>
Example Partition:	—
Input of Processes:	<b>CoilBinding</b>
Output of Processes:	—

**Table 8-29: CoilBindingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>Brand</i> ?	string	The name of the coil manufacturer and the name of the specific item.
<i>Color</i> ?	NamedColor	Determines the color of the coil.
<i>ColorDetails</i> ? <i>New in JDF 1.4</i>	string	A more specific, specialized or site-defined name for the color. If <i>@ColorDetails</i> is supplied, <i>@Color</i> SHOULD also be supplied.
<i>Diameter</i> ?	double	The coil diameter to be produced is determined by the height of the block of Sheets to be bound.
<i>Material</i> ?	enumeration	The material used for forming the coil binding. <b>Allowed values are:</b> <i>LaqueredSteel</i> <i>NylonCoatedSteel</i> <i>PVC</i> <i>TinnedSteel</i> <i>ZincsSteel</i>
<i>Shift</i> ? <i>Deprecated in JDF 1.2</i>	double	Amount of vertical shift that occurs as a result of the coil action while opening the document. It is determined by the distance between the holes. In JDF 1.2 and beyond, use the value implied by <b>HoleMakingParams/@HoleType</b> .
<i>Thickness</i> ?	double	The thickness of the coil.

**Table 8-29: CoilBindingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<code>Tucked ?= "false"</code>	boolean	If "true", the ends of the coils are "tucked in".
<code>HoleMakingParams ?</code>	refelement	Details of the holes in <i>CoilBinding</i> .
New in JDF 1.2		

## 8.21 CollectingParams

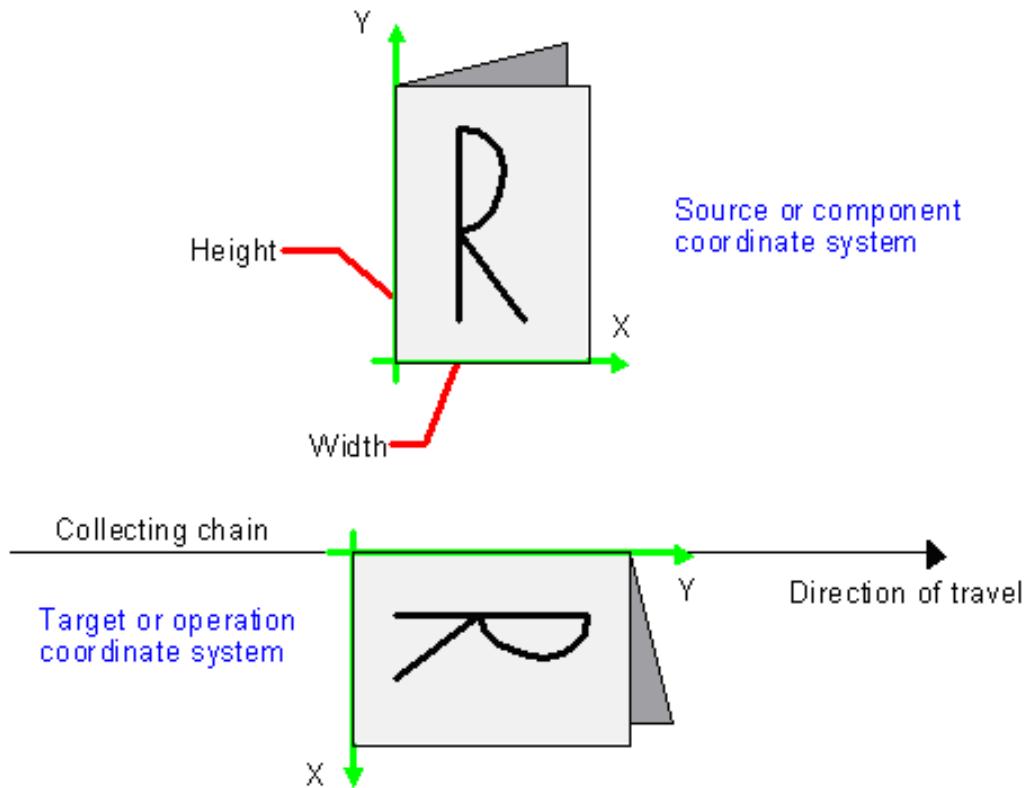
The *Collecting* Process needs no special Attributes. However, this Resource is provided as a container for extensions of the *Collecting* Process.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Example Partition:	—
Input of Processes:	<i>Collecting</i>
Output of Processes:	—

**Table 8-30: CollectingParams Resource**

Name	Data Type	Description

**Figure 8-18: Coordinate systems used for collecting**

## 8.22 Color

Color describes the details of spot color inks, process color inks and any other coating, for instance varnish or gloss coating. Spot colors are named colors that can either be separated or converted to process colors. It is important to know the neutral density of the colorant for trapping and, in many cases, the `@Lab` values for representing them on screen. If you know the `@Lab` value, you can calculate the neutral density. When representing colors on screen, a conversion to process colors SHALL be defined. This conversion is a simple linear interpolation between the `@CMYK` value of the 100% spot color and its tint. At most one `ResourceSet[@Name="Color"]` SHALL be specified in one XJDF instance. This Color ResourceSet summarizes the properties of all colorants that are used in the XJDF.

A color is represented by a `Color` Element. It has a REQUIRED `@Name` Attribute, which represents the name of either a spot color or a process color. When Certification has been used in `ElementColorParams` and/or in `ColorantControl` to clean up string names of spot colors, the resolved, not the uncorrected duplicate, `Certification/@ReplacementColorantName` spot color name SHALL match `Color/@Name`. The four names that are reserved for representing process CMYK color names are "Cyan", "Magenta", "Yellow" and "Black". Every colorant MAY have a `@Lab` and/or `@CMYK` color value. If both are specified and a system is capable of interpreting both values, the `@Lab` value overrides the `@CMYK` definition, unless the target Device is compatible with CMYK (i.e., `ColorantControl/@ProcessColorModel = "DeviceCMYK"`). In this case the CMYK value has precedence.

The `@Lab` value represents the  $L, a, b$  readings of the ink on certain media. This means that spot inks printed on three different kinds of stocks have different `@Lab` values. Pantone books, for example, provide `@Lab` values for three kinds of paper: "Coated" (not necessarily glossy), "Matte" and "Uncoated". Thus a color of ink SHOULD identify the media for which the Color is specified. CMYK colors are used to approximate spot colors when they are not separated. This conversion can be done by a color management system, or there can be fixed CMYK representation defined by color books such as Pantone.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	<code>ColorPool</code> , <code>LayoutPreparationParams/PageCell</code>
<b>Intent Pairing:</b>	<code>ColorIntent</code>
<b>Example Partition:</b>	
<b>Input of Processes:</b>	—
<b>Output of Processes:</b>	—

Table 8-31: Color Resource (Sheet 1 of 6)

Name	Data Type	Description
<code>ActualColorName</code> ? <a href="#">New in JDF 1.3</a>	string	Actual name of the color in the PDL. <code>@ActualColorName</code> SHOULD be used to identify the color. If not specified, defaults to the value of <code>@Name</code> .
<code>CMYK</code> ? <a href="#">Modified in JDF 1.2</a>	CMYKColor	CMYK value of the 100% tint value of the colorant. Although OPTIONAL <code>@CMYK</code> NEED NOT be specified, it is highly RECOMMENDED that this value be filled when the colorant is a spot colorant (i.e., not part of the <code>@ProcessColorModel</code> ). This preferred CMYK MAY be associated with an ICC source profile defined in the <code>FileSpec</code> Resource with a <code>@ResourceUsage = "ColorProfile"</code> when the target CMYK is different from the PDL CMYK.

**Table 8-31: Color Resource (Sheet 2 of 6)**

Name	Data Type	Description
<i>ColorBook ?</i> <a href="#">Modified in JDF 1.2</a>	string	<p>Definition of the color identification book name that is used to represent this color. The color book name SHALL match the name defined by the color book vendor</p> <p><b>Values include:</b></p> <p><i>CIP4 ColorBook Uncoated Grade 5</i>  <i>PANTONE C – an example</i>  <i>PANTONE C – an example</i></p> <p><i>PlaceHolder</i> – "PlaceHolder" is a special token that indicates that the <b>Color/@Name</b> is not a real color but a place holder like 'Spot1' that SHALL be resolved when the content arrives. <a href="#">New in JDF 1.3</a></p> <p><b>Modification note:</b> starting with JDF 1.2, the data type changes from NMTOKEN to string.</p>
<i>ColorBookEntry ?</i> <a href="#">Modified in JDF 1.2</a>	string	Definition of the <b>Color</b> within the standard specified by <b>@ColorBook</b> . This entry SHALL exactly match the color book entry as defined by the <b>@ColorBook</b> specified vendor, including capitalization and media type extension. When using ICC Profiles, this maps to the NCL2 value of a namedColorType tag of an ICC color profile. This entry is used to map from the <b>JDF XJDF Color</b> to an ICC namedColorType tag.
<i>ColorBookPrefix ?</i>	string	Definition of the name prefix of the color book entry within a named ICC profile. This entry is used to map from the <b>JDF XJDF Color</b> to an ICC namedColorType tag.
<i>ColorBookSuffix ?</i>	string	Definition of the name suffix of the color book entry within a named ICC profile. This entry is used to map from the <b>JDF XJDF Color</b> to an ICC namedColorType tag.
<i>ColorDetails ?</i> <a href="#">New in JDF 1.4</a>	string	A more specific, specialized or site-defined name for the color. If <b>@ColorDetails</b> is supplied, <b>@ColorName</b> SHOULD also be supplied.
<i>ColorName ?</i> <a href="#">New in JDF 1.1</a>	NamedColor	<p>Mapping to a color name.</p> <p><b>Allowed values are from:</b> Table A-3, "NamedColor Enumeration Values" on page 1125.</p>

**Table 8-31: Color Resource (Sheet 3 of 6)**

Name	Data Type	Description
<i>ColorType</i> ? <a href="#">Modified in JDF 1.2</a>	enumeration	<p>A name that characterizes the colorant.</p> <p><b>Allowed values are:</b></p> <p><i>DieLine</i> – Marks made with colorants of this type are ignored for trapping. <b>Trapping</b> Processes need not generate a color plane for this colorant.</p> <p>"<i>DieLine</i>" can be used for auxiliary process separations. "<i>DieLine</i>" marks will generally appear on proof output but will not be marked on final output (e.g., plates). Note that the <b>ColorantControl</b> Resource SHALL be correctly set up for the RIP and that <i>@ColorType</i> = "<i>DieLine</i>" does not implicitly remove the "<i>DieLine</i>" separation from final output.</p> <p><i>Normal</i> – Marks made with colorants of this type, marks covered by colorants of this type, and marks on top of colorants of this type are trapped.</p> <p><i>Opaque</i> – Marks covered by colorants of this type are ignored for trapping. "<i>Opaque</i>" can be used for metallic inks.</p> <p><i>OpaqueIgnore</i> – Marks made with colorants of this type and marks covered by colorants of this type are ignored for trapping. "<i>OpaqueIgnore</i>" can be used for metallic inks.</p> <p><i>Primer</i> – Colors with <i>@ColorType</i> = "<i>Primer</i>" are used as background filler and SHALL be ignored when trapping.</p> <p><i>Transparent</i> – Marks made with colorants of this type are to be ignored for trapping. <b>Trapping</b> Processes are not to generate a color plane for this colorant. This value SHOULD be used for varnish.</p>
<i>ColorTypeDetails</i> ? <a href="#">New in JDF 1.5</a>	string	Additional information about the color type. If <i>@ColorType</i> = " <i>DieLine</i> ", this attribute SHOULD specify the type of die line (e.g., DDES-numbers, For details, see Table 8-33, "Diecutting Data (DDES3)" on page 553 for a list of DDES3 die line types.
<i>Density</i> ? <a href="#">New in JDF 1.2</a>	double	Density value of colorant (100% tint). Whereas <i>@NeutralDensity</i> describes measurements of inks on substrate with wide-band filter functions, <i>@Density</i> is derived from measurements of inks on substrate with special small-band filter functions according to ANSI and DIN.

**Table 8-31: Color Resource (Sheet 4 of 6)**

Name	Data Type	Description
<i>Gray</i> ? <a href="#">New in JDF 1.4</a>	double	Gray value of the 100% tint value of the colorant. Although <b>OPTIONAL @CMYK NEED NOT be specified</b> , it is highly RECOMMENDED that this value be filled when the colorant is a spot colorant, <b>@MappingSelection = "UseProcessColorValues"</b> and <b>ColorantControl/@ProcessColorModel = "DeviceGray"</b> . Uses a subtractive color model: 0.0 means 100% coverage with colorant, while 1.0 means no coverage.
<i>Lab</i> ?	LabColor	L, a, b value of the 100% tint value of the colorant.
<i>MappingSelection</i> ? <a href="#">New in JDF 1.2</a> <a href="#">Modified in JDF 1.5</a>	enumeration	This value specifies the mapping method to be used for this Color. <b>@MappingSelection</b> can be specifically used to indicate how a combination of process colorant values will be obtained for any spot color when the separation spot colorant itself is not to be used. <b>Allowed values are:</b> <i>UsePDLValues</i> – Use color values specified in the PDL for this color. See [ColorPS]. <i>UseLocalPrinterValues</i> – Use the Printer's best local mapping for this Color. <i>UseProcessColorValues</i> – Use the values defined in this Color. <b>Modification note:</b> starting with JDF 1.5, the schema default has been removed and the default SHOULD be obtained from <b>ColorantControl/@MappingSelection</b> .
<i>MediaType</i> ? <a href="#">Modified in JDF 1.2</a>	string <sup>N-MTOKEN</sup>	Specifies the media type. <b>Values include:</b> <i>Coated</i> – Pertains to gloss coated. <i>Matte</i> – Pertains to matte or dull coated. <i>Uncoated</i>
<i>Name</i>	string	Name of the colorant. This is the value that SHALL match the <b>@Name</b> Attribute of a SeparationSpec that references this color (e.g., in <b>ColorantControl/DeviceNSpace/SeparationSpec/@Name</b> or <b>ColorantControl/ColorantParams/SeparationSpec/@Name</b> ). This <b>@Name</b> Attribute MAY also be referenced from the <b>@Name</b> Attribute in the <b>Ink</b> Resource. Name MAY also be referenced from <b>Certification/@ReplacementColorantName</b> . Only one <b>Color</b> with any given <b>@Name</b> SHALL be specified in a <b>ColorPool</b> .

**Table 8-31: Color Resource (Sheet 5 of 6)**

Name	Data Type	Description
<i>NeutralDensity</i> ?  <a href="#">New in JDF 1.5</a>	double	A number in the range of 0.001 to 10 that represents the neutral density of the colorant, defined as $10 \cdot \log(1/Y)$ . Y is the tristimulus value in CIEXYZ coordinates, normalized to 1.0.
<i>PrintingTechnology</i> ?  <a href="#">New in JDF 1.5</a>	NMTOKEN	<p>Printing technology of the press, press module or printer. For digital printing, describes the printing technology that the media or coatings on the media are intended for or optimized for.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>DyeSublimation</i> – for digital printing.</li> <li><i>Electrostatic</i> – for digital printing.</li> <li><i>Flexo</i> – for conventional printing.</li> <li><i>Gravure</i> – for conventional printing.</li> <li><i>InkJet</i> – for digital printing.</li> <li><i>Laser</i> – for digital printing.</li> <li><i>Offset</i> – for digital and conventional printing.</li> <li><i>Screen</i> – for conventional printing.</li> <li><i>Thermal</i> – for digital printing.</li> </ul> <p><b>Creation Note:</b> starting in JDF 1.5, <i>@PrintingTechnology</i> moved from <b>ConventionalPrintingParams</b> and additional values were copied from <b>Media</b>,</p>
<i>RawName</i> ?  <a href="#">New in JDF 1.2</a>	hexBinary	Representation of the original 8-bit byte stream of the <b>Color @Name</b> . Used to transport the original byte representation of a <b>Color @Name</b> when moving <b>JDF XJDF</b> tickets between computers with different locales. Only one <b>Color</b> with any given <i>@RawName</i> SHALL be specified in a <b>ColorPool ResourceSet[@Name="Color"]</b> .
<i>sRGB</i> ?	sRGBColor	sRGB value of the 100% tint value of the colorant.
<i>UsePDLAlternateCS</i> ?  <a href="#">Deprecated in JDF 1.2</a>	boolean	If "true", the alternate color space definition defined in the PDL SHALL be used for color space transformations when available. If "false", the alternate color space definitions defined in <i>@sRGB</i> , <i>@CMYK</i> or <i>DeviceNColor</i> of this <b>Color</b> SHALL be used depending on the value of <b>ColorantControl/ ProcessColorModel</b> . In JDF 1.2 and beyond, use <i>@MappingSelection</i> .
<b>ColorMeasurementConditions</b> ?  <a href="#">New in JDF 1.1</a>	refelement	Detailed description of the measurement conditions for color measurements.

**Table 8-31: Color Resource (Sheet 6 of 6)**

Name	Data Type	Description
DeviceNColor *	element	Each DeviceNColor element defines Elements that define the colorant in the DeviceN color space that is selected by DeviceNColor/@Name. A non-standard Device-dependent process color space. DeviceNColor can be specified when @Name is a spot colorant (not one of the DeviceNSpace colorants) and ColorantControl/@ProcessColorModel = "DeviceN".
FileSpec (ColorProfile) ?	refelement	A FileSpec Resource pointing to an ICC named color profile that describes further details of the color. This ICC profile is intended as a source profile for the named color whose equivalent CMYK value is given in the @CMYK Attribute.
FileSpec (TargetProfile) ?	refelement	A FileSpec Resource pointing to an ICC profile that defines the target output Device in case the object that uses the Color has been color space converted to a Device color space. FileSpec (TargetProfile) applies to the alternate color defined by the value of @MappingSelection.
PrintConditionColor *  <u>New in JDF 1.2</u> <u>Deprecated in JDF 1.5</u>	element	Description of the printing condition specific color properties of a colorant (i.e., how is the printed color result specific to media, screening, etc.).
TransferCurve *  TransferCurveRefs ? <u>Modified in JDF 1.1</u>	refelement DREFS	A list of color transfer functions that is used to convert a tint value to one of the alternative color spaces. The transfer functions that are not specified here default to a linear transfer: "0 0 1 1".

### 8.22.1 Element: DeviceNColor

**Table 8-32: DeviceNColor Element**

Name	Data Type	Description
ColorList	DoubleList	Value of the 100% tint value of the colorant in the ordered DeviceN space. DeviceNSpace that is selected by @Name. Each index SHALL refer to the separation defined at the same position in DeviceNSpace/@Separations. The number of entries SHALL be DeviceNSpace/@N. The list SHALL have @N Elements. A value of 0 specifies no ink and a value of 1 specifies full ink. The mapping of indices to colors is specified in the DeviceNSpace Element of the ColorantControl Resource.
N	integer	Number of colors that define the color space.
Name	string N-MTOKEN	Color space name (e.g., Hexachrome or HiFi). @Name SHALL match ColorantControl/DeviceNSpace/@Name. @Name of the matching DeviceNSpace. Exactly one ColorantControl/DeviceNSpace/@Name SHALL match @Name.

### 8.22.2 Diecutting Data (DDES3)

The following list of line types is taken from Annex A of ANSI® IT8.6-2002 Graphic technology — Prepress digital data exchange — Diecutting data (DDES3). The list is included in the JDF XJDF specification with permission of

IT8.6. A full copy of the DDES3 standard can be obtained from [http://webstore.ansi.org/RecordDetail.aspx?sku=ANSI+IT8.6-2002+\(R2013\)](http://webstore.ansi.org/RecordDetail.aspx?sku=ANSI+IT8.6-2002+(R2013)).

**Table 8-33: Diecutting Data (DDES3)**

DDES 3 Line type number	DDES3 Line type	Description
12	Non-varnish / UV area	Contour indicating a varnish free area
15	Printing / UV Blanket Edge	Contour enclosing a spot varnish area. Spot varnish will be applied with a varnish blanket.
16	Zipper / Tear Strip / Tear Edge - reference lines for cutting edge	Cutting contours indicating a tear strip.
17	Wave / Scallop - reference lines for cutting edge	Cutting contours indicating a wave /scallop (note: I have no clue what this is...)
18	Punches - reference lines for center / cutting edge	Contours indicating the shape and center of a punch
100	Miscellaneous ruled lines for dies	
101	Knife / Cutting rule	Contour indicating how the printed artwork will be cut from the printed sheet e.g. with a guillotine cutter or die cutting device.
102	Crease / Scoring rule	Contour indicating where the substrate will be creased to guide subsequent folding.
103	Perforation (Alternating cutting and spaces)	Contour indicating where the substrate will be perforated.
104	Cutscore / Halfcut (Partial depth cutting rule)	Contour indicating where the substrate will be cut partially i.e. not entirely through the material. Cutting is done from the front side.
105	Cut-Crease rule (Alternating cutting and creasing rule)	Contour indicating alternating cutting and creasing
106	Cutscore-Crease (Alternating partial depth cutting and creasing rule)	Contour indicating alternating half-cutting and creasing
107	Reverse cutscore / halfcut (for anvil in die)	Contour indicating where the substrate will be cut partially i.e. not entirely through the material. Cutting is done from the back side.
108	Emboss / Deboss crease profile	Contour enclosing an area where embossing will be applied.

### 8.22.3 Element: **PrintConditionColor**

[New in JDF 1.2](#)

[Deprecated in JDF 1.5](#)

[Undeprecated in JDF 1.6](#)

The **Color** Element describes the specific properties of a colorant (named in **Color/@Name**) when applied in a given printing condition (i.e., media surface, media opacity, media color and screening/RIP (e.g., halftone) technology). It is used to overwrite the generic values of **Color**, which are supplied as the default. See the descriptions in Color for details of the individual Attributes and Elements.

**Table 8-34: PrintConditionColor Element (Sheet 1 of 2)**

Name	Data Type	Description
CMYK ?	CMYKColor	@CMYK of the <b>Color</b> . <b>Default value is from:</b> parent <b>Color</b> /@CMYK
ColorBook ?	string	@ColorBook of the <b>Color</b> . <b>Default value is from:</b> parent <b>Color</b> /@ColorBook
ColorBookEntry ?	string	@ColorBookEntry of the <b>Color</b> . <b>Default value is from:</b> parent <b>Color</b> /@ColorBookEntry
ColorBookPrefix ?	string	@ColorBookPrefix of the <b>Color</b> . <b>Default value is from:</b> parent <b>Color</b> /@ColorBookPrefix
ColorBookSuffix ?	string	@ColorBookSuffix of the <b>Color</b> . <b>Default value is from:</b> parent <b>Color</b> /@ColorBookSuffix
Density ?	double	@Density of the <b>Color</b> . <b>Default value is from:</b> parent <b>Color</b> /@Density
Lab ?	LabColor	@Lab of the <b>Color</b> . <b>Default value is from:</b> parent <b>Color</b> /@Lab
MappingSelection ?  <a href="#">New in JDF 1.2</a>	enumeration	This value specified the mapping method to be used for this Color. <b>Default value is from:</b> parent <b>Color</b> /@MappingSelection. <b>Allowed values are:</b> <i>UsePDLValues</i> – Use color values specified in the PDL for this color. See [ColorPS]. <i>UseLocalPrinterValues</i> – Use the Printer's best local mapping for this <b>Color</b> . <i>UseProcessColorValues</i> – Use the values defined in this <b>Color</b> .
Media *MediaRefs ?	refelement-DREFS	Specifies one or more <b>Media</b> that this <b>Color</b> applies to. When PrintConditionColor is present, the parent attribute, <b>Color</b> /@MediaType, is ignored. If <b>Media</b> is not specified, <b>Color</b> applies to print processes with a matching <b>PrintConditionName</b> .
MediaSide ?= "Both"	enumeration	<b>Media</b> front and back surfaces can be different, affecting color results. If the <b>Media</b> /@FrontCoatings, <b>Media</b> /@BackCoatings or <b>Media</b> /@Gloss Attributes indicate differences in surface then @MediaSide can be used to specify the side of the media to which the <b>Color</b> attributes pertain. <b>Allowed values are:</b> <i>Front</i> <i>Back</i> <i>Both</i>
NeutralDensity ?	double	@NeutralDensity of the <b>Color</b> . <b>Default value is from:</b> parent <b>Color</b> /@NeutralDensity
PrintConditionName ?	NMTOKEN	@PrintConditionName specifies a particular screening condition and printing condition that this <b>Color</b> element applies to. In order to map a <b>PrintCondition</b> with a <b>Color</b> , @PrintConditionName SHALL match <b>PrintCondition</b> /@Name. If not specified, this <b>Color</b> matches all <b>PrintCondition</b> but MAY still be dependent on <b>Media</b> .

**Table 8-34: PrintConditionColor Element (Sheet 2 of 2)**

Name	Data Type	Description
sRGB ?	sRGBColor	@sRGB of the <b>Color</b> . If not specified, defaults to the parent <b>Color</b> /@sRGB.
DeviceNColor *	element	DeviceNColor of the <b>Color</b> . If not specified, defaults to the parent <b>Color</b> /DeviceNColor.
FileSpec (TargetProfile)	refelement	FileSpec (TargetProfile) of the <b>Color</b> . If not specified, defaults to the parent <b>Color</b> /FileSpec (TargetProfile)
Media *	refelement	Specifies one or more <b>Media</b> that this <b>Color</b> applies to. When PrintConditionColor is present, the parent attribute, <b>Color</b> /@MediaType, is ignored. If <b>Media</b> is not specified, <b>Color</b> applies to print processes with a matching @PrintConditionName.
TransferCurve *TransferCurveRefs ?	refelementI-DREFS	TransferCurve of the <b>Color</b> . If not specified, defaults to the parent <b>Color</b> /TransferCurve.

**Example 8-7: Color**

This is an example of the structure for **Color**. The transfer curves in this example are defined for process CMYK and sRGB, independently.

**TBD 2.x Example.**

```
<Color Class="Parameter" ID="C000" Status="Available" CMYK="0.2 0.3 0.4 0.5"
      Density="3.14" Lab="20. 30. 40." MediaType="Coated"
      Name="PANTONE Deep Blue" sRGB="0.6 0.7 0.9">
  <TransferCurve Curve="0 0 .5 .4 1 1" Separation="Cyan"/>
  <TransferCurve Curve="0 0 .5 .6 1 1" Separation="Magenta"/>
  <TransferCurve Curve="0 0 1 1" Separation="Yellow"/>
  <TransferCurve Curve="0 0 1 1" Separation="Black"/>
  <TransferCurve Curve="0 0 1 1" Separation="sRed"/>
  <TransferCurve Curve="0 0 1 1" Separation="sGreen"/>
  <TransferCurve Curve="0 0 1 1" Separation="sBlue"/>
</Color>
```

**Example 8-8: ColorantControl: Content-Ignorant MIS**New in JDF 1.4**TBD 2.x Example.**

```
<ColorantControl Class="Parameter" ID="r000004" ProcessColorModel="DeviceCMYK"
                  Status="Available">
  <!--Note that all Strings in ColorantParams etc. use Color/@Name,
      NOT Color/@ActualColorName-->
  <ColorantParams>
    <SeparationSpec Name="Spot1"/>
    <SeparationSpec Name="BlackText"/>
  </ColorantParams>
</ColorantControl>
```

**Example 8-9: ColorantControl: Synchronized with Input**New in JDF 1.4

Example of initial (previous) **ColorantControl** after synchronizing with input. This example specifies the replacement color name with a new @ActualColorName Attribute in the **Color** Element. **This approach has the disadvantage of needing a new Attribute.** However, it has the following advantages:

- no ambiguity in case of multiple names (Certification is used only as a pure aliasing mechanism)
- The name is localized in the **ColorPool**, which should be more central and not differ (e.g., between proofing and final imaging).
- it is “easier” to implement

**TBD 2.x Example.**

```
<!--ColorantControl after prepress has correctly set ActualColorName based
on pdl content-->
<ColorantControl Class="Parameter" ID="r000004" ProcessColorModel="DeviceCMYK"
    Status="Available">
    <!--Note that all Strings in ColorantParams etc. use Color/@Name,
        NOT Color/@ActualColorName-->
    <ColorantParams>
        <SeparationSpec Name="Spot1"/>
        <SeparationSpec Name="BlackText"/>
    </ColorantParams>
    <ColorPoolRef rRef="r000005"/>
</ColorantControl>
<ColorPool Class="Parameter" ID="r000005" Status="Available">
    <!--Color that maps the predefined separation Black
        ActualColorName is the new attribute that replaces
        ExposedMedia/@DescriptiveName as the "Main" PDL color
    -->
    <Color ActualColorName="Schwarz" CMYK="0 0 0 1" Class="Parameter"
        Name="Black"/>
    <Color ActualColorName="Gelb" CMYK="0 0 1 0" Class="Parameter"
        Name="Yellow"/>
    <!--ActualColorName defaults to Name if not specified-->
    <Color CMYK="1 0 0 0" Class="Parameter" Name="Cyan"/>
    <Color Class="Parameter" Name="Magenta"/>
    <Color ActualColorName="Acme Aqua" CMYK="0.7 0.2 0.03 0.1"
        Class="Parameter" Name="Spot1"/>
    <Color ActualColorName="VersionsText" CMYK="0 0 0 1" Class="Parameter"
        Name="BlackText"/>
</ColorPool>
```

**Example 8-10: ColorantControl: Synchronized with Input with Alias**New in JDF 1.4

Example of initial **ColorantControl** after synchronizing with input that contains an alias

**TBD 2.x Example.**

```
<ColorantControl Class="Parameter" ID="r000004" ProcessColorModel="DeviceCMYK"
    Status="Available">
    <!--ColorantControl after prepress has correctly set ActualColorName based
        on pdl content-->
    <!--Note that all Strings in ColorantParams etc. use Color/@Name,
        NOT Color/@ActualColorName-->
    <ColorantParams>
        <SeparationSpec Name="Spot1"/>
        <SeparationSpec Name="BlackText"/>
    </ColorantParams>
    <ColorPoolRef rRef="r000005"/>
    <!--ColorantAlias that maps the additional representations
        (noir, schwarz) to the predefined separation Black-->
    <ColorantAlias Class="Parameter" RawNames="6E6F6972 73636877E4727A"
        ReplacementColorantName="Black">
```

```

<SeparationSpec Name="noir"/>
<SeparationSpec Name="schwarz"/>
</ColorantAlias>
</ColorantControl>
<ColorPool Class="Parameter" ID="r000005" Status="Available">
    <!-- ColorPool is same as previous example -->
</ColorPool>

```

### Example 8-11: ColorantControl: with ColorantAlias/ReplacementColorantName

[New in JDF 1.4](#)

Example of many-to one substitution with `Certification/@ReplacementColorantName`

TBD 2.x Example.

```

<ColorantControl Class="Parameter" ID="r000004" ProcessColorModel="DeviceCMYK"
    Status="Available">
    <!--ColorantAlias that maps the predefined separation Black-->
    <ColorantAlias ReplacementColorantName="Black">
        <SeparationSpec Name="Schwarz"/>
        <SeparationSpec Name="schwarz"/>
    </ColorantAlias>
</ColorantControl>

```

### Example 8-12: ColorantControl: with Invalid ColorantAlias/ReplacementColorantName

[New in JDF 1.4](#)

Invalid example of many-to one substitution with `Certification/@ReplacementColorantName`

```

<ColorantControl Class="Parameter" ID="r000004" ProcessColorModel="DeviceCMYK"
    Status="Available">
    <!--ColorantAlias that maps the predefined separation Black-->
    <ColorantAlias ReplacementColorantName="Black">
        <SeparationSpec Name="Schwarz"/>
    </ColorantAlias>
    <ColorantAlias ReplacementColorantName="Black">
        <SeparationSpec Name="schwarz"/>
    </ColorantAlias>
</ColorantControl>

```

## 8.23 ColorantControl

**ColorantControl** defines how color separations of PDL or raster data SHALL be output on a target device. Color separations can be either output as real colorants, mapped to process colorants or ignored.

Colorants are referenced in **ColorantControl** by matching values of `Part/@Separation`. Additional details about individual colorants can be found in `ResourceSet[@Name="Color"]`.

**ColorantControl** is a Resource used to control the use of color when processing PDL pages. The Attributes and Elements of the **ColorantControl** Resource describe how color information embedded in PDL pages is to be translated into Device colorant information.

Colorants are referenced in **ColorantControl** by name only. Additional details about individual colorants can be found in the **Color** Element of the **ColorPool** Resource. **ColorantControl** uses the subset of colors specified in `@ColorantConvertProcess`. The **ColorantControl** Resources control which Device colorants will be used as well as how document colors will be converted into Device color spaces and how conflicting color information are to be resolved. Separation control is specified by the Process being present. For example:

**ColorantControl** can be used as follows to define the specific colorants of a targeted output **DeviceNSpace** when the **DeviceNSpace** process colors are the only colorants used on the Job:

- **ColorantControl/ColorPool/@ColorantSetName** matches **ColorantControl/DeviceNSpace/@Name**, and
- a **ColorantControl/ColorPool/Color** Resource (with correct **@Name** of colorant and other defining Attributes) exists for each colorant of the DeviceNSpace as given in:
  - **ColorantControl/DeviceNSpace/SeparationSpec/@Name**.

**ColorantControl** can be used as follows to define the specific colorants of a targeted output when both CMYK process colors and separate spot colorants are used for the final production printing, but a local printer equivalent of the spot color is used for proofing:

- **ColorPool/@ColorantSetName** is an expanded name set including **Color** Resources for the CMYK process primaries and the **@ReplacementColorantName** spot colorant, and
- Then for that spot color...
  - **ColorPool/Color/@Name**
  - **ColorPool/Color/@MappingSelection** Attribute Value = "UseLocalPrinterValues", (used by a **ColorSpaceConversion** Process only in the proofing instance).
- For proof printing:
  - **ColorantControl/@ColorantParams** does not list that spot colorant.
- For production printing:
  - **ColorantControl/@ColorantParams** and **ColorantControl/@ColorantOrder** both include that spot colorant.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	<b>ColorIntent</b>
<b>Example Partition:</b>	"DocIndex", "RunIndex", "RunTags", "DocTags", "PageTags", "SetTags", "SheetName", "Side", "SignatureName"
<b>Input of Processes:</b>	<b>ColorCorrection, ColorSpaceConversion, ConventionalPrinting,</b> <b>DigitalPrinting, ImageSetting, Interpreting,</b> <b>PreviewGeneration, Separation, Stripping, Trapping</b>
<b>Output of Processes:</b>	<b>ColorSpaceConversion</b>

Table 8-35: ColorantControl Resource (Sheet 1 of 6)

Name	Data Type	Description
<b>ColorantConvertProcess ?</b> <b>ColorantConvertProcess</b> <b>?New in JDF 1.4</b>	elementNMTO-KENS	List of colors that SHALL be converted to process colors. Defaults to all colors that are neither nor listed in <b>ColorantParams @ColorantParams</b> nor implied by <b>@ProcessColorModel</b> . An Application can MAY issue a warning for all PDL Colors that are not in ( <b>ColorantParams @ColorantParams</b> + <b>ColorantConvertProcess @ColorantConvertProcess</b> + implied by <b>@ProcessColorModel</b> ) lists.

**Table 8-35: ColorantControl Resource (Sheet 2 of 6)**

Name	Data Type	Description
ColorantOrder ?ColorantOrder ?	elementNMTO-KENS	<p>The ordering of named colorants to be processed, for example in the RIP. All of the colorants named SHALL either occur in the <b>ColorantParams @ColorantParams</b> list or be implied by the <b>@ProcessColorModel</b>.</p> <p>If present, then only the colorants specified by <b>ColorantOrder @ColorantOrder</b> SHALL be output. Colorants listed in the <b>ColorantParams @ColorantParams</b>, or implied by the <b>@ProcessColorModel</b>, but not listed in <b>ColorantOrder @ColorantOrder</b>, SHALL NOT be output. They SHALL still be processed for side effects in the colorants that are listed such as knockouts or trapping.</p> <p>If not present, then all colorants specified in <b>ColorantParams @ColorantParams</b> and implied by <b>@ProcessColorModel</b> are output. The explicit or implied value of <b>ColorantOrder</b> MAY be modified by an implied Partition of the <b>ColorantControlLink</b>. If one or more <b>ColorantControlLink /Part/@Separation</b> are specified, <b>ColorantOrder</b> is reduced to the list. It is an error to specify values of <b>ColorantControlLink/Part/@Separation</b> that are not explicitly stated or implied by <b>ColorantOrder</b>.</p>
ColorantParams ?ColorantParams ?	elementNMTO-KENS	<p>A set of named colorants. This list defines all the colorants that are expected to be available on the Device where the Process will be executed. Named colors found in the PDL that are not listed in <b>ColorantParams @ColorantParams</b> will be implemented through their <b>@ProcessColorModel</b> equivalents. (See <b>ElementColorParams</b> and <b>ColorSpaceConversion</b> Process.) The colorants implied by the value of <b>@ProcessColorModel</b> are assumed and SHALL NOT be specified in this list. The spot colors defined in <b>ColorIntent/ColorsUsed @ColorsUsed</b> will in general be mapped to <b>ColorantParams @ColorantParams</b> for each spot color to be used as part of any Product Intent to Process conversion.</p>
ForceSeparations ?= "false"	boolean	If "true", forces all colorants to be output as individual separations, regardless of any values defined in <b>ColorantControl</b> (i.e., all separations in a document are assumed to be valid and are output individually). A value of "false" specifies to respect the parameters specified in <b>ColorantControl</b> and elsewhere in the <b>JDF XJDF</b> .

**Table 8-35: ColorantControl Resource (Sheet 3 of 6)**

Name	Data Type	Description
<i>InternalColorModel</i> ? <a href="#">New in JDF 1.5</a>	enumeration	<p>Internal color model that SHALL be used by a device that supports enhanced color models.</p> <p><b>Allowed values are:</b></p> <p><i>Basic</i> – Use the basic color model selected by this <b>ColorantControl</b>.</p> <p><i>Enhanced</i> – Use the enhanced color model that is implied by this <b>ColorantControl</b> (e.g., Use "<i>LightCyan</i>", "<i>LightMagenta</i>" in addition to CMYK).</p> <p><i>Explicit</i> – Use the elements of the enhanced color model that are explicitly listed in <b>ColorantOrder</b> @<i>ColorantOrder</i>.</p>
<i>MappingSelection</i> ? <a href="#">New in JDF 1.5</a>	enumeration	<p>This value specifies the default mapping method to be used for all separations. Note that @<i>MappingSelection</i> MAY be overridden by <b>Color</b>/@<i>MappingSelection</i>.</p> <p>@<i>MappingSelection</i> can be specifically used to indicate how a combination of process colorant values will be obtained for any spot color when the separation spot colorant itself is not to be used.</p> <p><b>Allowed values are:</b></p> <p><i>UsePDLValues</i> – Use color values specified in the PDL for a color. See [ColorPS].</p> <p><i>UseLocalPrinterValues</i> – Use the Printer's best local mapping for a <b>Color</b>.</p> <p><i>UseProcessColorValues</i> – Use the values defined in the respective <b>Color</b>.</p>
<i>ProcessColorModel</i> ? <a href="#">Modified in JDF 1.4</a>	NMTO-KEN enumeration	<p>Specifies the model to be used for rendering the colorants defined in color spaces into process colorants.</p> <p><b>Values include: Allowed values are:</b></p> <p><i>DeviceCMY</i>  <i>DeviceCMYK</i>  <i>DeviceGray</i>  <i>DeviceN</i> – The specific DeviceN color space to operate on is defined in the <b>DeviceNSpace</b> Resource. If this value is specified then <b>DeviceNSpace</b> SHALL also be present.  <i>DeviceRGB</i>  <i>None</i> – No Colorants other than those specified in <b>ColorantParams</b> @<i>ColorantParams</i> SHALL be output. <a href="#">New in JDF 1.4</a></p> <p><b>Note:</b> The separations implied by @<i>ProcessColorModel</i> SHALL be explicitly specified in @<i>ColorantConvertProcess</i>.</p>

**Table 8-35: ColorantControl Resource (Sheet 4 of 6)**

Name	Data Type	Description
Certification *	element	<p>Identify one or more named colorants that are to be replaced with a specified named colorant. The identified colorant remappings in this Certification MAY be consolidated for processing from the information received in the <b>LayoutElement/ElementColorParams/Certification</b> Resources with the Job content.</p> <p>Multiple Certification Elements with identical values of <b>Certification/@ReplacementColorantName</b> SHALL NOT be specified in the same <b>ColorantControl</b> Resource context.</p>
ColorantConvertProcess ? ColorantConvertProcess ?New in JDF 1.4	elementNMTO-KENS	<p>List of colors that SHALL be converted to process colors. Defaults to all colors that are neither listed in <b>ColorantParams @ColorantParams</b> nor implied by <b>@ProcessColorModel</b>. Application can issue a warning for all PDL Colors that are not in (<b>ColorantParams @ColorantParams</b> + <b>ColorantConvertProcess @ColorantConvertProcess</b> + implied by <b>@ProcessColorModel</b>) lists.</p>
ColorantOrder ?ColorantOrder ?	elementNMTO-KENS	<p>The ordering of named colorants to be processed, for example in the RIP. All of the colorants named SHALL either occur in the <b>ColorantParams @ColorantParams</b> list or be implied by the <b>@ProcessColorModel</b>.</p> <p>If present, then only the colorants specified by <b>ColorantOrder @ColorantOrder</b> SHALL be output. Colorants listed in the <b>ColorantParams @ColorantParams</b>, or implied by the <b>@ProcessColorModel</b>, but not listed in <b>ColorantOrder @ColorantOrder</b>, SHALL NOT be output. They SHALL still be processed for side effects in the colorants that are listed such as knockouts or trapping.</p> <p>If not present, then all colorants specified in <b>ColorantParams @ColorantParams</b> and implied by <b>@ProcessColorModel</b> are output. The explicit or implied value of <b>ColorantOrder</b> MAY be modified by an implied Partition of the <b>ColorantControlLink</b>. If one or more <b>ColorantControlLink /Part/@Separation</b> are specified, <b>ColorantOrder</b> is reduced to the list. It is an error to specify values of <b>ColorantControlLink/Part/@Separation</b> that are not explicitly stated or implied by <b>ColorantOrder</b>.</p>

**Table 8-35: ColorantControl Resource (Sheet 5 of 6)**

Name	Data Type	Description
ColorantParams ?ColorantParams ?	elementNMTO-KENS	A set of named colorants. This list defines all the colorants that are expected to be available on the Device where the Process will be executed. Named colors found in the PDL that are not listed in <b>ColorantParams @ColorantParams</b> will be implemented through their <b>@ProcessColorModel</b> equivalents. (See <b>ElementColorParams</b> and <b>ColorSpaceConversion</b> Process.) The colorants implied by the value of <b>@ProcessColorModel</b> are assumed and SHALL NOT be specified in this list. The spot colors defined in <b>ColorIntent/ColorsUsed @ColorsUsed</b> will in general be mapped to <b>ColorantParams @ColorantParams</b> for each spot color to be used as part of any Product Intent to Process conversion.
ColorPool ?	refelement	Pool of <b>Color</b> Elements that define the specifics of the colors implied by <b>@ProcessColorModel</b> and named in <b>ColorantControl</b> . <b>ColorantControl</b> uses a subset of the total <b>ColorPool</b> . The subset that <b>ColorantControl</b> uses from <b>ColorPool</b> is the subset of <b>@ProcessColorModel</b> colors (possibly all), and the subset of spot colors (possibly all) designated to be processed in this instance using specific separation colorants.  <b>ColorPool</b> in total includes spot colors in the Job for which a JDF process color equivalent mapping is required. Those colors are used by <b>ColorSpaceConversion</b> when <b>ColorPool/Color/@MappingSelection = "UseProcessColorValues"</b> . In that case, the process color equivalent for the spot color is taken from the available information in the <b>Color</b> Resource for that spot color.
ColorSpaceSubstitute *	element	Each Subelement identifies a colorant that is to be replaced by another colorant.
DeviceColorantOrder ?DeviceColorantOrder ?	elementNMTO-KENS	The ordering of named colorants (e.g., order of laying them down) to be output on the Device, such as press modules. Note that this SHALL be synchronized with the Device output ICC profile. The explicit separation " <i>None</i> " denotes that a Module in the ordered sequence of Modules is skipped (e.g., on a printing press).  All of the named colorants SHALL occur in <b>ColorantOrder @ColorantOrder</b> if it is present. If <b>ColorantOrder @ColorantOrder</b> is not present, then all of the named colorants SHALL occur in the <b>ColorantParams @ColorantParams</b> list, or be implied by the <b>@ProcessColorModel</b> . If the <b>DeviceColorantOrder Element @DeviceColorantOrder Attribute</b> is not specified, the order for laying down colorants defaults to <b>ColorantOrder @ColorantOrder</b> .
ColorantAlias *	element	Each <b>ColorantAlias</b> is used to map a color name from the PDL to a separation.

**Table 8-35: ColorantControl Resource (Sheet 6 of 6)**

Name	Data Type	Description
DeviceNSpace *	element	DeviceNSpaceDeviceNSpace defines the colorants that make up a DeviceN color space. The DeviceNSpaceDeviceNSpace Attribute is REQUIRED when Element SHALL be present if the @ProcessColorModel value is "DeviceN". <b>Modification note:</b> starting with JDF 1.5, the data type changes from relement to element.

**8.23.1 Element: ColorantAlias**

Certification is an element that specifies a replacement colorant name string to be used instead of one or more named colorant strings.

**Table 8-36: ColorantAlias Element**

Name	Data Type	Description
ColorantName	string	The name of the colorant to be replaced in PDL files.
RawName ?	hexBinary	@RawName represents the original 8-bit byte stream of the color specified in @ColorantName. Used to transport the original byte representation of a color name when moving XJDF tickets between computers with different locales.
ReplacementColorantName	NMOKEN	The value of Color/..@Separation to be substituted for the colorant name string @ColorantName.

**Example 8-13: ColorantAlias/@RawName**

TBD 2.x Example.

```
<ColorantAlias Class="Parameter" ID="r000004" RawNames="4772FC6E 6772FC6E"
  ReplacementColorantName="Green" Status="Available">
  <!-- ColorantAlias that maps the additional representation (grün, Grün)
       to the predefined separation Green -->
  <SeparationSpec Name="Grün"/>
  <SeparationSpec Name="grün"/>
</ColorantAlias>
```

**8.23.2 Element: ColorantConvertProcess**

New in JDF 1.4.

**Table 8-37: ColorantConvertProcess Element**

Name	Data Type	Description
SeparationSpec *	element	The names of the colorants that define the respective lists.

**8.23.3 Element: ColorantOrder****Table 8-38: ColorantOrder Element**

Name	Data Type	Description
SeparationSpec *	element	The names of the colorants that define the respective lists.

#### 8.23.4 Element: [ColorantParams](#)

**Table 8-39: ColorantParams Element**

Name	Data Type	Description
SeparationSpec *	element	The names of the colorants that define the respective lists.

#### 8.23.5 Element: [DeviceColorantOrder](#)

**Table 8-40: DeviceColorantOrder Element**

Name	Data Type	Description
SeparationSpec *	element	The names of the colorants that define the respective lists.

#### 8.23.6 Element: [ColorSpaceSubstitute](#)

**Table 8-41: ColorSpaceSubstitute Element**

Name	Data Type	Description
PDLResourceAlias	refelementelement	A reference to a color space description that replaces the color space defined by the colorants described by the <a href="#">SeparationSpec Element(s) @Separations Attribute</a> .
SeparationSpec + <a href="#">Separations ?Modified in JDF 1.2</a>	elementN-MTOKENS	A list of names that defines the colorants to be replaced. This could be a single name in the case of a <a href="#">@Separation</a> color space, or more than one name in the case of a DeviceN color space.

The following table describes which separations are output for various values of [@ProcessColorModel](#), [ColorantOrder](#), [@ColorantOrder](#), [ColorantControlLink](#), [ColorantControl](#), [ColorantParams](#) [@ColorantParams](#) and [DeviceColorantOrder](#) [@DeviceColorantOrder](#). Note that all separations that are neither specified in [ColorantParams](#) [@ColorantParams](#) nor implied by [@ProcessColorModel](#) are mapped to the colors implied by [@ProcessColorModel](#) prior to any color selection defined by [ColorantOrder](#) [@ColorantOrder](#).

**Table 8-42: Sample output for different values of ProcessColorModel, ColorantParams, ColorantOrder, ColorantControlLink and DeviceColorantOrder Elements. (Sheet 1 of 2)**

ProcessColorModel	ColorantParams	ColorantOrder	ColorantControlLink /Part/@Separation	Colorants not shown in the output	Separations that are output and ordered for press using DeviceColorantOrder
DeviceCMYK	Not Present	Cyan Magenta	—	Yellow Black	Cyan Magenta (If <a href="#">DeviceColorantOrder</a> <a href="#">@DeviceColorantOrder</a> is not present then lay down order will be Cyan first, Magenta last.)

**Table 8-42: Sample output for different values of ProcessColorModel, ColorantParams, ColorantOrder, ColorantControlLink and DeviceColorantOrder Elements. (Sheet 2 of 2)**

ProcessColorModel	ColorantParams	ColorantOrder	ColorantControlLink /Part/@Separation	Colorants not shown in the output	Separations that are output and ordered for press using DeviceColorantOrder
DeviceCMYK	Spot1 Spot2	Cyan Magenta Yellow Black Spot2		Spot1	Cyan Magenta Yellow Black Spot2
DeviceCMYK	Spot1 Spot2	Cyan Magenta Yellow Black Spot2	Cyan Magenta	Spot1 Spot2 Yel- low Black	Cyan Magenta
DeviceGray	Spot1 Spot2	Black Spot2		Spot1	Black Spot2
DeviceN (with example N = 2 colorants as identi- fied in DeviceNSpace)	Spot1 Spot2	Spot2 DeviceN 1 DeviceN 2		Spot1	DeviceN 1 DeviceN 2 Spot2  The reordering is accomplished using DeviceColorantOrder @DeviceColorantOrder

**Table 8-43: Sample output for different values of ProcessColorModel, ColorantParams, ColorantOrder, ColorantControlLink and DeviceColorantOrder Elements. (Sheet 1 of 2)**

ProcessColorModel	ColorantParams	ColorantOrder	Colorants not shown in the output	Separations that are output and ordered for press using DeviceColorantOrder
DeviceCMYK	Not Present	Cyan Magenta	Yellow Black	Cyan Magenta (If DeviceColorantOrder @DeviceColorantOrder is not present then lay down order will be Cyan first, Magenta last.)

**Table 8-43: Sample output for different values of ProcessColorModel, ColorantParams, ColorantOrder, ColorantControlLink and DeviceColorantOrder Elements. (Sheet 2 of 2)**

ProcessColorModel	ColorantParams	ColorantOrder	Colorants not shown in the output	Separations that are output and ordered for press using DeviceColorantOrder
DeviceCMYK	Spot1 Spot2	Cyan Magenta Yellow Black Spot2	Spot1	Cyan Magenta Yellow Black Spot2
DeviceCMYK	Spot1 Spot2	Cyan Magenta Yellow Black Spot2	Spot1 Spot2 Yellow Black	Cyan Magenta
DeviceGray	Spot1 Spot2	Black Spot2	Spot1	Black Spot2
DeviceN (with example N = 2 colorants as identified in DeviceNSpace)	Spot1 Spot2	Spot2 DeviceN 1 DeviceN 2	Spot1	DeviceN 1 DeviceN 2 Spot2 The reordering is accomplished using DeviceColorantOrder @DeviceColorantOrder

### 8.23.7 Element: DeviceNSpace

DeviceNSpace lists the process color separations that define a non-standard process color space. Additional details of the DeviceNSpace SHOULD be provided as references to ICC profiles, e.g. in ColorSpaceConversionParams/FileSpec(FinalTargetDevice).

**Table 8-44: DeviceNSpace Element**

Name	Data Type	Description
N	integer	The number of colors that define the color space. @N SHALL be an integer >= 1
Name ?	NMTOKEN	Name of the DeviceNSpace.
<u>SeparationSpec *</u> <u>Separations</u> Modified in JDF 1.2	elementN-MTOKENS	Ordered list of colorant names that define the DeviceN color space. The number of tokens SHALL match the value of @N. Additional details of the colorants SHOULD be provided in a Color ResourceSet. Note that these colorants SHALL be specified in a corresponding ColorantParams Element of the ColorantControl or be implied by @ProcessColorModel. In other words, they SHALL be real, physical colorants.

## 8.24 ColorCorrectionParams

This Resource provides the information needed for an operator to correct colors on some PDL pages or content Elements such as image, graphics or formatted text.

The preferred color adjustment method allows for multi-dimensional adjustments through the use of either an ICC Abstract profile or an ICC DeviceLink profile. The adjustments are not universally colorimetrically calibrated. However, when either of the ICC profile adjustment methods are used, these standard ICC profile formats can be interpreted and applied using generally recognized ICC profile processing techniques. Use of the ICC Abstract profile adjustment will cause the adjustment to be applied in ICC Profile Connection Space, after each source profile is applied, in sequence before final target color conversion. Use of the ICC DeviceLink profile adjustment will cause the adjustment to be applied in final target Device space, after the final target color conversion.

In addition to color adjustment using an ICC profile, the `@AdjustXXX` Attributes each provide a direct color adjustment applied to the interpretation of the PDL data at an implementation dependent point in the processing after each source profile is applied (if source-to-destination color conversion is needed). The L\*a\*b\* values range from -100 to +100 to indicate the minimum and maximum of the range that the system supports. A "0" value means no adjustment. The color adjustment Attributes differ from the Tone Reproduction Curve (TRC) Attributes that can be applied later in the processing path in two key ways. First, the `@AdjustXXX` use, even when included in the Job, will vary as a function of Job content. Second, the data values associated with the `@AdjustXXX` Attributes are arbitrary, and their interpretation will be printer dependent. For details about these Attributes, see Appendix E, "Color Adjustment Attribute Description and Usage" on page 1155.

**Note:** These color adjustments are not available in any Intent Resource (e.g., **ColorIntent**). In order to request such adjustment in a Product Intent Job ticket supplied to a print provider, attach to a Product Intent Node an incomplete **ColorCorrection** Process with a **ColorCorrectionParams** Resource specifying the requested `@AdjustXXX` Attributes.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	<b>ColorIntent</b>
<b>Example Partition:</b>	<code>"DocIndex", "RunIndex", "RunTags", "DocTags", "PageTags", "SetTags", "SheetName", "Side", "SignatureName"</code>
<b>Input of Processes:</b>	<b>ColorCorrection</b>
<b>Output of Processes:</b>	—

Table 8-45: ColorCorrectionParams Resource

<b>ColorManagementSystem</b>		
?	string	<p>Identifies the preferred ICC color-management system to use when performing color transformations. When specified, this Attribute overrides any default selection of a color management system by an application and overrides the "CMM Type" value (bytes 4-7 of an ICC Profile Header) in any of the Job related ICC profiles. This string Attribute Value identifies the manufacturer of the preferred CMM and SHALL match one of the registered four-character ICC CMM Type values.</p> <p><b>Values include those from:</b> <i>ICC Manufacturer's Signature Registry</i> at <a href="http://www.color.org">http://www.color.org</a>.</p> <p><b>Example values:</b> "ADBE" for the Adobe CMM and "KODA" for the Kodak CMM.</p>

**Table 8-45: ColorCorrectionParams Resource**

<b>ColorCorrectionOp</b> <b>*ColorCorrectionOp *</b>	element	List of <b>ColorCorrectionOp</b> Subelements. <b>ColorCorrectionOp</b> SHOULD contain the complete set of parameters for a given color correction operation. Otherwise the results are implementation dependent.
<b>FileSpec</b> ( <i>FinalTargetDevice</i> ) ?	<b>refelement</b>	A <b>FileSpec</b> Resource pointing to an ICC profile that describes the characterization of the final output target Device.
<b>FileSpec</b> ( <i>WorkingColorSpace</i> ) ? <i>Deprecated in JDF 1.1</i>	<b>refelement</b>	A <b>FileSpec</b> Resource pointing to an ICC profile that describes the assumed characterization of "CMYK", "RGB" and "Gray" color spaces.

**8.24.1 Element: **ColorCorrectionOp******Table 8-46: ColorCorrectionOp Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>AdjustContrast</i> ?	double	Specifies the L*a*b* contrast adjustment in the range -100 (minimum contrast for the system (i.e., a solid midtone gray color)) to + 100 (maximum contrast for the system (i.e., either use full color (the maximum is restricted by the system ink limit) or no color for each of Cyan, Magenta, Yellow and Black)). Increasing the contrast value increases the variation between light and dark areas and decreasing the contrast value decreases the variation between light and dark areas. See explanation above.
<i>AdjustCyanRed</i> ?	double	Specifies the L*a*b* adjustment in the Cyan/Red axis in the range -100 (maximum Cyan cast for the system) to + 100 (maximum Red cast for the system) while maintaining lightness. See explanation above.
<i>AdjustHue</i> ?	double	Specifies the change in the L*a*b* hue in the range -180 to +180 of all colors by the specified number of degrees of the color circle. See explanation above.
<i>AdjustLightness</i> ?	double	Specifies the decrease or increase of the L*a*b* lightness in the range -100 (minimum lightness for the system (i.e., black)) to + 100 (maximum lightness for the system (i.e., white)). Increasing the lightness value causes the output to appear lighter and decreasing the lightness value causes the output to appear darker. See explanation above.
<i>AdjustMagentaGreen</i> ?	double	Specifies the L*a*b* adjustment in the Magenta/Green axis in the range -100 (maximum Magenta cast for the system) to + 100 (maximum Green cast for the system) while maintaining lightness. See explanation above.
<i>AdjustSaturation</i> ?	double	Specifies the increase or decrease of the L*a*b* color saturation in the range -100 (minimum saturation for the system) to +100 (maximum saturation for the system). Increasing the saturation value causes the output to contain more vibrant colors and decreasing the saturation value causes the output to contain more pastel and gray colors. See explanation above.

**Table 8-46: ColorCorrectionOp Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>AdjustYellowBlue</i> ?	double	Specifies the L*a*b* adjustment in the Yellow/Blue axis in the range -100 (maximum Yellow cast for the system) to + 100 (maximum Blue cast for the system) while maintaining lightness. See explanation above.
<i>ObjectTags</i> ?	NMTOKENS	Tags associated with individual objects that this <b>ColorCorrectionOp</b> SHALL be applied to. Each tag specified in <i>@ObjectTags</i> is logically anded with the object type(s) specified by <i>@SourceObjects</i> , enabling first qualification by object type (such as image), and then tags associated with those objects. The values of <i>@ObjectTags</i> depends on the PDL that the color correction is applied to. <i>@ObjectTags</i> SHALL apply only to objects whose tag pool includes all the tags in the value of <i>@ObjectTags</i> .
<i>SourceObjects</i> ?	enumerations	Identifies which class(es) of incoming graphical objects will be operated on. <b>Allowed values are:</b> <i>All</i> <i>ImagePhotographic</i> – Contone images. <i>ImageScreenShot</i> – Images largely comprised of rasterized vector art. <i>LineArt</i> – Vector objects other than text. <i>SmoothShades</i> – Gradients and blends. <i>Text</i>
<b>FileSpec</b> ( <i>AbstractProfile</i> ) ?	element	A <b>FileSpec</b> Resource pointing to an abstract ICC profile that has been devised to apply a preference adjustment. See explanation of adjustment at the beginning of this section.
<b>FileSpec</b> ( <i>DeviceLinkProfile</i> ) ?	element	A <b>FileSpec</b> Resource pointing to an ICC profile that describes the characterization of an abstract profile for specifying a preference adjustment. See explanation of adjustment at the beginning of this section.

## 8.25 ColorPool

The **ColorPool** Resource contains a pool of all **Color** Elements referred to in the Job. In general, it will be referenced as a **ResourceRef** from within Resources that require access to color information.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	<b>ColorIntent</b> , <b>NumberingIntent</b> , <b>ByteMap</b> , <b>ColorantControl</b> , <b>FormatConversionParams</b> , <b>LayoutElement</b> , <b>PageList</b> , <b>ShapeDef</b>
<b>Intent Pairing:</b>	<b>ColorIntent</b>
<b>Example Partition:</b>	
<b>Input of Processes:</b>	
<b>Output of Processes:</b>	

**Table 8-47: ColorPool Resource**

Name	Data Type	Description
<i>ColorantSetName</i> ?	string	A string used to identify the named colorant parameter set. This string will be used to identify a set of color definitions (typically associated with a particular class of Job or a particular press). <b>Note:</b> This value will typically be identical to <b>ColorIntent/@ICCCColorStandard</b> or <b>ColorIntent/@ColorStandard</b> .
<i>Color</i> *	element	Individual named color.

## 8.26 ColorSpaceConversionParams

This set of parameters defines the rules for a **ColorSpaceConversion** Process, the Elements of which define the set of operations to be performed. Information inside the **ColorSpaceConversionOp** Elements defines the operation and identifies the color spaces and types of objects to operate on. Other Attributes define the color management system to use, as well as the working color space and the final target Device.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	<b>ColorIntent</b> , <b>ProofingIntent</b> , <b>ContentCheckIntent</b>
<b>Example Partition:</b>	<b>"DocIndex", "RunIndex", "RunTags", "DocTags", "PageTags", "SetTags", "SheetName", "Side", "SignatureName"</b>
<b>Input of Processes:</b>	<b>ColorSpaceConversion</b>
<b>Output of Processes:</b>	—

**Table 8-48: ColorSpaceConversionParams Resource (Sheet 1 of 3)**

Name	Data Type	Description
<i>ColorManagementSystem</i> ?	string	Identifies the preferred ICC color management system to use when performing color transformations. When specified, this Attribute overrides any default selection of a color management system by an application and overrides the “CMM Type” value (bytes 4-7 of an ICC Profile Header) in any of the Job related ICC profiles. This string Attribute Value identifies the manufacturer of the preferred CMM and SHALL match one of the registered four-character ICC CMM Type values. <b>Values include those from:</b> <i>ICC Manufacturer's Signature Registry</i> at <a href="http://www.color.org">http://www.color.org</a> . <b>Example values:</b> “ADBE” for the Adobe CMM and “KODA” for the Kodak CMM.
<i>ConvertDevIndepColors</i> ? <i>Deprecated in JDF 1.1</i>	boolean	When “true”, incoming Device-independent colors are processed to the selected Device space. If the chosen operation is “Untag” and the characterization data are in the form of an ICC profile, then the profile is removed. Otherwise, these colors are left untouched. The functionality of <b>@ConvertDevIndepColors</b> is superseded by including one or more <b>ColorSpaceConversionOp</b> with <b>@SourceCS = “DevIndep”</b> in JDF 1.1.

**Table 8-48: ColorSpaceConversionParams Resource (Sheet 2 of 3)**

Name	Data Type	Description
<i>ICCProfileUsage</i> ?= "UsePDL" New in JDF 1.2	enumeration	<p>This Attribute specifies where to obtain either the destination profile or Device Link transform (see Section 1 on page 354 in Section 6.4.4, “ColorSpaceConversion”) to be applied when converting object colors for the current iteration of the <b>ColorSpaceConversion</b> Process. @<i>ICCProfileUsage</i> provides an order precedence.</p> <p><b>Note:</b> Use of a final target device profile provides a profiled destination to be used when converting a source object through PCS (Profiled Connection Space) to that profiled destination, and a Device Link transform specifies a conversion directly of the source object from the source space directly to the destination.</p> <p><b>Allowed values are:</b></p> <p><i>UsePDL</i> –</p> <ul style="list-style-type: none"> <li>1 Use the embedded profile.</li> <li>2 Use the profile specified in the <b>LayoutElement/ElementColorParams/FileSpec(ReferenceOutputProfile)</b>.</li> <li>3 Use the profile specified in the <b>LayoutElement/ElementColorParams/FileSpec(ActualOutputProfile)</b>.</li> <li>4 Use the Device Link transform specified in a <b>ColorSpaceConversionOp/ColorSpaceConversionOp/FileSpec(DeviceLinkProfile)</b>.</li> <li>5 Use the profile specified in <b>ColorSpaceConversionParams/FileSpec(FinalTargetDevice)</b>.</li> <li>6 Use the system specified profile or Device Link transform.</li> </ul> <p><i>UseSupplied</i> –</p> <ul style="list-style-type: none"> <li>1 Use the profile specified in the <b>LayoutElement/ElementColorParams/FileSpec(ReferenceOutputProfile)</b>.</li> <li>2 Use the profile specified in the <b>LayoutElement/ElementColorParams/FileSpec(ActualOutputProfile)</b>.</li> <li>3 Use the Device Link transform specified in a <b>ColorSpaceConversionOp/ColorSpaceConversionOp/FileSpec(DeviceLinkProfile)</b>.</li> <li>4 Use the profile specified in <b>ColorSpaceConversionParams/FileSpec(FinalTargetDevice)</b>.</li> <li>5 Use the system specified profile or Device Link transform.</li> </ul>

**Table 8-48: ColorSpaceConversionParams Resource (Sheet 3 of 3)**

Name	Data Type	Description
ColorSpaceConversionOp ColorSpaceConversionOp *	element	<p>List of <b>ColorSpaceConversionOp</b> elements, each of which identifies a type of object, defines the source color space for that type of object, and specifies the behavior of the conversion operation for that type of object. The XML order of <b>ColorSpaceConversionOp</b> elements is significant, and when multiple elements apply to the same object, they are applied in that XML order.</p> <p>A <b>ColorSpaceConversionOp</b> can modify the characteristics of an object such that its selection criteria is also modified. Thus, if two <b>ColorSpaceConversionOp</b> elements select the same set of objects, and the first element changes the object in such a way that the object would no longer be selected by the second element, then the second <b>ColorSpaceConversionOp</b> SHALL NOT be applied to that object.</p> <p><b>ColorSpaceConversionOp</b> SHOULD contain the complete set of parameters for a given color space conversion operation. Otherwise the results are implementation dependent.</p> <p>A <b>ColorSpaceConversionOp</b> process included as part of a RIPping combined process shall include an implied Convert operation as its last operation (causing all other unconverted color spaces to be converted according to the RIP's PDL)</p>
FileSpec (FinalTargetDevice) ?	refelement	A <b>FileSpec</b> Resource pointing to an ICC profile that describes the characterization of the final output target Device.
FileSpec (WorkingColorSpace) ? <i>Deprecated in JDF 1.1</i>	refelement	A <b>FileSpec</b> Resource pointing to an ICC profile that describes the assumed characterization of "CMYK", "RGB" and "Gray" color spaces.

### 8.26.1 Element: **ColorSpaceConversionOp**

The **ColorSpaceConversionOp** Element identifies a type of object, defines the source color space for that type of object, and specifies the behavior of the conversion operation for that type of object. Many of these Attribute descrip-

tions refer to ICC Color Profiles[ICC.1]. See also the International Color Consortium (ICC) Web site at <http://www.color.org>.

**Table 8-49: ColorSpaceConversionOp Element (Sheet 1 of 4)**

Name	Data Type	Description
<i>ObjectTags</i> ?	NMTOKENS	<p>Tags associated with individual objects that this <i>ColorSpaceConversionOp</i> SHALL be applied to. Each tag specified in <i>@ObjectTags</i> is logically anded with the object type(s) specified by <i>@SourceObjects</i>, enabling first qualification by object type (such as image), and then tags associated with those objects.</p> <p>The values of <i>@ObjectTags</i> depends on the PDL that the color space conversion is applied to.</p> <p><i>@ObjectTags</i> SHALL apply only to objects whose tag pool includes all the tags in the value of <i>@ObjectTags</i>.</p>
<i>Operation</i> ?	enumeration	<p>Controls which of five functions the color space conversion utility performs.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Convert</i> – Transforms graphical elements to final target color space.</li> <li><i>Tag</i> – Associates appropriate working space profile with uncharacterized graphical element.</li> <li><i>Untag</i> – Removes all profiles and color characterizations from graphical elements.</li> <li><i>Retag</i> – Equivalent to a sequence of "<i>Untag</i>" → "<i>Tag</i>", where the "<i>Untag</i>" → "<i>Tag</i>" sequence is only applied to those objects selected by this <i>ColorSpaceConversionOp</i>.</li> <li><i>ConvertIgnore</i> – Equivalent to a sequence of "<i>Untag</i>" → "<i>Convert</i>".</li> </ul>
<i>PreserveBlack</i> ?	boolean	Controls how the tints of black (K in CMYK) are to be handled. If <i>@PreserveBlack</i> is " <i>false</i> ", these colors are processed through the standard ICC workflow. If <i>@PreserveBlack</i> is " <i>true</i> ", these colors are to be converted into other shades of black. The algorithm is implementation-specific.
<i>RenderingIntent</i> ?	enumeration	<p>Identifies the rendering intent to be applied when rendering the objects selected by this <i>ColorSpaceConversionOp</i>.</p> <p><b>Allowed values are</b> (ICC-defined [ICC.1] rendering intent values):</p> <ul style="list-style-type: none"> <li><i>Saturation</i></li> <li><i>Perceptual</i></li> <li><i>RelativeColorimetric</i></li> <li><i>AbsoluteColorimetric</i></li> <li><i>ColorSpaceDependent</i> – The rendering intent is dependent on the color space. The dependencies are implementation specific.</li> </ul>

**Table 8-49: ColorSpaceConversionOp Element (Sheet 2 of 4)**

Name	Data Type	Description
<i>RGBGray2Black ?</i>	boolean	This feature controls what happens to gray values (R = G = B) when converting from RGB to CMYK or the incoming graphical objects indicated by <i>@SourceObjects</i> . In the case of MS Office applications and screen dumps, there are a number of gray values in the images and line art. Printers do not want to have CMY under the K because it creates registration problems. They prefer to have K only, so the printer converts the gray values to K. Gray values that exceed the <i>@RGBGray2BlackThreshold</i> are not converted. <i>@RGBGray2Black</i> and <i>@RGBGray2BlackThreshold</i> are used by the <b>ColorSpaceConversion</b> Process in determining how to allocate RGB values to the black (K) channel. After the <b>ColorSpaceConversion</b> Process is completed, the <b>Rendering</b> Process uses <b>AutomatedOverPrintParams</b> to determine overprint behavior for the previously determined black (K) channel.
<i>RGBGray2BlackThreshold ?</i>	double	A value between "0.0" and "1.0" which specifies the threshold value above which the Device SHALL NOT convert gray (R = G = B) to black (K only) when <i>@RGBGray2Black</i> is "true". So a "0" value means convert only R = G = B = 0 (black) to K only. A value of "1" specifies that all values of R = G = B are converted to K if <i>@RGBGray2Black</i> = "true".
<i>Separations ?</i>	NMTOKENS	List of separations that specify on which separation(s) to operate when <i>@SourceCS</i> = "Separation".
<i>PageDistributionScheme</i>	enumeration	Identifies which of the incoming color spaces will be operated on. <b>Allowed values are from:</b> Table 8-50, "SourceCS Attribute Values". <b>Note:</b> see Table 8-51, "Mapping of SourceCS enumeration values to color spaces in the most common input file formats".
<i>SourceObjects ?</i>	enumerations	List of object Classes that identifies which incoming graphical objects will be operated on. <b>Allowed values are:</b> <i>All</i> <i>ImagePhotographic</i> – Contone images. <i>ImageScreenShot</i> – Images largely comprised of rasterized vector art. <i>LineArt</i> – Vector objects other than text. <i>SmoothShades</i> – Gradients and blends. <i>Text</i>

**Table 8-49: ColorSpaceConversionOp Element (Sheet 3 of 4)**

Name	Data Type	Description
<i>SourceRenderingIntent</i> ?	enumeration	<p>Identifies the rendering intent transform elements to be selected from the source profile that will be used to interpret objects of type identified by the <i>@SourceObjects</i> and <i>@SourceCS</i> Attributes.</p> <p><b>Default value is from:</b> <i>@RenderingIntent</i>.</p> <p><b>Allowed values are</b> (ICC-defined [ICC.1] rendering intent values):</p> <ul style="list-style-type: none"> <li><i>Saturation</i></li> <li><i>Perceptual</i></li> <li><i>RelativeColorimetric</i></li> <li><i>AbsoluteColorimetric</i></li> </ul> <p><i>ColorSpaceDependent</i> – The rendering intent is dependent on the color space. The dependencies are implementation specific.</p> <p><b>Note:</b> The <i>@SourceRenderingIntent</i> will pertain to the source profile used in a particular <b>ColorSpaceConversion</b> Process (e.g., sources can be the native original color space, an intermediate working color space or an reference output simulation color space).</p>
<i>DeviceNSpace</i> ?	element	DeviceNSpace Resource that describe the DeviceN color space on which to operate when <i>@SourceCS</i> = "DeviceN". Individual colorant definitions for the colorant names given in DeviceNSpace are provided in <b>ColorantControl</b> / <i>@ColorRef</i> , which SHALL also be present
<b>FileSpec</b> ( <i>AbstractProfile</i> ) ?	element	A <b>FileSpec</b> Resource pointing to an ICC profile [ICC.1] that describes the characterization of an Abstract Profile for specifying a preference adjustment.
<b>FileSpec</b> ( <i>DeviceLinkProfile</i> ) *	element	<p>A <b>FileSpec</b> Resource pointing to an ICC profile file [ICC.1] that contains a Device Link transform.</p> <p>The Source colorspace of the referenced Device Link transform SHOULD match that of the profile identified by <b>FileSpec</b> (<i>PDLSourceProfile</i>) and the destination color space SHOULD match that of the destination profile identified by <b>ColorSpaceConversionParams</b> (if specified). Multiple Device Link ICC transforms should be provided where each transform specifies a different rendering intent. This is important in the case where multiple PDL content objects of the colorspace specify different rendering intents.</p> <p><b>Note:</b> an ICC Device Link profile contains only one transform with one color rendering intent.</p> <p><b>Note:</b> although the ICC specification refers to all ICC files as "profiles", a Device Link in actuality represents a single transform to be applied, and not a profile of a particular device colorspace. Thus these files are referred to as Device Link transforms in this specification.</p>

**Table 8-49: ColorSpaceConversionOp Element (Sheet 4 of 4)**

Name	Data Type	Description
<b>FileSpec</b> ( <i>PDLSourceProfile</i> )?	element	A <b>FileSpec</b> Resource describing an ICC profile that describes a profiled source space that this <b>ColorSpaceConversionOp</b> should operate on. When present, only objects that specify the <b>@SourceCS</b> along with the specified profile are selected.  <b>Note:</b> The <b>FileSpec/@UID</b> Attribute can often be used to positively identify an ICC profile referenced in a PDL file when available ( <b>FileSpec/@UID</b> corresponds to the ICC ProfileID field). In addition, <b>FileSpec/@CheckSum</b> may be used when only a checksum of the entire profile is available.
<b>FileSpec</b> ( <i>SourceProfile</i> )?	element	A <b>FileSpec</b> Resource pointing to an ICC profile [ICC.1] that describes the assumed source color space. If <i>SourceProfileRef</i> is specified, it SHALL be used as the profile for the source object's color space during a "Convert", "Tag", or "Retag" operation, as specified by <b>@Operation</b> . <i>SourceProfileRef</i> SHALL be present for "Tag" or "Retag" operations, as specified by <b>@Operation</b> .
<b>ScreenSelector</b> ?	element	Links this <b>ColorSpaceConversionOp</b> to a given screening.

**— Attribute: SourceCS****Table 8-50: SourceCS Attribute Values (Sheet 1 of 2)**

Value	Description
<i>All</i>	Operates on all source colorspaces. This is useful when specifying a Convert operation using all PDL source-supplied characterizations with an XJDF-supplied final target device profile.
<i>CalGray</i>	defines a calibrated Device independent representation of Gray.
<i>Calibrated</i>	Operates on " <i>CalGray</i> " and " <i>CalRGB</i> " color spaces.
<i>CalRGB</i>	defines a calibrated based Device independent representation of RGB.
<i>CIEBased</i>	Operates on CIE-based color spaces (" <i>CIEBasedA</i> ", " <i>CIEBasedABC</i> ", " <i>CIEBasedDEF</i> " and " <i>CIEBasedDEFG</i> ").
<i>CMYK</i>	Operates on all CMYK color spaces. This includes both characterized and uncharacterized CMYK color spaces.
<i>DeviceCMYK</i>	Operates on uncharacterized CMYK color spaces.
<i>DeviceGray</i>	Operates on uncharacterized Gray color spaces.
<i>DeviceN</i>	Identifies the source color encoding as a " <i>DeviceN</i> " color space. The specific " <i>DeviceN</i> " color space to operate on is defined in the <b>DeviceNSpace</b> Resource. If " <i>DeviceN</i> " is specified, then <b>DeviceNSpace</b> SHALL also be present.
<i>DeviceRGB</i>	Operates on uncharacterized RGB color spaces.
<i>DevIndep</i>	Operates on Device independent color spaces (equivalent to " <i>Calibrated</i> ", " <i>CIEBased</i> ", " <i>ICCBased</i> ", " <i>Lab</i> " or " <i>YUV</i> ").
<i>Gray</i>	Operates on all Gray color spaces. This includes both characterized and uncharacterized Gray color spaces.
<i>ICCBased</i>	Operates on color spaces defined using ICC profiles. The " <i>ICCBased</i> " value includes EPS, TIFF or PICT files with embedded ICC profiles. See [ICC.1]. Includes PDF Device color spaces that are characterized in Footnote 1 on page 578 following Table 8-51.

**Table 8-50: SourceCS Attribute Values (Sheet 2 of 2)**

<b>Value</b>	<b>Description</b>
<i>ICCCMYK</i>	Operates on ICCBased color spaces with ICC CMYK profiles or DeviceCMYK having an ICC-based characterization. See Footnote 1 on page 578 following Table 8-51.
<i>ICCGray</i>	Operates on ICCBased color spaces with ICC gray profiles or DeviceGray having an ICC-based characterization. See Footnote 1 on page 578 following Table 8-51.
<i>ICCLAB</i>	Operates on ICC based Device independent representation of LAB
<i>ICCRGB</i>	Operates on ICCBased color spaces with ICC RGB profiles or DeviceRGB having an ICC-based characterization. See Footnote 1 on page 578 following Table 8-51.
<i>Lab</i>	Operates on "Lab".
<i>RGB</i>	Operates on all RGB color spaces. This includes both characterized and uncharacterized RGB color spaces.
<i>Separation</i>	Operates on " <i>Separation</i> " color spaces (spot colors). The specific separation(s) to operate on are defined in the <i>@Separations</i> attribute. If no <i>@Separations</i> is defined, the operation will operate on all the separation color spaces in the input <i>RunList</i> .
<i>YUV</i>	Operates on " <i>YUV</i> " (Also known as YCbCr). See [CCIR601-2]

**Note:**

The following table summarizes how the *@SourceCS* Attribute is mapped to/from different file formats.

**Table 8-51: Mapping of SourceCS enumeration values to color spaces in the most common input file formats (Sheet 1 of 2)**

<b>SourceCS</b>	<b>File Format</b>	<b>Color Space</b>
<i>Calibrated</i>	PDF (2)	CalGray, CalRGB
	PostScript (2)	n/a
	TIFF	n/a
<i>CIEBased</i>	PDF (2)	n/a
	PostScript (2)	CIEBasedABC, CIEBasedA, CIEBasedDEF and CIEBasedDEFG
	TIFF	n/a
<i>CMYK</i>	PDF (2)	DeviceCMYK (1) PDF ICCBased color spaces with ICC CMYK profiles. CIEBasedDEFG spaces that resolve to a characterized CMYK space.
	PostScript (2)	DeviceCMYK
	TIFF	PhotometricInterp = 5 Samples per pixel = 4
<i>DeviceCMYK</i>	PDF (2)	DeviceCMYK (1)
	PostScript (2)	DeviceCMYK
	TIFF	PhotometricInterp = 5 Samples per pixel = 4
<i>DeviceGray</i>	PDF (2)	DeviceGray (1)
	PostScript (2)	DeviceGray
	TIFF	PhotometricInterp = 0 or 1

**Table 8-51: Mapping of SourceCS enumeration values to color spaces in the most common input file formats (Sheet 2 of 2)**

<b>SourceCS</b>	<b>File Format</b>	<b>Color Space</b>
<i>DeviceN</i>	PDF (2)	DeviceN
	PostScript (2)	DeviceN
	TIFF	PhotometricInterp = 5, Samples per pixel = N
<i>DeviceRGB</i>	PDF (2)	DeviceRGB (1)
	PostScript	DeviceRGB
	TIFF	PhotometricInterp = 2
<i>Gray</i>	PDF (2)	DeviceGray (1) PDF ICCBased color spaces with ICC Gray profiles. CIEBasedA spaces that resolve to a characterized Gray space.
	PostScript (2)	DeviceGray
	TIFF	PhotometricInterp = 0 or 1
<i>ICCBased</i> <i>ICCCMYK</i> <i>ICCGray</i> <i>ICCLAB</i> <i>ICCRGB</i>	PDF (2)	ICCBased DeviceGray, DeviceCMYK, DeviceRGB (See Footnote 1 on page 578)
	PostScript (2)	n/a
	PostScript/EPS	The EPS file has an embedded ICC profile.
	TIFF	The TIFF file has an embedded ICC profile.
	LAB	LAB
<i>LAB</i>	PostScript (2)	n/a
	TIFF	PhotometricInterp = 8 (CIELAB 1976 “normal” encoding) or PhotometricInterp = 9 (CIELAB 1976 using ICC profile v2 encoding).
	RGB	DeviceRGB (1) PDF ICCBased color spaces with ICC RGB profiles. CIEBasedDEF spaces that resolve to a characterized RGB space.
<i>RGB</i>	PostScript	DeviceRGB
	TIFF	PhotometricInterp = 2
	Separation	Separation
<i>Separation</i>	PostScript (2)	Separation
	TIFF	PhotometricInterp = 5 (Applies only to one of the planes in the separated image.)
	YUV	n/a
<i>YUV</i>	PostScript (2)	n/a
	TIFF	PhotometricInterp = 6

- 1) In PDF, DeviceCMYK, DeviceRGB, and DeviceGray source colorspaces can be characterized through providing a DefaultCMYK, DefaultRGB, or DefaultGray resource specifying a profile to be associated with source objects in that color space. In which case, the resulting color space is considered characterized by XJDF operations.
- 2) Where a "Pattern" or "Indexed" color space has been used, the base color space is used to determine whether to apply this operation.

## 8.27 Component

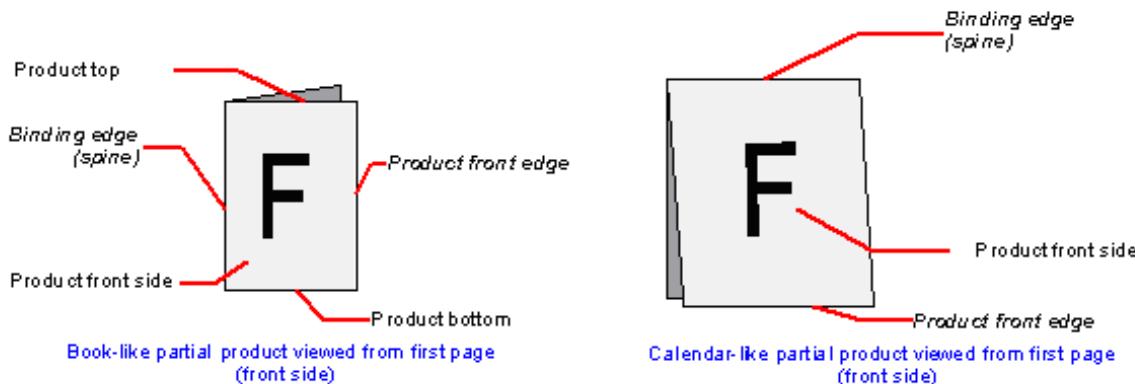
**Component** is used to describe the various versions of semi-finished goods in the press and postpress area, such as a pile of folded Sheets that have been collected and are then joined and trimmed. Nearly every postpress process has a **Component** resource as an input as well as an output. Typically the first components in the process chain are some printed sheets or ribbons, while the last **Component** is a book or a brochure.

### Glossary – Component

The descriptions of **Component** specific attributes use some terms whose meaning depends on the culture in which they are used. For example, different cultures mean different things when they refer to the “front” side of a magazine. Other terms (e.g., binding) are defined by the production process and, therefore, do not depend on the culture.

Whenever possible, this specification endeavors to use culturally independent terms. In cases where this is not possible, Western style (left-to-right writing) is assumed. Please note that these terms might have a different meaning in other cultures (i.e., those writing from right to left).

Figure 8-19: Component – terms and definitions



The table below describes the terms used to define the components.

Table 8-52: Glossary – Component

Term	Definition
<b>Binding edge</b>	The edge on which the (partial) product is glued or stitched. This edge is also often called <i>working edge</i> or <i>spine</i> .
<b>Product front edge</b>	The side, where you open the (partial) product. This edge is opposite to the binding edge.
<b>Registered edge</b>	A side on which a collection of Sheets or partial products is aligned during a production step. All production steps require two registered edges, which SHALL NOT be opposite to each other. The two registered edges define the coordinate system used within the production step. When there is a binding edge, this is one of the registered edges.

### Resource Properties

**Resource Class:**

Quantity

**Resource referenced by:**

Bundle/BundleItem, DigitalPrintingParams, FeedingParams/Feeder, FeedingParams/CollatingItem

**Example Partition:**

`"Condition", "RibbonName", "SheetName", "SignatureName",  
"WebName"`

**Input of Processes:**

Any Product Intent Node (Section , "")**Product Intent**,  
**ConventionalPrinting**, **DigitalPrinting**, **Varnishing**,  
**BlockPreparation**, **BoxFolding**, **BoxPacking**, **Bundling**,

*CaseMaking, CasingIn, ChannelBinding, CoilBinding, Collecting, CoverApplication, Creasing, Cutting, Embossing, EndSheetGluing, Feeding, Folding, Gathering, Gluing, HeadBandApplication, HoleMaking, Inserting, Jacketing, Labeling, Laminating, LooseBinding, Numbering, Palletizing, Perforating, PlasticCombBinding, PrintRolling, RingBinding, ShapeCutting, Shrinking, SpinePreparation, SpineTaping, Stacking, StaticBlocking, Stitching, Strapping, StripBinding, ThreadSealing, ThreadSewing, Trimming, WebInlineFinishing, Winding, WireCombBinding, Wrapping*

**Output of Processes:**

,Any Product Intent Node (Section , ‘‘’)**Product Intent**,  
*ConventionalPrinting, DigitalPrinting, Varnishing, BlockPreparation, BoxFolding, BoxPacking, Bundling, CaseMaking, CasingIn, ChannelBinding, CoilBinding, Collecting, CoverApplication, Creasing, Cutting, Embossing, EndSheetGluing, Feeding, Folding, Gathering, Gluing, HeadBandApplication, HoleMaking, Inserting, Jacketing, Labeling, Laminating, LooseBinding, Numbering, Palletizing, Perforating, PlasticCombBinding, PrintRolling, RingBinding, ShapeCutting, Shrinking, SpinePreparation, SpineTaping, Stacking, StaticBlocking, Stitching, Strapping, StripBinding, ThreadSealing, ThreadSewing, Trimming, WebInlineFinishing, Winding, WireCombBinding, Wrapping*

**Table 8-53: Component Resource (Sheet 1 of 6)**

Name	Data Type	Description
<a href="#">AssemblyIDs ? New in JDF 1.3</a>	NMTOKENS	@AssemblyIDs of the <b>Assembly</b> , AssemblySection or <b>StrippingParams</b> (@BinderySignatureName) which this <b>Component</b> carries.

**Table 8-53: Component Resource (Sheet 2 of 6)**

Name	Data Type	Description
<i>Automation ?</i> <a href="#">New in JDF 1.5</a>	enumeration	<p>Identifies dynamic and static components. When a <b>Component</b> is referenced from a Binding process, <i>@Automation</i> modifies the scope of the <b>Component</b> to be bound. If <i>@Automation</i> = "Static", the individual <b>Component</b> elements to be bound are one instance of the referenced <b>Component</b>. If <i>@Automation</i> = "Dynamic", the individual <b>Component</b> elements to be bound are identified by <b>Component</b> of the referenced partition. This may either be marked by the availability of all child partitions of the referenced partition or by the number of surfaces matching the value of <i>@SurfaceCount</i> specified in the <b>IdentificationField</b> or Pipe <b>JMF XJMF</b> Messages, respectively. The structure of <i>@PartIDKey</i> generation for automated imposition is defined in detail in: Section 6.4.18.3, Execution Model for Automated Imposition. This structure SHALL be retained in the <b>Component</b> description.</p> <p><b>Allowed values are:</b></p> <p><i>Static</i> – The <b>Component</b> is static and completely qualified.</p> <p><i>Dynamic</i> – The <b>Component</b> is a template. If <i>@PipeID</i> is also present, Details are specified in <b>JMF XJMF</b> Pipe messages. See <a href="#">Section 4.3.3.1, Dynamic Pipes</a><a href="#">Section 11.3.4.1, Dynamic Pipes</a>. If an <b>IdentificationField</b>/MetadataMap element is present, the details are controlled by the barcode that is represented by <b>IdentificationField</b>/MetadataMap.</p>
<i>CartonTopFlaps ?</i> <a href="#">New in JDF 1.3</a>	XYPair	Size (F1,F2) (See Figure 8-13, "Box packing," on page 535) of the two top flaps of a carton for shipping. SHALL NOT be specified unless <i>@ProductType</i> = "Carton".
<i>Columns ?</i> <a href="#">New in JDF 1.5</a>	integer	Number of columns of images that are placed on a finished roll, such as by the <b>Winding</b> Process. This value is typically used to describe rolls with multiple columns of printed labels.

**Table 8-53: Component Resource (Sheet 3 of 6)**

Name	Data Type	Description
<i>ComponentType</i> <a href="#">Modified in JDF 1.3</a>	enumeration	<p>Specifies the category of the component.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Block</i> – Folded or stacked product (e.g., book block).</li> <li><i>Other</i> – The <b>Component</b> describes a sample that has not been produced in this Job. Examples are perfume samples, CDs or toys that are inserted into a printed product. <a href="#">New in JDF 1.3</a></li> <li><i>Ribbon</i> – The <b>Component</b> is a ribbon on a Web Press.</li> <li><i>Sheet</i> – Single layer (Sheet) of paper.</li> <li><i>Web</i> – The <b>Component</b> is a web on a Web Press.</li> </ul> <p><i>FinalProduct</i> – The <b>Component</b> is the final product that was ordered by the customer.</p> <p><i>PartialProduct</i> – The <b>Component</b> is an intermediate product that will be input to a following Process.</p> <p><i>Proof</i> – The <b>Component</b> is a proof (e.g., a press proof or output from a digital press). Note that in JDF 1.2, proof was defined in the 1st list of categories, above. <a href="#">Modified in JDF 1.3</a></p> <p><b>Constraint:</b> further <i>Further</i> details of the component are specified in <i>@ProductType</i>. At most one of "<i>FinalProduct</i>", "<i>PartialProduct</i>" or "<i>Proof</i>" SHALL be specified in addition to one of the first five enumerations specified as values.</p>
<i>Dimensions</i> ?	shape	<p>The dimensions of the component. These dimensions MAY differ from the original size of the original product. For example, the dimensions of a folded Sheet MAY be unequal to the dimensions of the Sheet before it was folded. The dimension is always the bounding box around the <b>Component</b>. If not specified, a portrait orientation (<math>Y &gt; X</math>) is assumed</p> <p><b>Note:</b> It is crucial for enabling postpress to specify <i>@Dimensions</i> unless they really are unknown.</p>
<i>ContentRefs</i> ?	IDREFS	Reference to <b>Content</b> that provides metadata related to this <b>Component</b> .
<i>IsWaste</i> = "false" <a href="#">Deprecated in JDF 1.4</a>	boolean	<p>If "true", the <b>Component</b> is waste from a previous Process that can be used to set up a Machine.</p> <p><b>Deprecation note:</b> starting with JDF 1.4, use Partitioning with <i>@Condition</i> instead of <i>@IsWaste</i>.</p>
<i>MaxHeat</i> ?	double	Maximum temperature the <b>Component</b> can resist (in degrees centigrade). The default setting is to impose no restriction in terms of heat (e.g., fusers in electrophotographic Process or shrink wrapping).
<i>Media</i> ? <a href="#">MediaRef</a> ? <a href="#">New in JDF 1.4</a>	refelementIDREF	<p><b>Media</b> for the component.</p> <p>The coordinate system of <b>Media</b> coincides with the coordinate system of the component.</p>
<i>Overfold</i> ? <a href="#">New in JDF 1.1</a>	double	Expansion of the overfold of a <b>Component</b> . This attribute is needed for the <i>Inserting</i> or other postpress processes.

**Table 8-53: Component Resource (Sheet 4 of 6)**

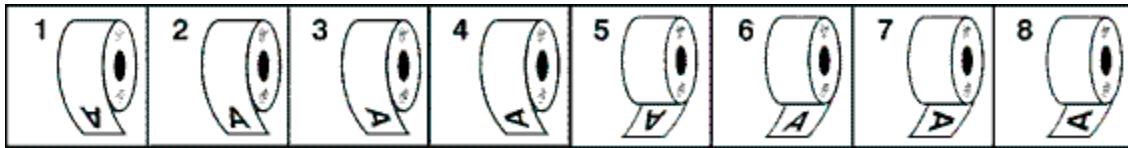
Name	Data Type	Description
<i>OverfoldSide</i> ? <a href="#">New in JDF 1.1</a>	enumeration	Specifies the longer side of a folded component. <b>Allowed values are:</b> <i>Front</i> <i>Back</i>
<i>PageListIndex</i> ? <a href="#">New in JDF 1.3</a>	IntegerRangeList	List of the indices of the <b>PageData</b> Elements of the <b>PageList</b> specified in this <b>Component</b> .
<i>NodeStatus</i> ? <i>ProductType</i> ? <a href="#">Modified in JDF 1.5</a>	NMTOKEN	Type of product that this component specifies. <b>Values include those from:</b> <a href="#">Table 8-54, “ProductType Attribute Values” on page 585</a> , <a href="#">Table 7-2, “ProductType Attribute Values” on page 428</a>
<i>ProductTypeDetails</i> ? <a href="#">New in JDF 1.3</a>	string	Additional details of the product: If <i>@ProductType</i> = "BlankBox" or <i>@ProductType</i> = "FlatBox", <i>@ProductTypeDetails</i> specifies a box type (e.g., [ECMA], [FEFCO] or company internal box type standard). <b>Values include:</b> <i>NewspaperNormal</i> – Standard newspaper. <i>NewspaperMixed</i> – multiple <b>Component</b> resources of a newspaper are produced in parallel. <i>NewspaperCombi</i> – <b>Component</b> resources are collected to one <b>Component</b> in an inline production chain after press.
<i>ReaderPageCount</i> ? <a href="#">New in JDF 1.1</a>	integer	Total amount of individual Reader Pages that this <b>Component</b> contains. Count of -1 means “unknown.” If not specified, the value is unknown.
<i>SheetPart</i> ?	rectangle	Only used if contains ( <i>@ComponentType</i> , "Block") and <b>Layout</b> is present. Position of the block on the <b>Layout</b> in <i>@SurfaceContentsBox</i> coordinates used in this <b>Component</b> .
<i>SourceRibbon</i> ? <a href="#">Deprecated in JDF 1.3</a>	string	SHALL NOT be specified unless contains ( <i>@ComponentType</i> , "Ribbon"). <i>@RibbonName</i> of the ribbon used in this <b>Component</b> . <b>Deprecation note:</b> starting with JDF 1.3, use a direct reference to the <b>Layout</b> Partition that represents the ribbon.
<i>SourceSheet</i> ? <a href="#">Deprecated in JDF 1.3</a>	string	SHALL NOT be specified unless contains ( <i>@ComponentType</i> , "Sheet") or contains ( <i>@ComponentType</i> , "Block"). Matches the <b>Layout</b> /Signature/ <b>Sheet</b> / <i>@Name</i> used in this <b>Component</b> . <b>Deprecation note:</b> starting with JDF 1.3, use a direct reference to the <b>Layout</b> partition that represents the Sheet.
<i>SourceWeb</i> ? <a href="#">Deprecated in JDF 1.3</a>	string	SHALL NOT be specified unless contains ( <i>@ComponentType</i> , "Ribbon"). <i>@WebName</i> of the ribbon used in this <b>Component</b> . <b>Deprecation note:</b> starting with JDF 1.3, use a direct reference to the <b>Layout</b> Partition that represents the Web.
<i>SpineThickness</i> ? <a href="#">New in JDF 1.4</a>	double	Thickness

**Table 8-53: Component Resource (Sheet 5 of 6)**

Name	Data Type	Description
<i>SurfaceCount</i> ? <a href="#">New in JDF 1.1</a>	integer	Total amount of individual surfaces that this <b>Component</b> contains. <b>Note:</b> a sheet always has 2 Surfaces regardless of the number of images or reader pages. In case of homogeneous <b>Component</b> elements, <i>@SurfaceCount</i> refers to surfaces with a size of <b>Component</b> / <i>@Dimensions</i>
<i>Transformation</i> ? <a href="#">Deprecated in JDF 1.1</a>	matrix	Matrix describing the transformation of the orientation of a <b>Component</b> for the process using this resource as input. This is needed to convert the coordinate system of the <b>Component</b> to the coordinate system of the process. When this attribute is not present, the identity matrix (1 0 0 1 0 0) is assumed. In version 1.1 and beyond, use <i>ResourceLink/@Transformation</i> or <i>ResourceLink/@Orientation</i> .
<i>WindingResult</i> ? <a href="#">New in JDF 1.5</a>	integer	Orientation of the finished product on the Roll. For an image, see Figure 8-20, “Orientation of the Finished Product on the Roll,” on page 585. The integer in the figure corresponds to value specified by <a href="http://www.finat.org">http://www.finat.org</a> . <b>Note:</b> the orientation and number of windings in a <b>Winding</b> Process are modified based on the value of <i>@WindingResult</i> .
<i>Assembly</i> ? <i>AssemblyRef</i> ? <a href="#">New in JDF 1.3</a>	refelementIDREF	Specifies the assembly of the <b>Component</b> . In case of a newspaper-Web Press, the output <b>Component</b> MAY already be built up of several “booklets”. <i>@AssemblyIDs</i> additionally specifies which <b>AssemblySection</b> elements of the <b>Assembly</b> belong to this <b>Component</b> .
<i>Bundle</i> ? <a href="#">New in JDF 1.1</a>	refelementele- ment	Description of a <b>Bundle</b> of <b>Component</b> resources if the <b>Component</b> represents multiple individual items. If no <b>Bundle</b> is present, the <b>Component</b> represents an individual item. Note that it is essential to keep a reference of the child <b>Component</b> resources that comprise a <b>Component</b> , as this information is useful to postpress processes.
<i>Disjointing</i> ?	element	A stack of components can be processed using physical separators. This is useful in operations such as feeding.
<i>Layout</i> ? <i>LayoutRef</i> ? <a href="#">New in JDF 1.2</a>	refelementIDREF	Specifies the original <b>Layout</b> of the source Sheet of the <b>Component</b> if it contains ( <i>@ComponentType</i> , "Sheet") or contains ( <i>@ComponentType</i> , "Block"). The original sheet is the <b>Layout</b> partition element where <i>@SourceSheet</i> matches the <b>Layout</b> / <i>@SheetName</i> used in this <b>Component</b> .
<i>Media</i> ? <i>MediaRef</i> ? <a href="#">New in JDF 1.4</a>	refelementIDREF	<b>Media</b> for the component. The coordinate system of <b>Media</b> coincides with the coordinate system of the component.
<i>PageList</i> ? <i>PageListRef</i> ? <a href="#">New in JDF 1.3</a>	refelementIDREF	Specification of page metadata for pages described by this <b>Component</b> .

**Table 8-53: Component Resource (Sheet 6 of 6)**

Name	Data Type	Description
<a href="#">Sheet ?</a> <a href="#">Deprecated in JDF 1.2</a>	refelement	The <b>Sheet</b> Resource that describes the details of this <b>Component</b> if it contains (@ <i>ComponentType</i> , "Sheet") or contains (@ <i>ComponentType</i> , "Block"). Replaced with <b>Layout</b> in JDF 1.2 and beyond. The Sheet in the referenced <b>Layout</b> is accessed by matching @ <i>SourceSheet</i> with <b>Layout</b> /Signature/ <b>Sheet</b> /@ <i>Name</i> .

**Figure 8-20: Orientation of the Finished Product on the Roll**

— Attribute: [ProductType](#)

**Table 8-54: ProductType Attribute Values (Sheet 1 of 2)**

Value	Description
<i>BackCover</i>	
<i>BlankBox</i> <a href="#">New in JDF 1.3</a>	Cut, Unfolded box, input for folder-gluer
<i>BlankSheet</i> <a href="#">New in JDF 1.4</a>	A sheet with connected blanks after a die cutting
<i>BlankWeb</i> <a href="#">New in JDF 1.4</a>	A web with connected blanks after a die cutting.
<i>Body</i> <a href="#">New in JDF 1.2</a>	Generic content inside of a cover.
<i>Book</i>	
<i>BookBlock</i>	
<i>BookCase</i>	
<i>Box</i>	Convenience packaging that is not envisioned to be protection for shipping.
<i>Brochure</i>	
<i>BusinessCard</i>	
<i>Carton</i>	Protection packaging for shipping.
<i>Cover</i>	
<i>EndSheet</i> <a href="#">New in JDF 1.5</a>	Endsheet for hard cover books.
<i>FlatBox</i> <a href="#">New in JDF 1.3</a>	A folded and glued blank (not opened). Output from a box folder-gluer.
<i>FlatWork</i> <a href="#">New in JDF 1.5</a>	Non-bound, non-folded Products or Products that only have packaging folds.

**Table 8-54: ProductType Attribute Values (Sheet 2 of 2)**

<b>Value</b>	<b>Description</b>
<i>FrontCover</i>	
<i>Insert</i>	
<i>New in JDF 1.2</i>	
<i>Jacket</i>	Hard cover case jacket.
<i>Label</i>	
<i>Newspaper</i>	A newspaper-product
<i>New in JDF 1.3</i>	
<i>Notebook</i>	A book or block with a set of identical or similar pages, e.g. a writing tablet, where all page fronts have identical content, and all page backs have identical content.
<i>New in JDF 1.6</i>	
<i>Pallet</i>	Loaded pallet of Boxes, Cartons or <b>Component</b> resources
<i>New in JDF 1.3</i>	
<i>Poster</i>	
<i>Stack</i>	Stacked <b>Components</b> .
<i>New in JDF 1.4</i>	
<i>Unknown</i>	
<i>Deprecated in JDF 1.2</i>	

## 8.28 Contact

Element describing a contact to a person or address. The **@ProductID @ExternalID** attribute in the parent **Resource element** SHALL be unique within the company.

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

Abstract PhysicalResource, **ArtDeliveryIntent**, **ArtDeliveryIntent/ArtDelivery**, **DeliveryIntent**, **DeliveryIntent/DropIntent**, **ApprovalParams/ApprovalPerson**, **ApprovalDetails**, **ApprovalSuccess/ApprovalDetails**, **ContentList Content**, **ContentData/ContentMetadata**, **CustomerInfo**, **DeliveryParams**, **DeliveryParams/Drop**, **DigitalDeliveryParams**

**Example Partition:**

—

**Input of Processes:**

—

**Output of Processes:**

—

**Table 8-55: Contact Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>ContactTypeDetails</i> ?	string  <a href="#">New in JDF 1.2</a>	<p><i>@ContactTypeDetails</i> specifies the details Details of the Contact's role or roles. For instance, if contains (@ContactTypes, "Delivery") this could be a description for which delivery location this <b>Contact</b> is responsible.</p> <p>If @ContactTypes contains "Employee", then <i>@ContactTypeDetails</i> defines the list of roles that the employee fills.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Apprentice</i> – Employee that is in training ("Auszubildender" / "Auszubildende" / "Stift" in German).</li> <li><i>Assistant</i> – Assistant operator.</li> <li><i>Craftsman</i> – Trained employee ("Geselle" / "Facharbeiter" in German).</li> <li><i>CSR</i> – Customer Service Representative</li> <li><i>Manager</i> – Manager.</li> <li><i>Master</i> – Highly trained employee ("Meister" in German).</li> <li><i>Operator</i> – Operator.</li> <li><i>ShiftLeader</i> – The leader of the shift.</li> <li><i>StandBy</i> – Employee who is allocated to a specific task on demand.</li> </ul>

**Table 8-55: Contact Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>ContactTypes</i> <a href="#">Modified in JDF 1.4</a>	NMTOKENS	<p><b>Classification</b> One or more roles of the contact.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Accounting</i> – Address of where to send to the bill.</li> <li><i>Administrator</i> – Person to contact for queries concerning the execution of the Job.</li> <li><i>Agency</i> – The contact is an employee of an Agency. <a href="#">New in JDF 1.4</a></li> <li><i>Approver</i> – Person who approves this Job. <a href="#">New in JDF 1.2</a></li> <li><i>ArtReturn</i> – Return delivery or pickup address for artwork of this Job.</li> <li><i>Author</i> – <a href="#">New in JDF 1.4</a></li> <li><i>Billing</i> – Contact information that refers to a payment method (e.g., credit card).</li> <li><i>Customer</i> – The end customer.</li> <li><i>Delivery</i> – The delivery address for all products of this Job.</li> <li><i>DeliveryCharge</i> – The <b>Contact</b> is charged for delivery of this Job.</li> <li><i>Designer</i> – <a href="#">New in JDF 1.4</a></li> <li><i>Editor</i> – <a href="#">New in JDF 1.4</a></li> <li><i>Employee</i> – Employee who works for the printer that is processing this job.</li> <li><i>Illustrator</i> – <a href="#">New in JDF 1.4</a></li> <li><i>Owner</i> – The owner of a Resource.</li> <li><i>Photographer</i> – <a href="#">New in JDF 1.4</a></li> <li><i>Pickup</i> – The pickup address for all products of this Job.</li> <li><i>Sender</i> – The source address of the delivery. <a href="#">New in JDF 1.2</a></li> <li><i>Supplier</i> – Address of a supplier of needed goods.</li> <li><i>SurplusReturn</i> – Return delivery or pickup address for surplus products of this Job.</li> <li><i>TelephoneSanitizer</i> – <a href="#">New in JDF 1.4</a></li> </ul>
<i>CostCenterID</i> ?	NMTOKEN	Identifier of the cost center that this <b>Contact</b> belongs to if <i>@ContactTypes</i> contains "Employee"
<i>UserID</i> ? <a href="#">New in JDF 1.5</a>	string	User ID of user, as specified when logging into the operating system or into the submitting application.
<i>Address</i> ?	element	Element describing the address.
<i>ComChannel</i> * <a href="#">ComChannel</a> * <a href="#">Modified in JDF 1.2</a>	element	Communication channels to the contact. These Elements define communication channels that MAY be assigned to multiple Persons, for instance the communication channel of a reception area.
<i>Company</i> ? <a href="#">New in JDF 1.1</a>	refelementele- ment	Company that this <b>Contact</b> is associated with.
<i>Person</i> ? <i>Person</i> ?	element	Name of the contact person.

**8.28.1 Element: ComChannel**

A communication channel to a person or company such as an email address, phone number or fax number.

**Table 8-56: ComChannel Element**

Name	Data Type	Description
<i>ChannelType</i> <a href="#">Modified in JDF 1.5</a>	enumerationNMTOKEN	<p>Type of the communication channel.</p> <p><b>Allowed values are:</b> Values include:</p> <ul style="list-style-type: none"> <li><i>ComputerName</i> <a href="#">New in JDF 1.5</a></li> <li><i>Email</i> – Email address.</li> <li><i>Fax</i> – Fax machine.</li> <li><i>JMF</i> – <b>JMF XJMF</b> messaging channel.</li> <li><i>Mobile</i> – Mobile phone. <a href="#">New in JDF 1.5</a></li> <li><i>Phone</i> – Telephone number. Starting with JDF 1.5, this This SHOULD be restricted to land line phones. <a href="#">Modified in JDF 1.5</a></li> <li><i>WWW</i> – WWW home page or form.</li> </ul> <p><i>PrivateDirectory</i> – Account of a registered customer of a certain service. (The list of the registered accounts is maintained by the service vendor). The <i>ChannelTypeDetails</i> Attribute has the name of the private directory service vendor.</p> <p><i>InstantMessaging</i> – IM service address. The <i>ChannelTypeDetails</i> Attribute has the name of the IM service vendor</p>
<i>ChannelTypeDetails</i> ? <a href="#">New in JDF 1.2</a> <a href="#">Modified in JDF 1.5</a>	NMTOKEN	<p>Description of the value of the <i>@ChannelType</i> Attribute. Consumer treats this value as the service vendor name if <i>@ChannelType</i> is "PrivateDirectory" or "InstantMessaging".</p> <p><b>Values include those from:</b> Table 8-57, "ChannelTypeDetails Attribute – predefined values for certain ChannelType values" on page 607.</p>
<i>ChannelUsage</i> ? <a href="#">New in JDF 1.2</a>	NMTOKENS	<p>Communication channel usage.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Business</i> – Business purpose usage (e.g., office phone number, fax).</li> <li><i>Private</i> – Private purpose usage (e.g., private phone number, fax, Email).</li> <li><i>DayTime</i> – Office hours in the time zone of the recipient.</li> <li><i>NightTime</i> – Out-of-office hours in the time zone of the recipient.</li> <li><i>WeekEnd</i> – Out-of-office hours in the time zone of the recipient.</li> </ul>
<i>Locator</i> <a href="#">Modified in JDF 1.2</a>	string	<p>Locator of this type of channel in a form, such as a phone number, a URL or an Email address. If a URL is defined for the <i>@ChannelType</i>, it is RECOMMENDED to use the URL syntax specified in [RFC2368] for "mailto" URLs, [RFC3966] for "tel" URLs and [RFC3986] for URLs in general, as follows:</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li>"mailto:a@b.com" – instead of "a@b.com" if <i>@ChannelType</i> = "Email",</li> <li>"tel:+49-69-92058800" – if <i>@ChannelType</i> = "Phone" and</li> <li>"tel:+49.6151.155.299" – if <i>@ChannelType</i> = "Fax".</li> </ul>

### 8.28.2 Element: Company

Company defines the organization name and organizational units (ORG) of the organizational properties defined in the vCard format. **@ProductID** **@CompanyID** SHALL be globally unique across all companies.

**Table 8-57: Company Element**

Name	Data Type	Description
<i>CompanyID</i> ?	NMTOKEN	An ID of the Company. The <b>@CompanyID</b> attribute for each specified company SHALL be unique within the company (i.e., the company's database).
<i>OrganizationName</i>	string	Name of the organization or company (vCard: ORG:orgnam (e.g., ABC, Inc.)).
<b>Contact</b> *	refelement	A contact of the company. In JDF 1.1 and beyond, Contacts reference multiple Companies.
<b>OrganizationalUnit</b> *	text element	Describes the organizational unit (vCard: ORG:orgunit. For example, if two Elements are present: 1. "North American Division" and 2. "Marketing").

### 8.28.3 Element: Person

This Element provides detailed information about a person. It also has the ability to specify different communication channels to this person. Use **@ExternalID** when a unique identifier for the Person is required. The structure of the Element is derived from the vCard format. It contains all of the same name subtypes (N:) of the identification and the title of the organizational properties. The corresponding XML types of the vCard are quoted in the description field of the table below.

**Table 8-58: Person Element**

Name	Data Type	Description
<i>AdditionalNames</i> ?	string	Additional names of the contact person (vCard: N:other).
<i>FamilyName</i> ?	string	The family name of the contact person (vCard: N:family).
<i>FirstName</i> ?	string	The first name of the contact person (vCard: N:given).
<i>JobTitle</i> ?	string	Job function of the person in the company or organization (vCard: title).
<i>Languages</i> ? <i>New in JDF 1.4</i>	languages	List of languages related to the person, ordered by decreasing preference
<i>NamePrefix</i> ?	string	Prefix of the name, can include title (vCard: N:prefix).
<i>NameSuffix</i> ?	string	Suffix of the name (vCard: N:suffix).
<i>PhoneticFirstName</i> ? <i>New in JDF 1.5</i>	string	Alternative spelling of a first name. Used (e.g., for pronunciation of Kanji (Japanese) names). See <a href="http://en.wikipedia.org/wiki/VCard">http://en.wikipedia.org/wiki/VCard</a> .
<i>PhoneticLastName</i> ? <i>New in JDF 1.5</i>	string	Alternative spelling of a last name. Used (e.g., for pronunciation of Kanji (Japanese) names). See <a href="http://en.wikipedia.org/wiki/VCard">http://en.wikipedia.org/wiki/VCard</a> .
<i>Address</i> ? <i>New in JDF 1.2</i>	element	Address of the person.
<b>ComChannel</b> * <b>ComChannel</b> *	element	Communication channels to the person

## 8.29 ContactCopyParams

New in JDF 1.1

Element describing the parameters of **ContactCopying**.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Example Partition:	—
Input of Processes:	<b>ContactCopying</b>
Output of Processes:	—

Table 8-59: ContactCopyParams Resource

Name	Data Type	Description
<i>ContactScreen</i> ?= "false"	boolean	@ContactScreen = "true" if a halftone screen on film is to be used to produce halftones.
<i>Cycle</i> ?	integer	Number of exposure light units to be used. The amount depends on the subject to be exposed.
<i>Diffusion</i> ?	enumeration	The diffusion foil setting. <b>Allowed values are:</b> On Off
<i>PolarityChange</i> ?= "true"	boolean	@PolarityChange = "true" if the copy is to change polarity with respect to the original image.
<i>RepeatStep</i> ?= "1 1"	XYPair	Number (as integers) of copies in each direction for a Step/Repeat camera.
<i>ScreeningParamsRef</i> ?	IDREF	Properties of the halftone screen on film. Ignored if @ContactScreen = "false".
<i>Vacuum</i> ?	double	Amount of vacuum pressure to be used, measured in bars.
<b>ScreeningParams</b> ? <i>ScreeningParamsRef</i> ?	refelementIDREF	Properties of the halftone screen on film. Ignored if @ContactScreen = "false".

## 8.30 ContentList

### 8.31 Content

New in JDF 1.3

**ContentList** provides a list of **ContentData** Elements. **ContentData** elements are independent of pages. Thus multiple **ContentData** elements MAY reside on one page and a **ContentData** element MAY span multiple pages.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	<b>PublishingIntent, LayoutElement, PageList, RunList</b>
Example Partition:	—
Input of Processes:	—
Output of Processes:	—

**Table 8-60: ContentList Content Resource**

Name	Data Type	Description
ContentData + <a href="#">Modified in JDF 1.4</a>	element	<p>Details of the individual content element. A ContentData Element is referred to by its ID (i.e., the value of ContentData/@ID).</p> <p><b>Modification note:</b> before JDF 1.4, a ContentData Element was referred to by its index in ContentList with the warning that ContentData elements not be removed or inserted in a position other than the end of the list.</p>

### 8.31.1 Element: ContentData

ContentData Content defines the additional metadata of individual graphic elements of a page. If the ContentList is Partitioned, the index refers to ContentData Elements in the respective leaves of the Partitioned ContentList. The index restarts at 0 with each Partitioned leaf.

**Table 8-61: ContentData Resource Element (Sheet 1 of 3)**

Name	Data Type	Description
<a href="#">BinderySignatureIDs ?</a>	NMTOKENS	<p>IDs of the Assembly Elements, AssemblySection Elements or StrippingParams[@BinderySignatureName] BinderySignature/@AssemblyID that this finished belongs to.</p> <p><b>Default value is from: PageList/@AssemblyIDs.</b></p>
<a href="#">CatalogDetails ?</a> <a href="#">Deprecated in JDF 1.6</a>	string	Additional details of a Resource in a catalog environment.
<a href="#">CatalogID ?</a> <a href="#">Deprecated in JDF 1.6</a>	string	Identification of the Resource (e.g., in a catalog environment).
<a href="#">ContentRefs ?</a> <a href="#">New in JDF 1.4</a>	IDREFS	List of ContentData/@ID values that specify the ContentData Elements children of this ContentData Element. For instance, a book may refer to individual chapters. The reference ContentData object SHALL reside in the same ContentList as this ContentData.
<a href="#">ContentStatus ?</a>	NMTOKENS	<p>Status of a single Content Element.</p> <p>Values include those defined in the column "Content-Status" of Table C-20, "MessageEvents and MilestoneType Values" on page 1146.</p>
<a href="#">ContentType ?</a>	NMTOKEN	<p>Type of content.</p> <p><b>Values include those from:</b> Table 8-62, "ContentType Attribute Values" on page 594.</p>
<a href="#">HasBleeds ?</a>	boolean	If "true", the fileContent has bleeds.
<a href="#">ID ?</a> <a href="#">New in JDF 1.4</a>	ID	For reference by @ContentRefs.
<a href="#">ImageCompressionParams ?</a> <a href="#">ImageCompressionParamsRef ?</a>	refelementIDREF	Specification of the image compression properties.
<a href="#">IsBlank ?</a>	boolean	If "true", the Content has no content marks and is blank.
<a href="#">IsTrapped ?</a>	boolean	If "true", the fileContent has been trapped.

**Table 8-61: ContentData Resource Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>JobID</i> ?	string	ID of the Job that this ContentData belongs to.
<i>PageLabel</i> ?	string	Complete identification of the finished page as it is displayed on the finished page. For instance "1", "iv" or "C-1". Note that this MAY be different from the position of the page in the finished document.
<i>ProductID</i> ?	string	An ID of the ContentData as defined in the MIS system.
<b>ScreeningParams</b> ?ScreeningParamsRef ?	refelementIDREF	Specification of the screening properties of the Content.
<b>SeparationSpec</b> * <i>Separations</i> ?	elementNMTO-KENS	List of separation names defined in the Content.
<i>SourceBleedBox</i> ?	rectangle	A rectangle that describes the bleed area of the content to be included. This rectangle is expressed in the source coordinate system of the object. <b>Default value is from: PageList/@SourceBleedBox.</b>
<i>SourceClipBox</i> ?	rectangle	A rectangle that defines the region of the finished content to be included. This rectangle is expressed in the source coordinate system of the object. <b>Default value is from: PageList/@SourceClipBox.</b>
<i>SourceTrimBox</i> ?	rectangle	A rectangle that describes the intended trimmed size of the finished content to be included. This rectangle is expressed in the source coordinate system of the object. <b>Default value is from: PageList/@SourceTrimBox.</b>
BarcodeProductionParams ?	element	Description of the specific s for barcode production.
ContentMetadata ? <i>New in JDF 1.4</i>	element	Container for document related metadata such as ISBN, Author etc.
<b>ElementColorParams</b> ?	refelement	Color details of the ContentData Element.
<b>FileSpec</b> *	element	Reference to dependent references such as fonts, external images, etc. <b>FileSpec/@ResourceUsage</b> SHOULD have one of the following values: <i>Font</i> – The file references a font. <i>Image</i> – The file references Image data. <i>PDL</i> – The file references page definition language data such as PDF.
<b>ImageCompressionParams</b> ?ImageCompressionParamsRef ?	refelementIDREF	Specification of the image compression properties.
<b>OCGControl</b> *	element	@OCGControl provides a list of the OCGs (layers) that SHALL be included or excluded. Any OCGs (layers) not listed in an OCGControl Element SHALL follow the rules defined by the underlying PDL.
<b>PositionObj</b> * <i>PositionObj</i> *	element	Definition of the size and positioning of any child Content elements

**Table 8-61: ContentData Resource Element (Sheet 3 of 3)**

Name	Data Type	Description
<b>ScreeningParams</b> ?ScreeningParamsRef ?	refelementIDREF	Specification of the screening properties of the <b>Content</b> .
SeparationSpec * <b>Separations</b> ?	elementNMTO-KENS	List of separation names defined in the <b>Content</b> .

**— Attribute: ContentType****Table 8-62: ContentType Attribute Values**

Value	Description
<i>Ad</i>	The content represents a single ad
<i>Article</i>	The content represents a single article. Including headers, text bodies, photos etc.
<i>Barcode</i>	A barcode.
<i>ClassifiedAd</i>	Specifies a classified ad.
<i>ClassifiedsPageElement</i>	Specifies a grouping page element dealing with content of classified ads
<i>Composed</i>	Combination of elements that define an element that is not bound to a document page.
<i>Editorial</i>	Defines this Element to contain editorial matter (e.g., text, photos etc.).
<i>EditorialPageElement</i>	Specifies a grouping page element dealing with content of the editorial department
<i>Graphic</i>	Line art.
<i>IdentificationField</i>	A general identification field excluding bar codes.
<i>Image</i>	Bitmap image.
<i>Page</i>	Representation of one document page.
<i>PageHeader</i>	For instance a newspaper title shown on the front page or on each single page. Usually, these headers contain information like page number, editorial desk and the date.
<i>ROPAd</i>	Specifies this Element as an ROP ad. An ROP ad is an ad which is placed by the planner. Generally speaking, in a newspaper environment these include color ads, ads with placement requests in the editorial section and large ads.
<i>Surface</i>	Representation of an imposed surface.
<i>Text</i>	Formatted or unformatted text.

**8.31.2 Element: BarcodeProductionParams**

**BarcodeProductionParams** describes of the specific parameters for barcode production.

**Table 8-63: BarcodeProductionParams Element (Sheet 1 of 2)**

Name	Data Type	Description
<b>IdentificationFieldIdentificationFieldRef</b>	refelementIDREF	Description of the barcode metadata.
BarcodeReproParams ?	element	Description of the formatting and reproduction parameters for barcode production.

**Table 8-63: BarcodeProductionParams Element (Sheet 2 of 2)**

Name	Data Type	Description
IdentificationField	refelement	Description of the barcode metadata.

### 8.31.3 Element: ContentMetadata

New in JDF 1.4

ContentMetadata is a container for metadata pertaining to this **ContentData** element **Content** Resource. Additional metadata fields may be created using **GeneralID**.

**Table 8-64: ContentMetadata Element**

Name	Data Type	Description
ContactRefs ?	IDREFS	@ContactRef SHALL reference the <b>Contacts</b> that represent the various contact types that are responsible for this content.
ISBN10 ?	stringN-MTOKEN	The 10 digit ISBN (see ref ISBN)
ISBN13 ?	stringN-MTOKEN	The 13 digit ISBN (see ref ISBN)
Title ?	stringN-MTOKEN	The title of the content
Comment ?	element	If required, an abstract should be specified in Comment[@Name = "Abstract"].
Contact *ContactRefs ?	refelement-IDREFS	The person who is responsible for this content.
Employee *EmployeeRefs ?	refelement-IDREFS	If required, the author should be specified in an Employee[contains(@Roles, "Author")].
GeneralID *	element	Additional metadata MAY be defined by adding GeneralID elements.
Part ?	element	If present, conserves the values of the specified Partition Keys related to the content being processed. It is illegal to set Partition Key values where that key is used to explicitly Partition the referencing Resource, or is implied by that Resource. <b>Note:</b> this allows Partition Keys and values to be conserved in a <b>RunList</b> ( <b>Surface</b> ) or <b>Component</b> .

### 8.31.4 Element: PositionObj

PositionObj describes the size and position of the **Content**.

**Table 8-65: PositionObj Element (Sheet 1 of 2)**

Name	Data Type	Description
Anchor ?	Anchor	@Anchor specifies the origin (0,0) of the coordinate system in the unrotated LayoutElementPartContent.

**Table 8-65: PositionObj Element (Sheet 2 of 2)**

Name	Data Type	Description
CTM ?	matrix	Transformation matrix of the origin of <b>LayoutElementPartContent</b> as specified by <b>@Anchor</b> . Note that this is not necessarily the actual CTM that will position a given <b>LayoutElementPartContent</b> . The actual CTM SHALL be recalculated based on the values of <b>@Anchor</b> and <b>@Size</b> .
PageRange ?	IntegerRangeListIntegerRange	Reader Page index in the <b>PageList</b> , in the <b>Content</b> referenced by <b>RefAnchor</b> .
PositionPolicy ?	enumeration	Specifies the level of freedom when applying the values specified in <b>PositionObj</b> . <b>Allowed values are:</b> <i>Exact</i> – The values SHALL be followed precisely. <i>Free</i> – The values are used as guidance and MAY be modified by the designer.
RelativeSize ?	XYPair	Specifies the size of the unrotated and unscaled object, relative to the parent specified in <b>RefAnchor</b> .
RotationPolicy ?	enumeration	Specifies the level of freedom when applying the values specified in <b>PositionObj</b> . <b>Allowed values are:</b> <i>Exact</i> – The values SHALL be followed precisely. <i>Free</i> – The values are used as guidance and MAY be modified by the designer.
Size ?	XYPair	Specifies the size of the unrotated and unscaled object, in points.
SizePolicy ?	enumeration	Specifies the level of freedom when applying the values specified in <b>PositionObj</b> . <b>Allowed values are:</b> <i>Exact</i> – The values SHALL be followed precisely. <i>Free</i> – The values are used as guidance and MAY be modified by the designer.
RefAnchor ?	element	Reference to a <b>LayoutElementPartContent</b> that this <b>LayoutElementPartContent</b> is positioned relative to. If <b>RefAnchor</b> is not specified, <b>PositionObj</b> refers to the lower left of the first page specified in page Range.

**Example 8-14: ContentList**New in JDF 1.4**TBD 2.x Example.**

```
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1"
      ID="n071030_02242300_000002" JobPartID="n071030_02242300_000002"
      Status="Waiting" Type="Approval" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:type="Approval">
  <!--Generated by the CIP4 Java open source JDF Library version : CIP4 JDF
      Writer Java 1.3 BLD 47-->
  <AuditPool>
    <Created AgentName="CIP4 JDF Writer Java" AgentVersion="1.3 BLD 47"
            ID="a071030_02242331_000003"TimeStamp="2007-10-30T14:24:23+01:00"/>
```

```

</AuditPool>
<ResourcePool>
    <ApprovalParams Class="Parameter" ID="ID345" Status="Available"/>
    <ApprovalSuccess Class="Parameter" ID="ID346" Status="Unavailable"/>
    <RunList Class="Parameter" ID="r071030_02242378_000004"
        Status="Available">
        <PageListRef rRef="PageList"/>
    </RunList>
    <PageList Class="Parameter" ID="PageList" Status="Available">
        <ContentListRef rRef="ContentList"/>
    </PageList>
    <ContentList Class="Parameter" ID="ContentList" Status="Available">
        <ContentData>
            <ContentMetadata ISBN10="0123456789" Title="book thing">
                <Comment ID="c071030_022423109_000005" Name="Abstract">
                    Abstract of the book in english
                </Comment>
                <Contact ContactTypes="Editor">
                    <Person DescriptiveName="authorName" FamilyName="authorName"/>
                </Contact>
            </ContentMetadata>
        </ContentData>
        <ContentData>
            <ContentMetadata Title="Chapter 1">
                <Contact ContactTypes="Customer">
                    <Person DescriptiveName="authorName1" FamilyName="authorName1"/>
                </Contact>
            </ContentMetadata>
        </ContentData>
        <ContentData>
            <ContentMetadata Title="Chapter 2">
                <Contact ContactTypes="Customer">
                    <Person DescriptiveName="authorName2" FamilyName="authorName2"/>
                </Contact>
            </ContentMetadata>
        </ContentData>
        <ContentData>
            <ContentMetadata Title="Chapter 3">
                <Contact ContactTypes="Customer">
                    <Person DescriptiveName="authorName3" FamilyName="authorName3"/>
                </Contact>
            </ContentMetadata>
        </ContentData>
    </ContentList>
</ResourcePool>
<ResourceLinkPool>
    <RunListLink Usage="Input" rRef="r071030_02242378_000004"/>
    <ApprovalParamsLink Usage="Input" rRef="ID345"/>
    <ApprovalSuccessLink Usage="Output" rRef="ID346"/>
</ResourceLinkPool>
</JDF>

```

### Example 8-15: ContentList: Extended with ISBN, Author, etc.

[New in JDF 1.4](#)

Example of **ContentList Content** with ISBN, Author, etc.

TBD 2.x Example.

```

<!-- Information about the input (file, author) -->
<RunList ID="NodeIDRunList" Status="Available" Class="Parameter" >
    <LayoutElementRef rRef="NodeIDLE" />
    <PageList>
        <ContentList>
            <ContentData>
                <!-- String for title -->
                <new:DocumentInfo Title="This is the title of the book"
                    ISBN="0123456789" xmlns:new="new schema URI">
                    <!-- Multi-lines string for Abstract -->
                    <new:DocumentAbstract>
                        This is the abstract of the book
                        It has several lines...
                    </new:DocumentAbstract>
                    <!-- List of authors. Using a PersonRef allows reusing the same
                        Person element -->
                    <new:Author Subject="Preface">
                        <PersonRef rRef="AuthorID1" />
                    </new:Author>
                    <new:Author Subject="Content">
                        <new:PersonRef rRef="AuthorID2" />
                        <new:PersonRef rRef="AuthorID3" />
                    </new:Author>
                </new:DocumentInfo>
            </ContentData>
        </ContentList>
    </PageList>
</RunList>
<LayoutElement ID="NodeIDLE" Status="Available" Class="Parameter" >
    <FileSpec URL="file:///hotfolder/files/Document2747.pdf"
        MimeType="application/pdf" UserFileName="JDF1.3.pdf" />
</LayoutElement>
<!-- Information about the authors -->
<Person ID="AuthorID1" Class="Parameter" Status="Available" FirstName="James"
    FamilyName="Smith" JobTitle="Author" />
<Person ID="AuthorID2" Class="Parameter" Status="Available" FirstName="John"
    FamilyName="Smith" JobTitle="Author" />
<Person ID="AuthorID3" Class="Parameter" Status="Available" FirstName="William"
    FamilyName="Smith" JobTitle="Author" />
<!-- Media: A3 white paper coated on both sides, 70 gr/m2 -->
<Media ID="MediaID" Class="Consumable" Status="Available" Weight="70"
    Dimension="1190 842" MediaType="Paper" MediaColorName="White"
    FrontCoatings="Coated" BackCoatings="Coated" />
<!-- Media: A4 yellow paper for Banner Page -->
<Media ID="MediaID2" Class="Consumable" Status="Available" Weight="70"
    Dimension="595 842" MediaType="Paper" MediaColorName="Yellow" />
<!-- Booklet layout + banner page with ISBN and Authors printed on it -->
<LayoutPreparationParams ID="NodeIDLPP" Class="Parameter" Status="Available"
    Sides="TwoSidedFlipY" NumberUp="2 1" BindingEdge="Left"
    PresentationDirection="FoldCatalog" FoldCatalog="F4-1"
    FinishingOrder="GatherFold" PageDistributionScheme="Saddle" />
<InsertSheet SheetType="JobSheet" SheetUsage="Header" IsWaste="true"
    SheetFormat="Standard" >
    <Layout>
        <MediaRef rRef="MediaID2" />
        <MarkObject CTM="1 0 0 1 0 0" >
            <JobField ShowList="new:ISBN new:Authors" />
        </MarkObject>
    </Layout>
</InsertSheet>

```

```
</InsertSheet>
</LayoutPreparationParams>
```

## 8.32 ConventionalPrintingParams

This Resource defines the Attributes and Elements of the ***ConventionalPrinting*** Process. The specific parameters of individual printer modules are modeled by using the standard Partitioning methods. These methods are described in [Section 3.15.5, “Description of Partitioned Resources”](#) [Section 3.13.2.2, “Selecting a Partition”](#)

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Example Partition:	<pre>"BlockName", "FountainNumber", "PartVersion", "RibbonName", "Separation", "SheetName", "Side", "SignatureName", "WebName", "WebProduct"</pre>
Input of Processes:	<i>ConventionalPrinting</i>
Output of Processes:	—

**Table 8-66: ConventionalPrintingParams Resource (Sheet 1 of 4)**

Name	Data Type	Description
<i>DirectProof</i> ?= "false"	boolean	If "true", the proof is directly produced and subsequently an approval might be given by a person (e.g., the customer, foreman or floor manager) shortly after the first final-quality printed Sheet is printed. The approval is needed for the actual print run, and not for setup. If the <b><i>ConventionalPrinting</i></b> Process is waiting for approval of a direct proof, the <b>@Status</b> of the <b>JDF XJDF</b> Node is switched to "Suspended" with the <b>@StatusDetails = "WaitForApproval"</b> .
<i>Drying</i> ?	enumeration	The way in which ink is dried after a print run. <b>Allowed values are:</b> <i>UV</i> – Ultraviolet dryer <i>Heatset</i> – Heatset dryer <i>IR</i> – Infrared dryer <i>On</i> – Use the Device default drying unit. <i>Off</i>
<i>FirstSurface</i> ? <a href="#">Modified in JDF 1.2</a>	enumeration	Printing order of the surfaces on the Sheet. <b>Allowed values are:</b> <i>Either</i> – <a href="#">Deprecated in JDF 1.2 Deprecation note</a> : starting with JDF 1.2, omit <b>@FirstSurface</b> to specify " <i>Either</i> ". <i>Front</i> <i>Back</i>
<i>FountainSolution</i> ?	enumeration	State of the fountain solution module in the printing units. <b>Allowed values are:</b> <i>On</i> <i>Off</i>

**Table 8-66: ConventionalPrintingParams Resource (Sheet 2 of 4)**

Name	Data Type	Description
<i>MediaLocation</i> ?  <u>New in JDF 1.1</u> <u>Deprecated in JDF 1.4</u>	stringNMTO-KEN	<p>Identifies the location of the <b>Media</b>. The value identifies a physical location on the press (e.g., unwinder 1, unwinder 2 and unwinder 3).</p> <p>If the media Resource is Partitioned by <i>@Location</i> (see also <a href="#">Section 3.15.6.4, “Locations of PhysicalResources”</a> <a href="#">Section 3.13.1, “Location”</a>) there SHOULD be a match between one <i>@Location</i> Partition Key and this <i>@MediaLocation</i> value.</p> <p><b>Values include those from:</b> Table C-21, “Input Tray and Output Bin Names” on page 1147.</p> <p><b>Note:</b> the specified values are for printer locations.</p>
<i>ModuleAvailableIndex</i> ?  <u>New in JDF 1.1</u> <u>Deprecated in JDF 1.4</u>	IntegerRangeList	<p>Zero-based list of print modules that are available for printing. In some cases modules are not available because the print module is replaced with in-line tooling (e.g., a perforating unit). If not specified, all modules are used for printing. The list is based on all modules of the printer and is not influenced by the value of <i>@ModuleIndex</i>.</p> <p><b>Deprecation note:</b> starting with JDF 1.4, the skipping of press modules is now handled by specifying <b>ColorantControl/DeviceColorantOrder/ SeparationSpec</b> with no <i>@Name</i></p>
<i>ModuleDrying</i> ?	enumeration	<p>The way in which ink is dried in individual modules.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>UV</i> – Ultraviolet dryer</li> <li><i>Heatset</i> – Heatset dryer</li> <li><i>IR</i> – Infrared dryer</li> <li><i>On</i> – Use the Device default drying unit.</li> <li><i>Off</i></li> </ul>
<i>ModuleIndex</i> ?	IntegerRangeList	<p>Zero-based, ordered list of print modules that are to be used. <i>@ModuleIndex</i> does not influence the ink sequence. It is used only to skip individual modules. The list is based on all modules of the printer and is not influenced by the value of <i>@ModuleAvailableIndex</i>.</p> <p><b>Note:</b> starting with JDF 1.4, the skipping of press modules SHOULD additionally be specified by supplying <b>ColorantControl/ DeviceColorantOrder@DeviceColorantOrder/ SeparationSpec</b> with no <i>@Name</i>.</p>
<i>NonPrintableMarginBottom</i> ?  <u>New in JDF 1.3</u>	double	<p>The width in points of the bottom margin measured inward from the edge of the <b>Media</b> with respect to the idealized Process coordinate system of the <b>ConventionalPrinting</b> Process. The <b>Media</b> origin is unaffected by <i>@NonPrintableMarginBottom</i>.</p>
<i>NonPrintableMarginLeft</i> ?  <u>New in JDF 1.3</u>	double	<p>Same as <i>@NonPrintableMarginBottom</i> except for the left margin.</p>
<i>NonPrintableMarginRight</i> ?  <u>New in JDF 1.3</u>	double	<p>Same as <i>@NonPrintableMarginBottom</i> except for the right margin.</p>

**Table 8-66: ConventionalPrintingParams Resource (Sheet 3 of 4)**

Name	Data Type	Description
<a href="#"><i>NonPrintableMarginTop</i> ? New in JDF 1.3</a>	double	Same as @ <i>NonPrintableMarginBottom</i> except for the top margin.
<a href="#"><i>PerfectingModule</i> ? New in JDF 1.1</a>	integer	Index of the perfecting module if @ <i>WorkStyle</i> = "Perfecting" and multiple perfecting modules are installed.
<a href="#"><i>Powder</i> ?</a>	double	Quantity of powder in%.
<a href="#"><i>PrintingTechnology</i> ? New in JDF 1.4 Deprecated in JDF 1.5</a>	enumeration	<p>Printing technology of the press or press module.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Flexo</i></li> <li><i>Gravure</i></li> <li><i>Offset</i></li> <li><i>Screen</i></li> </ul> <p><b>Deprecation note:</b> starting with JDF 1.5, use <b>Color</b>/ <b>@PrintingTechnology</b>.</p>
<a href="#"><i>PrintingType</i> ? Modified in JDF 1.3</a>	enumeration	<p>Type of printing Machine.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>ContinuousFed</i> – connected Sheets including fan fold. <a href="#">New in JDF 1.2</a></li> <li><i>SheetFed</i> – Separate cut Sheets.</li> <li><i>WebFed</i> – Paper supplied to press on rolls. <a href="#">Deprecated in JDF 1.3</a></li> <li><i>WebMultiple</i> – Web Printing with multiple plates per cylinder. Generally used with Newspaper Web Printing. <a href="#">New in JDF 1.3</a></li> <li><i>WebSingle</i> – Web Printing with only one plate per cylinder. Generally used in commercial and publication workflows. <a href="#">New in JDF 1.3</a></li> </ul>
<a href="#"><i>SheetLay</i> ?</a>	enumeration	<p>Lay of input media. Reference edge of where paper is placed in a feeder.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Left</i></li> <li><i>Right</i></li> <li><i>Center</i></li> </ul>
<a href="#"><i>Speed</i> ? Modified in JDF 1.3</a>	double	Maximum print speed in Sheets/hour (Sheet fed) or revolutions/hour (Web-Fed). Defaults to Device specific full speed.
<a href="#"><i>WorkStyle</i> ?</a>	WorkStyle	The direction in which to turn the press Sheet.
<a href="#"><i>ApprovalParams</i> ? New in JDF 1.2</a>	refelement	Details of the direct <b>Approval</b> Process, when @ <i>DirectProof</i> = "true".

**Table 8-66: ConventionalPrintingParams Resource (Sheet 4 of 4)**

Name	Data Type	Description
<b>Ink *</b> <a href="#">Modified in JDF 1.2</a> <a href="#">Deprecated in JDF 1.4</a>	refelement	Details of varnishing. Defines the varnish to be used for coatings on printed sides. Coatings are applied after printing all the colors. Other coating sequences SHALL use the Partition mechanism of this Resource. Selective varnishing in print modules has to use a separate separation for the respective varnish. Varnish is specified by <b>Ink@Family = "Varnish"</b> . If both <b>Ink</b> and <b>ExposedMedia (Plate)</b> are specified for a given separation, spot varnishing is specified. If only <b>Ink</b> and not <b>ExposedMedia (Plate)</b> is specified, overall varnishing is specified. In JDF 1.2 and beyond, <b>Ink</b> MAY occur in multiples in order to specify multiple layers of varnish. <b>Note:</b> The color inks are direct Input Resources of the Process and SHALL NOT be specified here. <b>Deprecation note:</b> starting with JDF 1.4, use <b>Varnishing</b> .

## 8.33 CoverApplicationParams

[New in JDF 1.1](#)

**CoverApplicationParams** define the parameters for applying a cover to a book block.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	BindingIntent
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	<i>CoverApplication</i>
<b>Output of Processes:</b>	—

**Table 8-67: CoverApplicationParams Resource**

Name	Data Type	Description
<b>CoverOffset ?</b> <a href="#">Deprecated in JDF 1.2</a>	XYPair	Position of the cover in relation to the book block given in the cover-Sheet coordinate system. In JDF 1.2 and beyond, @ <i>CoverOffset</i> is implied by the transformation matrix of the <b>ResourceLink/@Transformation</b> of the cover's <b>ComponentLink</b> .
<b>GlueApplication *</b> <b>Glue *</b>	refelement	Describes where and how to apply glue to the book block.
<b>Score *</b>	element	Describes where and how to score the cover. The sequence of Score Elements specifies the sequence in which the tool is applied.

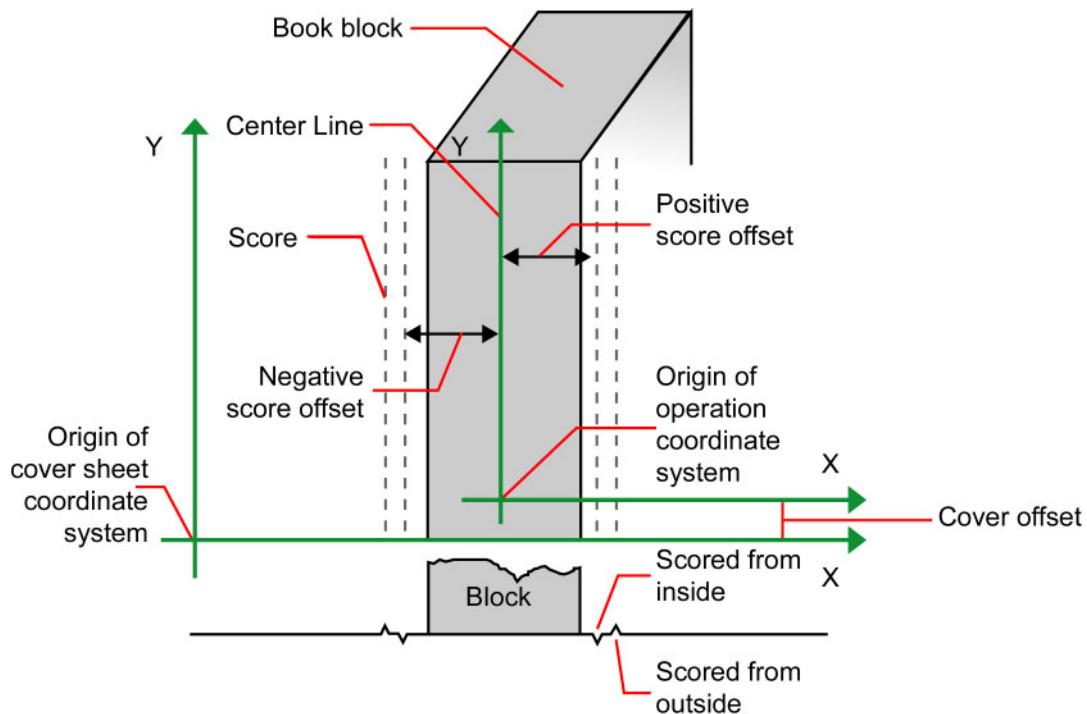
### 8.33.1 Element: Score

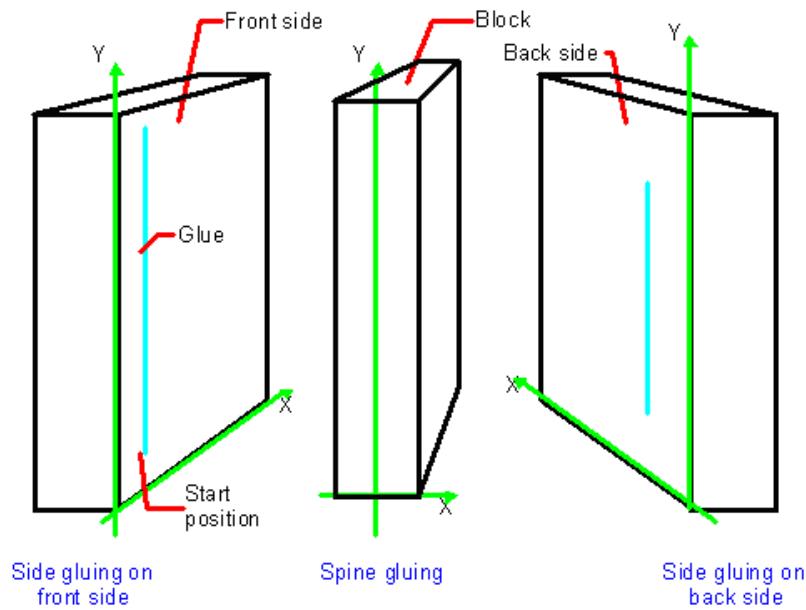
**Table 8-68: Score Element (Sheet 1 of 2)**

Name	Data Type	Description
<b>Offset</b>	double	Position of scoring given in the operation coordinate system.

**Table 8-68: Score Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Side</i> ?= "FromInside"	enumeration	Specifies the side from which the scoring tool works. <b>Allowed values are:</b> <i>FromInside</i> <i>FromOutside</i>

**Figure 8-21: Parameters and coordinate system for cover application**

**Figure 8-22: Parameters and coordinate system for glue application**

## 8.34 CreasingParams

New in JDF 1.1

**CreasingParams** define the parameters for creasing or grooving a Sheet.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	FoldingIntent
<b>Example Partition:</b>	" <i>BlockName</i> ", " <i>RibbonName</i> ", " <i>SheetName</i> ", " <i>SignatureName</i> ", " <i>WebName</i> "
<b>Input of Processes:</b>	<i>Creasing</i>
<b>Output of Processes:</b>	—

**Table 8-69: CreasingParams Resource**

Name	Data Type	Description
Crease *	element	Each Crease element defines one or more crease lines.

## 8.35 CustomerInfo

[Modified in JDF 1.3](#)

The **CustomerInfo** Resource contains information about the customer who orders the Job. **CustomerInfo** has been moved from a direct element of JDF to a Resource in JDF 1.3.

Before JDF 1.3, **CustomerInfo** was a Sub-element of a JDF Node, and “inherited” down to child Nodes. Starting with JDF 1.3, **CustomerInfo** became a Resource that SHALL be linked like any other Resource; there is no “inheritance”. Any Node MAY link to the same **CustomerInfo** Resource as its parent. A normative **CustomerInfo** is specified by a linked Resource. An informative **CustomerInfo** MAY be retrieved by searching for **CustomerInfo** of parent Nodes or Ancestor Elements

### Creating Better Job Tracking & Reporting

 Customer information within JDF can provide a bridge between your CRM systems and production. How could JDF be used to automate the process of reporting to customers on the status of their Jobs?

#### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	Ancestor
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	Any Process
<b>Output of Processes:</b>	—

**Table 8-70: CustomerInfo Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>BillingCode</i> ?	string	A code to bill charges incurred while executing the Node.
<i>ContactRefs</i> ?	IDREFS	@ <i>ContactRefs</i> SHALL reference all <b>Contacts</b> associated with the customer. There SHOULD be one <b>Contact</b> [@ <i>ContactTypes</i> = "Customer"].
<i>CustomerID</i> ?	stringNMTO-KEN	Customer identification used by the application that created the Job. This is usually the internal customer number of the MIS system that created the Job.
<i>CustomerJobName</i> ?	string	The <b>human readable descriptive</b> name that the customer uses to refer to the Job.
<i>CustomerOrderID</i> ?	string	The internal order number in the system of the customer. This number is usually provided when the order is placed and then referenced on the order confirmation or the bill.
<i>CustomerProjectID</i> ? <a href="#">New in JDF 1.2</a>	string	The internal project id in the system of the customer. This number MAY be provided when the order is placed and then referenced on the order confirmation or the bill.
<i>rRefs</i> ? <a href="#">Deprecated in JDF 1.2</a>	IDREFS	Array of IDs of any elements that are specified as <b>ResourceRef</b> elements. In version 1.1 it was the IDREF of a <b>ContactRef</b> . In JDF 1.2 and beyond, it is up to the implementation to maintain references.
<i>Company</i> ? <a href="#">Deprecated in JDF 1.1</a>	refelement	Resource element describing the business or organization of the contact. In JDF 1.1 and beyond, <b>Company</b> affiliation of <b>Contact</b> elements is specified in <b>Contact</b> .
<b>Contact</b> * <a href="#">New in JDF 1.1</a>	refelement	Resource element describing contacts associated with the customer. There SHOULD be one <b>Contact</b> [contains (@ <i>ContactTypes</i> , "Customer")]. Such a <b>Contact</b> specifies the primary customer's name, address etc.

**Table 8-70: CustomerInfo Resource (Sheet 2 of 2)**

Name	Data Type	Description
CustomerMessage *	element	Element that describes messages to the customer. <b>Deprecation note:</b> Use Comment instead.  <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.5</a>

**8.35.1 Element: CustomerMessage**[New in JDF 1.2](#)[Deprecated in JDF 1.5](#)

See Section P.6.3, “CustomerMessage” on page 1342 for details of this deprecated Parameter element.

**8.36 CutBlock**

Defines a cut block on a Sheet. It is possible to define a block that contains a matrix of elements of equal size. In this scenario, the intermediate cut dimension is calculated from the information about element size, block size and the number of elements in both directions. Each cut block has its own coordinate system, which is defined by the **@BlockTrf** Attribute.

**Resource Properties**

Resource Class:	Parameter
Resource referenced by:	<b>CuttingParams</b>
Example Partition:	
Input of Processes:	
Output of Processes:	

**Table 8-71: CutBlock Resource (Sheet 1 of 2)**

Name	Data Type	Description
<a href="#">AssemblyIDs ?</a> <a href="#">New in JDF 1.3</a>	NMTOKENS	The <b>@AssemblyIDs</b> of the <b>Assembly</b> , <b>AssemblySection</b> or <b>StrippingParams[@BinderySignatureName]</b> <b>BinderySignature</b> which are contained in this <b>CutBlock</b> .
<a href="#">BlockElementSize ?</a>	XYPair	Element dimension in X and Y direction. The default value is equivalent to the XYPair value in <b>@BlockSize</b> .
<a href="#">BlockElementType ?</a>	enumeration	Element type. <b>Allowed values are:</b> <i>CutElement</i> – Cutting element. <i>PunchElement</i> – Punching element.
<a href="#">BlockName</a>	NMTOKEN	Name of the block. Used for reference by the <b>CutMark</b> Resource. Note that <b>CutBlock</b> Resources are not Partitioned although they are nested. The semantics of nested <b>CutBlock</b> Elements are different.
<a href="#">BlockSize</a>	XYPair	Size of the block.
<a href="#">BlockSubdivision ?= "1 1"</a>	XYPair	Number (as integers) of elements in X and Y direction.
<a href="#">BlockTrf ?= "1 0 0 1 0 0"</a>	matrix	Block transformation matrix. Defines the position and orientation of the block relative to the <b>Component</b> coordinate system.

**Table 8-71: CutBlock Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>BlockType</i>	enumeration	<p>Block type.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>CutBlock</i> – Block to be cut.</li> <li><i>SaveBlock</i> – Protected block, cut only via outer contour.</li> <li><i>TempBlock</i> – Auxiliary block that is not taken into account during cutting.</li> <li><i>MarkBlock</i> – Contains no elements, only marks.</li> </ul>
<i>CutWidth</i> ? <small>New in JDF 1.4</small>	double	Width in points of u-shaped knife, saw blade, etc.
<b>Assembly</b> ? <b>AssemblyRef</b> <small>?New in JDF 1.3</small>	refelementI-DREF	<b>Assembly</b> that is referred to by <i>@AssemblyIDs</i> or contains the <b>AssemblySection</b> that is referred to by <i>@AssemblyIDs</i> .

## 8.37 CutMark

This Resource, along with **CutBlock**, provides the means to position cut marks on the Sheet. After printing, these marks can be used to adapt the theoretical block positions (as specified in **CutBlock**) to the real position of the corresponding blocks on the printed Sheet.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	<b>Layout/MarkObject</b>
<b>Example Partition:</b>	
<b>Input of Processes:</b>	
<b>Output of Processes:</b>	

**Table 8-72: CutMark Resource**

Name	Data Type	Description
<i>Blocks</i> ? <small>Modified in JDF 1.1</small>	NMTOKENS	Values of the <i>@BlockName</i> Partition Attributes of the blocks defined by the <b>CutMark</b> Resource.
<i>MarkType</i>	enumeration	<p>Cut mark type.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>CrossCutMark</i></li> <li><i>TopVerticalCutMark</i></li> <li><i>BottomVerticalCutMark</i></li> <li><i>LeftHorizontalCutMark</i></li> <li><i>RightHorizontalCutMark</i></li> <li><i>LowerLeftCutMark</i></li> <li><i>UpperLeftCutMark</i></li> <li><i>LowerRightCutMark</i></li> <li><i>UpperRightCutMark</i></li> </ul>
<i>Position</i>	XYPair	Position of the logical center of the cut mark in the coordinates of the <b>MarkObject</b> that contains this mark. Note that the logical center of the cut mark does not always directly specify the center of the visible cut mark symbol.

**Table 8-73: Cut mark types as specified by CutMark/@MarkType**

<b>Symbol</b>	<b>MarkType Value</b>	<b>Position of Symbol</b>
	"CrossCutMark"	Centered at logical position
	"TopVerticalCutMark"	Slightly above logical position
	"BottomVerticalCutMark"	Slightly below logical position
	"LeftHorizontalCutMark"	Slightly to the left of logical position
	"RightHorizontalCutMark"	Slightly to the right of logical position
	"LowerLeftCutMark"	Corner at logical position
	"UpperLeftCutMark"	Corner at logical position
	"LowerRightCutMark"	Corner at logical position
	"UpperRightCutMark"	Corner at logical position

## 8.38 CuttingParams

New in JDF 1.1

This Resource describes the parameters of a **Cutting** Process that uses either **Cut** elements or nested **CutBlock** Elements as input. If **CuttingParams** is partitioned by **@BlockName**, Part/**@BlockName** SHALL specify the input **CutBlock**.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	FoldingIntent, ShapeCuttingIntent
<b>Example Partition:</b>	"BlockName", "RibbonName", "SheetName", "SignatureName", "WebName"
<b>Input of Processes:</b>	<b>Cutting</b>
<b>Output of Processes:</b>	—

**Table 8-74: CuttingParams Resource**

Name	Data Type	Description
<i>NUpSeparation</i> ? <a href="#">New in JDF 1.4</a>	XYPair	Defines the number of <b>CutBlock</b> Elements in x and y direction. For example, a 2-up book sawed apart would have <code>@NUpSeparation = "2 1"</code> .
<i>SheetLay</i> ? <a href="#">New in JDF 1.5</a>	enumeration	Lay of input <b>Component</b> . <b>Allowed values are:</b> <i>Left</i> <i>Right</i> <b>Note:</b> <code>@SheetLay</code> does not modify the coordinate references of the <b>Cutting</b> Process.
<b>Cut</b> *	element	Cut Elements describe an individual cut. Cut Elements SHALL NOT be specified if <b>CutBlock</b> Elements are specified.
<b>CutBlock</b> * <b>CutBlock</b> *	refelement	One or several <b>CutBlock</b> Elements can be used to find the <b>Cutting</b> sequence. These <b>CutBlock</b> elements describe the output cut blocks that SHALL be cut out of the input <b>CutBlock</b> or <b>Component</b> . The <b>CutBlock</b> Elements SHALL NOT be written if Cut Elements are specified.
<b>CutMark</b> * <a href="#">Deprecated in JDF 1.3</a>	refelement	<b>CutMark</b> Resources can be used to adapt the theoretical cut positions to the real positions of the corresponding blocks on the <b>Component</b> to be cut. Replaced by <b>Component/Layout</b> in JDF 1.3 and above.
<b>FileSpec</b> (CIP3) ? <a href="#">New in JDF 1.5</a>	refelement	Reference to a CIP3 file that contains cutting instructions in the CIP3 format. The <b>FileSpec/@ResourceUsage</b> = "CIP3".

### 8.38.1 Element: **CutBlock**

**CutBlock** specifies exactly one cut block on a sheet. If `Part/@BlockName` is specified for the ancestor Resource element, then the **CutBlock** SHALL be defined in the coordinate system of the parent **CutBlock** with `CutBlock/@BlockName= Part/@BlockName`. Otherwise the input **Component** SHALL be the parent sheet. Each cut block has its own coordinate system, which has its origin (0,0) at the lower left corner of the **CutBlock** and the same orientation as the parent component or **CutBlock**.

**Table 8-75: CutBlock Element (Sheet 1 of 2)**

Name	Data Type	Description
<b>BinderySignatureIDs</b> ?	NMTOKENS	The <code>@AssemblyIDs</code> of the <b>Assembly</b> , <b>AssemblySection</b> or <b>BinderySignature</b> which are contained in this <b>CutBlock</b> . If specified, <code>@BinderySignatureIDs</code> SHALL list the <b>BinderySignature/@BinderySignatureID</b> of all <b>BinderySignatures</b> that comprise this <b>CutBlock</b> .
<b>BlockElementType</b> ?	enumeration	Element type. <b>Allowed values</b> are: <i>CutElement</i> – Cutting element. <i>PunchElement</i> – Punching element.
<b>BlockName</b>	NMTOKEN	Name of the block. Used for reference by the <b>CutMark</b> Resource.

**Table 8-75: CutBlock Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>BlockType</i>	enumeration	<p>Block type.</p> <p><b>Allowed values</b> are:</p> <ul style="list-style-type: none"> <li><i>CutBlock</i> – Block to be cut.</li> <li><i>SaveBlock</i> – Protected block, cut only via outer contour.</li> <li><i>TempBlock</i> – Auxiliary block that is not taken into account during cutting.</li> <li><i>MarkBlock</i> – Contains no elements, only marks.</li> </ul>
<i>Box ?</i>	rectangle	Defines the position and size of the block relative to the parent Component or <b>CutBlock</b> coordinate system.
<i>CutWidth ?</i>	double	Width in points of u-shaped knife, saw blade, etc.

## 8.39 CylinderLayout

New in JDF 1.3

Describes the mapping of plates to cylinders on a newspaper-Web Press. This information might be important for pre-press systems. For instance, if a system wants to indicate the cylinder position as human readable text onto the plate.

### Resource Properties

Resource Class:	Parameter
Resource references:	
Resource inheritance:	
Example Partition:	"PlateLayout", "Separation", "WebProduct"
Input of Processes:	
Output of Processes:	<b>CylinderLayoutPreparation</b>

**Table 8-76: CylinderLayout Resource**

Name	Data Type	Description
<i>DeviceID ?</i>	NMOKEN	Specifies the <b>Device</b> that this <b>CylinderLayout</b> belongs to.
<i>CylinderPosition +</i>	element	Specifies the position of a plate on a cylinder of a newspaper-Web Press.
<i>Layout ?LayoutRef ?</i>	refelementI-DREF	References the <b>Layout</b> that describes the plates to be mounted.

### 8.39.1 Element: **CylinderPosition**

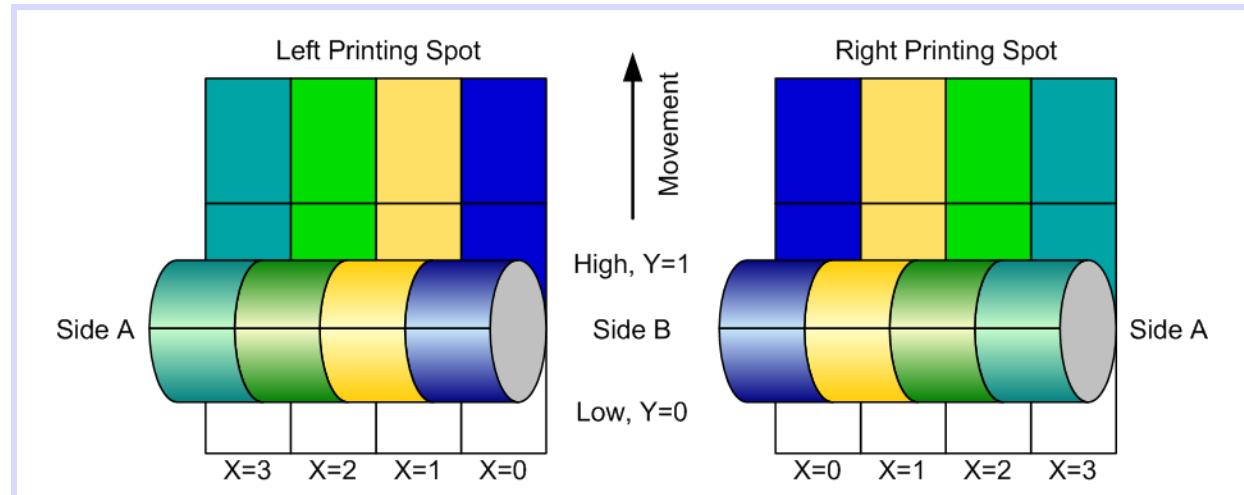
**Table 8-77: CylinderPosition Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>DeviceModuleIndex</i>	integer	Defines a Module with <i>@ModuleType = "PrintModule"</i> within the <b>Device</b> specified by <b>CylinderLayout/@DeviceID</b> . In a newspaper-Web Press, " <i>PrintModule</i> " corresponds to a single cylinder.
<i>PlatePosition</i>	XYPairRangeList	Specifies where to mount this plate onto the cylinder. See figure below for details.

**Table 8-77: CylinderPosition Element (Sheet 2 of 2)**

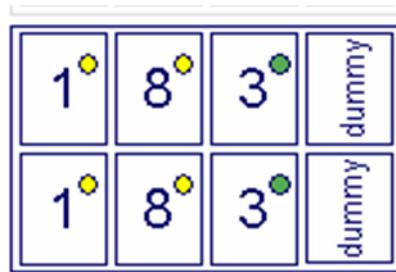
Name	Data Type	Description
<i>PlateType</i> ?= "Exposed"	enumeration	<p>Specifies whether the plate contains content data or represents a dummy plate. Additionally, it indicates where in the workflow it will be produced.</p> <p><b>Allowed values are:</b></p> <p><i>Dummy</i> – Indicates that the plate is a dummy plate. It SHALL be bent by a <i>Bending</i> Process. But it is unlikely to be exposed by an <i>ImageSetting</i> Process.</p> <p><i>Exposed</i> – Indicates that the plate contains content data and SHALL be exposed by an <i>ImageSetting</i> Process.</p>
<i>PlateUsage</i> ?= "Original"	enumeration	<p>Specifies, whether a plate has to be produced for a specific Web run or not.</p> <p><b>Allowed values are:</b></p> <p><i>Original</i> – indicates that the plate is to be produced specifically for this run.</p> <p><i>Reuse</i> – indicates that a plate of a previous run will be re-used (same plate position on the Web Press). For instance, a dummy on a specific <i>CylinderPosition</i> can be used in multiple Web runs.</p>

In Figure 8-23, the direction of the view is from the plate cylinder towards the paper. If this direction is vectored as the direction of the former module, this is a left-printing spot. Otherwise it is a right-printing spot. If a 'left-printing spot' is considered, 'Side A' is to the left and 'Side B' to the right. And vice versa for a 'right-printing spot'. The plate position in X-dimension starts numbering at Side B. Thus, for the innermost Side B position  $X = "0"$ . For the outmost Side A position  $X = "1"$  for single-width presses. On double-width presses  $X = "3"$  for the outmost Side A position. On triple-width presses  $X = "5"$  for the outmost Side A position. Note: The "Back" and "Front" side have the same X position on corresponding segments of a Web.

**Figure 8-23: Definition of the PlatePosition Attribute on a newspaper-Web Press**

The sketch in Figure 8-24 shows a single cylinder of a newspaper-Web Press for a broadSheet production. The numbers indicate Reader Page numbers. The colored dots indicate color separations. Dummy means no content-bearing plates are mounted on this cylinder position. Instead, so called dummy forms are mounted.

Figure 8-24: Example of a single physical section of eight pages

**Example 8-16: CylinderLayout**

The following **CylinderLayout** is an example representation of the cylinder layout as shown in the sketch.

```

<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="Bundle" Status="Waiting"
      Type="CylinderLayoutPreparation" JobPartID="ID20" Version="1.4">
  <ResourcePool>
    <CylinderLayoutPreparationParams ID="CL002" Class="Parameter"
        Status="Available" >
      <ProductionPath/>
    </CylinderLayoutPreparationParams>
    <RunList ID="R-002" Class="Parameter" Status="Available" />
    <Device ID="DEV-001" Manufacturer="MAN" ModelName="GEOMAN" Status="Available"
          Class="Implementation" DeviceID="DEV-001">
      <Module ModuleIndex="0" ModuleType="Folder" ModelName="Folder 1">
        <Module ModuleIndex="1" ModuleType="PrintUnit"
              DescriptiveName="PU-1">
          <Module ModuleIndex="2" SubModuleIndex="0"
                ModuleType="PrintModule" DescriptiveName="PM-1"/>
          <Module ModuleIndex="3" SubModuleIndex="1"
                ModuleType="PrintModule" DescriptiveName="PM-2"/>
          <Module ModuleIndex="4" SubModuleIndex="2"
                ModuleType="PrintModule" DescriptiveName="PM-3"/>
          <Module ModuleIndex="5" SubModuleIndex="3"
                ModuleType="PrintModule" DescriptiveName="PM-4"/>
          <Module ModuleIndex="6" SubModuleIndex="4"
                ModuleType="PrintModule" DescriptiveName="PM-5"/>
          <Module ModuleIndex="7" SubModuleIndex="5"
                ModuleType="PrintModule" DescriptiveName="PM-6"/>
          <Module ModuleIndex="8" SubModuleIndex="6"
                ModuleType="PrintModule" DescriptiveName="PM-7"/>
          <Module ModuleIndex="9" SubModuleIndex="7"
                ModuleType="PrintModule" DescriptiveName="PM-8"/>
        </Module>
      </Module>
    </Device>
    <Layout ID="L-001" Class="Parameter" Status="Available"/>
    <CylinderLayout ID="CL-001" Class="Parameter" Status="Available"
        PartIDKeys="WebSetup PlateLayout Separation"
        DeviceID="DEV-001">
      <LayoutRef rRef="L-001"/>
      <CylinderLayout WebSetup="Run-1">
        <CylinderLayout PlateLayout="PL-001">
          <CylinderLayout Separation="Yellow">
            <CylinderPosition DeviceModuleIndex="2" PlatePosition="0 0" />
          </CylinderLayout>
        </CylinderLayout>
      </CylinderLayout>
    </CylinderLayout>
  </ResourcePool>
</JDF>

```

```

        PlateType="Exposed" PlateUsage="Original"/>/>
<!-- page 1 -->
<CylinderPosition DeviceModuleIndex="2" PlatePosition="0 1"
    PlateType="Exposed" PlateUsage="Original"/>/>
<!-- page 1 -->
</CylinderLayout>
</CylinderLayout>
<CylinderLayout PlateLayout="PL-002">
    <CylinderLayout Separation="Yellow">
        <CylinderPosition DeviceModuleIndex="2" PlatePosition="1 0"
            PlateType="Exposed" PlateUsage="Original"/>/>
<!-- page 8 -->
<CylinderPosition DeviceModuleIndex="2" PlatePosition="1 1"
    PlateType="Exposed" PlateUsage="Original"/>/>
<!-- page 8 -->
</CylinderLayout>
</CylinderLayout>
<CylinderLayout PlateLayout="PL-003">
    <CylinderLayout Separation="HKS57">
        <CylinderPosition DeviceModuleIndex="2" PlatePosition="2 0"
            PlateType="Exposed" PlateUsage="Reuse"/>/>
<!-- page 3 -->
<CylinderPosition DeviceModuleIndex="2" PlatePosition="2 1"
    PlateType="Exposed" PlateUsage="Reuse"/>/>
<!-- page 3 -->
</CylinderLayout>
</CylinderLayout>
<CylinderPosition DeviceModuleIndex="2" PlatePosition="3 0"
    PlateType="Dummy" PlateUsage="Reuse"/>/>
<CylinderPosition DeviceModuleIndex="2" PlatePosition="3 1"
    PlateType="Dummy" PlateUsage="Reuse"/>/>
</CylinderLayout>
</CylinderLayout>
</ResourcePool>
<ResourceLinkPool>
    <DeviceLink Usage="Input" rRef="DEV-001"/>
    <LayoutLink Usage="Input" rRef="L-001"/>
    <RunListLink Usage="Input" rRef="R-002"/>
    <CylinderLayoutPreparationParamsLink Usage="Input" rRef="CL002"/>
    <CylinderLayoutLink Usage="Output" rRef="CL-001"/>
</ResourceLinkPool>
</JDF>

```

### Example 8-17: CylinderLayout: Double-Spread-Page Plate

In case of a double-spread-page plate (or double-truck-page plate) the CylinderPosition MAY be set as:

```

<CylinderLayout ID="CL-001" Class="Parameter" Status="Available"
    PartIDKeys="WebSetup PlateLayout Separation"
    DeviceID="DEV-001">
    <!-- ... -->
    <!-- PlatePosition (XYPairRangeList)-->
    <CylinderPosition DeviceModuleIndex="2" PlatePosition="0 0 ~ 1 0"
        PlateType="Exposed" PlateUsage="Original"/>/
    <!-- ... -->
</CylinderLayout>

```

## 8.40 CylinderLayoutPreparationParams

[New in JDF 1.3](#)

This Resource specifies the parameters of the **CylinderLayoutPreparation** Process.

### Resource Properties

Resource Class:	Parameter
Resource references:	—
Resource inheritance:	—
Example Partition:	"WebName", "WebProduct"
Input of Processes:	<b>CylinderLayoutPreparation</b>
Output of Processes:	—

Table 8-78: CylinderLayoutPreparationParams Resource

Name	Data Type	Description
ProductionPath	refelement element	ProductionPath describes the individual paper path through the different modules of a Web Press.

## 8.41 DBMergeParams

[Deprecated in JDF 1.5](#)

See Section P.6.4, “DBMergeParams” on page 1342 for details of this deprecated element.

## 8.42 DBRules

[Deprecated in JDF 1.5](#)

See Section P.6.5, “DBRules” on page 1343 for details of this deprecated element.

## 8.43 DBSchema

[Deprecated in JDF 1.5](#)

See Section P.6.6, “DBSchema” on page 1343 for details of this deprecated element.

## 8.44 DBSelection

[Deprecated in JDF 1.5](#)

See Section P.6.7, “DBSelection” on page 1344 for details of this deprecated element.

## 8.45 DeliveryParams

**DeliveryParams** provides information needed by a **Delivery** Process. A **Delivery** Process consists of sending one or more products to one or more delivery destinations. Delivery is also used to specify the scheduled transfer of digital assets.

In order to instruct a digital delivery Device to compress or encode the files one can use the input and output **RunList** with **FileSpec/@Compression** Attribute, even if no URL is specified. See Section O.7, “DigitalDelivery Examples” on page 1291 for a set of examples.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Intent Pairing:	<b>ArtDeliveryIntent, DeliveryIntent</b>

**Example Partition:****Delivery****Input of Processes:****Output of Processes:****Table 8-79: DeliveryParams Resource (Sheet 1 of 4)**

Name	Data Type	Description
<i>BuyerAccount</i> ?	string	Account ID of the buyer with the delivery service.
<i>ContactRefs</i> ?	IDREFS	<i>@ContactRefs</i> SHALL reference all <b>Contacts</b> responsible for this delivery.
<i>DeliveryCharge</i> ?	enumeration	Specifies who pays for a delivery being made by a third party. <b>Allowed values are:</b> <i>Printer</i> – The " <i>Printer</i> " is defined as the person who creates the Resource that is delivered. This includes all suppliers (e.g., binders, prepress suppliers, etc.). <i>Buyer</i> – The customer specified in <b>CustomerInfo</b> . <i>Other</i> – The <b>Contact</b> [@ContactTypes = "DeliveryCharge"].
<i>DeliveryID</i> ?	stringN-MTOKEN	Deliveries with the same <i>@DeliveryID</i> are part of the same physical delivery. This attribute allows items from multiple individual XJDF jobs to be delivered in one delivery.
<i>Earliest</i> ?	dateTime	<i>@Earliest</i> SHALL specify the earliest date and time after which the delivery is intended to be made.
<i>EarliestDuration</i> ?	duration	<i>@EarliestDuration</i> SHALL specify the earliest duration by which the delivery is to be made relative to the date and time that the order is ready for production.

**Table 8-79: DeliveryParams Resource (Sheet 2 of 4)**

Name	Data Type	Description
<i>Method</i> ? <a href="#">Modified in JDF 1.5</a>	stringN-MTOKEN	<p>Specifies a delivery method or Brand (e.g., "ExpressMail" or "InterofficeMail"). Note that it is strongly RECOMMENDED to use an NMTOKEN compatible string without blank spaces in this Attribute.</p> <p><b>Values include</b></p> <ul style="list-style-type: none"> <li><i>BestWay</i> – The sender decides how to deliver.</li> <li><i>CompanyTruck</i></li> <li><i>Courier</i></li> <li><i>CourierNoSignature</i> – a delivery service that does not require receipt stamps at recipient's mailbox and/or mail room. This new value covers the commonly used Japanese 'Mail bin' delivery service. <a href="#">New in JDF 1.5</a></li> <li><i>Email</i></li> <li><i>ExpressMail</i></li> <li><i>InstantMessaging</i> <a href="#">New in JDF 1.5</a></li> <li><i>InterofficeMail</i></li> <li><i>Local</i> – The files are already in place and a <b>DigitalDelivery</b> Process is not needed. <a href="#">New in JDF 1.5</a></li> <li><i>NetworkCopy</i> – This includes LAN and VPN. <a href="#">New in JDF 1.5</a></li> <li><i>Storage</i> – The product is stored by the supplier.</li> <li><i>OvernightService</i> <a href="#">Deprecated in JDF 1.5</a></li> <li><i>WebServer</i> – Upload / download from HTTP / FTP server. <a href="#">New in JDF 1.5</a></li> </ul> <p><b>Modification note:</b> starting in JDF 1.5, values have changed.</p>
<i>Ownership</i> ?	enumeration	<p>Point of transfer of ownership:</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Origin</i> – Ownership of goods is transferred upon leaving point of origin.</li> <li><i>Destination</i> – Ownership is transferred upon receipt at destination.</li> </ul>
<i>Pickup</i> ? <a href="#">Deprecated in JDF 1.2</a>	boolean	If " <i>true</i> ", the merchandise is picked up. If " <i>false</i> ", the merchandise is delivered. Replaced with @Transfer in JDF 1.2.
<i>Required</i> ?	dateTime	@Required SHALL specify the date and time by which the delivery is intended to be made.
<i>RequiredDuration</i> ?	duration	@RequiredDuration SHALL specify the time duration by which the delivery is to be made relative to the date and time that the order is ready for production.
<i>ReturnMethod</i> ?	NMTOKEN	<p>Specifies a delivery method for returning the surplus material, and SHALL NOT be specified unless SurplusHandling = "Return".</p> <p><b>Values include those from:</b> @Method</p>
<i>ServiceLevel</i> ? <a href="#">New in JDF 1.2</a>	string	<p>The service level of the specific carrier.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Next Day</i></li> <li><i>2nd Day Air</i></li> <li><i>Ground</i>.</li> </ul>

**Table 8-79: DeliveryParams Resource (Sheet 3 of 4)**

Name	Data Type	Description
<i>SurplusHandling ?</i>  <a href="#">New in JDF 1.2</a>	enumeration	<p>Describes what is to happen with unused or redundant parts of the transfer specified with <b>Transfer</b> = "BuyerToPrinterDeliver" or "BuyerToPrinterPickup" after the Job. The return delivery or pickup address is specified by <b>Contact</b>[contains (@ContactTypes, "SurplusReturn")].</p> <p><b>Allowed values are</b></p> <ul style="list-style-type: none"> <li><i>ReturnWithProduct</i> – The surplus material is delivered back to the customer together with the final product.</li> <li><i>Return</i> – The surplus material is delivered back independently directly after usage.</li> <li><i>Pickup</i> – The customer picks up the surplus material.</li> <li><i>Destroy</i> – The printer destroys the surplus material.</li> <li><i>PrinterOwns</i> – The surplus material belongs to the printer.</li> <li><i>Store</i> – The printer has to store the surplus material for future purposes.</li> </ul>
<i>TrackingID ?</i>  <a href="#">New in JDF 1.2</a>	string	The string that can help in tracking the delivery. The value of the @TrackingID Attribute will depend on the carrier chosen to ship the products.
<i>Transfer ?</i>  <a href="#">Transfer ?</a> <a href="#">New in JDF 1.2</a>	EnumerationSpan enumeration	<p>Describes the direction and responsibility of the transfer.</p> <p><b>Note:</b> if these values are for <b>DeliveryIntent/@Transfer</b> or <b>DropIntent/@Transfer</b>, then treat each occurrence of <b>DeliveryParams</b> below as <b>DeliveryIntent</b>.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>BuyerToPrinterDeliver</i> – The <b>DeliveryParams</b> describes an input to the Job (e.g., a CD for inserting, a preprinted cover, etc.). In this case, the buyer delivers the merchandise to the printer. The printer is to specify in the quote a special <b>Contact</b>[contains (@ContactTypes, "Delivery")]. The <b>Contact</b> specifies where the buyer is to send the merchandise.</li> <li><i>BuyerToPrinterPickup</i> – The <b>DeliveryParams</b> describes an input to the Job (e.g., a CD for inserting, a preprinted cover, etc.). In this case, the printer picks up the merchandise. The <b>Contact</b>[contains (@ContactTypes, "Pickup")] specifies where the printer has to pick up the merchandise.</li> <li><i>PrinterToBuyerDeliver</i> – The <b>DeliveryParams</b> describes an output of the Job. In this case, the printer delivers the merchandise to the buyer. The <b>Contact</b>[contains (@ContactTypes, "Delivery")] specifies where the printer is to send the merchandise.</li> <li><i>PrinterToBuyerPickup</i> – The <b>DeliveryParams</b> describes an output of the Job. In this case, the buyer picks up the merchandise. The printer is to specify in the quote a special <b>Contact</b>[contains (@ContactTypes, "Pickup")]. The <b>Contact</b> specifies where the buyer is to pick up the merchandise.</li> </ul>
<i>Company ?</i>  <a href="#">Deprecated in JDF 1.1</a>	refelement	Address and further information of the addressee. In JDF 1.1 and beyond, use <b>Contact/Company</b>

**Table 8-79: DeliveryParams Resource (Sheet 4 of 4)**

Name	Data Type	Description
<b>Contact *</b> <a href="#">ContactRefs ?<u>New in JDF 1.1</u></a>	refelementI-DREFS	Address and further information of the <b>Contact</b> responsible for this delivery.
Drop +	element	All locations where the product will be delivered.
DropItem +	element	A delivery MAY consist of multiple products, which are represented by their respective <b>PhysicalResource</b> Resource Elements. Each <b>DropItem</b> describes an individual Resource that is part of this delivery.
<b>FileSpec (DeliveryContents) ? <a href="#">New in JDF 1.6</a></b>	element	Reference to a document to be printed and packaged together with the delivered items.
<b>FileSpec (MailingList) ? <a href="#">New in JDF 1.5</a></b>	refelementI-element	A <b>FileSpec</b> Resource pointing to a mailing list. The format of the referenced mailing list is implementation dependent.
<b>FileSpec (RemoteURL) ?</b>	element	<b>FileSpec</b> that specifies the remote location of a digital delivery.

**8.45.1 Element: Drop****Table 8-80: Drop Element (Sheet 1 of 2)**

Name	Data Type	Description
<b>BuyerAccount ?</b>	string	Account ID of the buyer with the delivery service.
<b>Contact *</b> <a href="#">ContactRefs ?<u>New in JDF 1.1</u></a>	refelementI-DREFS	Address and further information of the Contacts responsible for this delivery. Default = <b>DeliveryParams/Contact</b> .
<b>DropID ? <a href="#">New in JDF 1.5</a></b>	string	Drop Elements with the same @DropID are part of the same drop. This attribute is provided to allow items from multiple individual <b>JDF XJDF</b> jobs to be delivered in one drop.
<b>Earliest ?</b>	dateTime	Specified the earliest time after which the delivery is to be made.
<b>EarliestDuration ?</b>	duration	Specifies the earliest time by which the transfer is to be made relative to the date of the purchase order. Within an RFQ or a Quote, at most one of Earliest or EarliestDuration SHALL be specified. Within a purchase order, EarliestDuration SHALL NOT be specified.
<b>Method ? <a href="#">Modified in JDF 1.5</a></b>	stringNMTOKEN	Specifies a delivery method (e.g., "ExpressMail" or "InterofficeMail"). Note that it is strongly RECOMMENDED to use an NMTOKEN compatible string in this Attribute, without blanks. <b>Values include those from:</b> <b>DeliveryParams/@Method</b> <b>Modification note:</b> starting in JDF 1.5, values have changed.
<b>Pickup ? <a href="#">Deprecated in JDF 1.2</a></b>	boolean	If "true", the merchandise is picked up. If "false", the merchandise is delivered. Default = <b>DeliveryParams/@Pickup</b> . Replaced with @Transfer in JDF 1.2.
<b>Required ?</b>	dateTime	Specifies the time by which the delivery is intended to be made. <b>Default value is from:</b> <b>DeliveryParams/@Required</b>

Table 8-80: Drop Element (Sheet 2 of 2)

Name	Data Type	Description
<i>RequiredDuration</i> ?	duration	Specifies the time by which the delivery is to be made relative to the date of the purchase order. Within an RFQ or a Quote, at most one of Required or RequiredDuration SHALL be specified. Within a purchase order, RequiredDuration SHALL NOT be specified.
<i>RemoteURLRef</i> ?	IDREF	Reference to a <b>FileSpec</b> that specifies the remote location.
<i>ReturnMethod</i> ?	NMTOKEN	Specifies a delivery method for returning the surplus material, and SHALL NOT be specified unless SurplusHandling = "Return". <b>Values include those from:</b> @Method
<i>ServiceLevel</i> ? <a href="#">New in JDF 1.2</a>	string	The service level of the specific carrier. <b>Values include those from:</b> <b>DeliveryParams/@ServiceLevel</b>
<i>SurplusHandling</i> ?	enumeration	Describes what is to happen with unused or redundant parts of the transfer specified with Transfer = "BuyerToPrinterDeliver" or "BuyerToPrinterPickup" after the Job. The return delivery or pickup address is specified by <b>Contact</b> [contains (@ContactTypes, "SurplusReturn")]. <b>Allowed values are</b> <i>ReturnWithProduct</i> – The surplus material is delivered back to the customer together with the final product. <i>Return</i> – The surplus material is delivered back independently directly after usage. <i>Pickup</i> – The customer picks up the surplus material. <i>Destroy</i> – The printer destroys the surplus material. <i>PrinterOwns</i> – The surplus material belongs to the printer. <i>Store</i> – The printer has to store the surplus material for future purposes.
<i>TrackingID</i> ? <a href="#">New in JDF 1.2</a>	string	The string that can help in tracking the delivery. The value of the @TrackingID Attribute will depend on the carrier chosen to ship the products.
<i>Transfer</i> ? <a href="#">New in JDF 1.2</a>	enumeration	Describes the direction and responsibility of the transfer. <b>Allowed values are from:</b> <b>DeliveryParams/@Transfer</b> .
<i>Company</i> ? <a href="#">Deprecated in JDF 1.1</a>	refelement	Address and further information of the addressee. Defaults to the value of Company specified in the root <b>DeliveryParams</b> Resource.
<b>Contact</b> * <b>ContactRefs</b> ? <a href="#">New in JDF 1.1</a>	refelementI-DREFS	Address and further information of the Contacts responsible for this delivery. Default = <b>DeliveryParams/Contact</b> .
DropItem +	element	A Drop MAY consist of multiple products, which are represented by their respective <b>PhysicalResource</b> <b>Resource</b> Elements. Each DropItem describes an individual Resource that is part of this Drop.
<b>FileSpec</b> (DeliveryContents) ? <a href="#">New in JDF 1.6</a>	refelement	Reference to a document to be printed and packaged together with the delivered items.

### 8.45.2 Element: DropItem

**Table 8-81: DropItem Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>ActualAmount</i> ? <a href="#">New in JDF 1.3</a>	integer	Actual amount of items delivered in this drop. Note that this logs the information after the fact in a way that is similar to an Audit. <i>@ActualAmount</i> was placed here because it is very difficult to map the <b>DeliveryParams</b> structure of individual <b>Drop</b> and <b>DropItem</b> Elements to <b>ResourceLink Resource</b> and Audit Elements.
<i>ActualTotalAmount</i> ? <a href="#">New in JDF 1.3</a>	integer	Actual <i>@TotalAmount</i> of items delivered in this drop. Note that this logs the information after the fact in a way that is similar to an Audit. <i>@ActualTotalAmount</i> was placed here because it is very difficult to map the <b>DeliveryParams</b> structure of individual <b>Drop</b> and <b>DropItem</b> Elements to <b>ResourceLink Resource</b> and Audit Elements.
<i>Amount</i> ?	integer	Specifies the number of <b>PhysicalResource Resource</b> ordered. If <i>@Amount</i> is not specified, defaults to the total amount of the Resource that is referenced by <b>PhysicalResource Resource</b> .
<i>ItemRef</i> ?	IDREF	<i>@ItemRef</i> SHALL reference the <b>Resource</b> , <b>ResourceSet</b> or <b>ProductList/Product</b> that represents the individual item to be delivered. If the <b>DropItem</b> references a final product, <i>@ItemRef</i> SHALL reference a <b>ProductList/Product</b> .
<i>OrderedAmount</i> ?	integer	Specifies the original number of Resources ordered. If not specified, defaults to the value of <i>@Amount</i> . Note that <b>DropItem</b> / <i>@OrderedAmount</i> corresponds semantically to <b>ResourceLink Resource</b> / <i>@Amount</i> and <b>DropItem</b> / <i>@Amount</i> .
<i>Proof</i> ?	stringN-MTOKEN	This <b>DropItem</b> refers to a proof that is specified in a <b>ProofItem</b> of the <b>ContentCheckIntent</b> of this Product Intent Node. <b>Constraint:</b> <b>ContentCheckIntent/ProofItem/@ProofName</b> SHALL match <i>@Proof</i> . Exactly one of <b>PhysicalResource Resource</b> or <i>@Proof</i> SHALL be specified.
<i>TotalAmount</i> ? <a href="#">New in JDF 1.3</a>	integer	Total amount of individual items delivered in this drop. The <i>@TotalAmount</i> and <i>@Amount</i> differ if the <b>PhysicalResource Resource</b> is a <b>Bundle</b> of multiple Resources. The <i>@Amount</i> specifies the number of <b>Bundles</b> (e.g., boxes, pallets etc.). Whereas <i>@TotalAmount</i> specifies the number of final products (e.g., books, magazines etc.).
<i>TotalDimensions</i> ? <a href="#">New in JDF 1.3</a>	Shape	Total dimensions in points of all individual items including packaging delivered in this drop.
<i>TotalVolume</i> ? <a href="#">New in JDF 1.3</a>	double	Total volume in liters of all individual items including packaging delivered in this drop.
<i>TotalWeight</i> ? <a href="#">New in JDF 1.3</a>	double	Total weight in gram of all individual items including packaging delivered in this drop.
<i>TrackingID</i> ? <a href="#">New in JDF 1.2</a>	string	The string that can help in tracking the delivery. The value of the <i>@TrackingID</i> Attribute will depend on the carrier chosen to ship the products. Defaults to <b>Drop/@TrackingID</b> .
<i>Unit</i> ?	stringN-MTOKEN	Unit of measurement for the <i>@Amount</i> of the Resource that is referenced by <b>PhysicalResource Resource</b> . <b>Default value is from:</b> <b>PhysicalResource Resource</b> / <i>@Unit</i>

**Table 8-81: DroplItem Element (Sheet 2 of 2)**

Name	Data Type	Description
Resource ?	refelementI-DREF	Description of the individual item to be delivered. It can be any kind of Resource Resource or a reference to a ProductList/Product.
ResourceRef ?		
Modified in JDF 1.2		

## 8.46 DevelopingParams

[New in JDF 1.1](#)

**DevelopingParams** specifies information about the chemical and physical properties of the developing and fixing process for film and plates. Includes details of preheating, postbaking and postexposure.

- **Preheating** is necessary for negative working plates. It hardens the exposed areas of the plate to make it durable for the following developing process. The stability and uniformity of the preheat temperature influence the evenness of tints and the run length of the plate on press.
- **Postbaking** is an optional process of heating that is applied to most polymer plates to enhance the run length of the plate. A factor 5 to 10 can be gained compared to plates that are not postbaked.
- **Postexposure** is an optional exposure process for photopolymer plates to enhance the run length of the plate. A factor of 5 to 10 can be gained compared with plates that are not postexposed.

**Note:** Postbaking and postexposure are mutually exclusive.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	<a href="#">ContactCopying</a> , <a href="#">ImageSetting</a>
<b>Output of Processes:</b>	—

**Table 8-82: DevelopingParams Resource**

Name	Data Type	Description
<i>PreHeatTemp</i> ?	double	Temperature of the preheating Process in °C.
<i>PreHeatTime</i> ?	duration	Duration of the preheating Process.
<i>PostBakeTemp</i> ?	double	Temperature of the postbaking Process in °C.
<i>PostBakeTime</i> ?	duration	Duration of the postbaking Process. <i>@PostBakeTime</i> SHALL NOT be specified if <i>@PostExposeTime</i> is present.
<i>PostExposeTime</i> ?	duration	Duration of the postexposing Process. <i>@PostExposeTime</i> SHALL NOT be specified if <i>@PostBakeTime</i> is present.

## 8.47 Device

Information about a specific Device. This can include information about the Devices capabilities. For more information, see [Section 3.13.4.3, “ImplementationResource”](#) [Section 8.1, “Resource”](#) and [Section 4.8, “Capability and Constraint Definitions”](#).

### Resource Properties

<b>Resource Class:</b>	Implementation
<b>Resource referenced by:</b>	<a href="#">PhaseTime</a> , <a href="#">AuditStatus</a> , <a href="#">DeviceFilter</a> , <a href="#">DeviceFilter</a> , <a href="#">IDInfo</a> , <a href="#">DeviceInfo</a> <a href="#">DeviceInfo</a> , Queue, QueueFilter, <a href="#">DieLayout</a> , <a href="#">DieLayoutProductionParams</a> /ConvertingConfig,

**InkZoneCalculationParams, PrintCondition, RollStand,**  
**StrippingParams**

**Example Partition:**

 **Any Process**

**Input of Processes:**

—

**Output of Processes:**

**Table 8-83: Device Resource (Sheet 1 of 3)**

Name	Data Type	Description
<i>CostCenterID</i> ?	NMTOKEN	MIS cost center ID.
<i>DeviceClass</i> ? <a href="#">New in JDF 1.5</a>	NMTOKENS	Indicates type of device. Multiple NMTOKENS are used to describe integrated devices with multiple classes. <b>Values include:</b> <i>CaseMaker</i> <i>Cutter</i> <i>DieCutter</i> <i>EndsheetFeeder</i> <i>Folder</i> <i>Gatherer</i> <i>GathererBinder</i> <i>Hardcover</i> <i>HardcoverBookLine</i> <i>Inserter</i> <i>Jacketer</i> <i>PerfectBinder</i> <i>PerfectBinderLine</i> <b>PlateSetter</b> <i>PrintDelivery</i> <i>PrintingPress</i> <i>Stacker</i> <i>Stitcher</i> <i>ThreadSewer</i> <i>Trimmer</i> <b>WideFormatPrinter</b>
<i>DeviceFamily</i> ? <a href="#">Deprecated in JDF 1.1</a>	string	Manufacturer family type ID. The <i>@DeviceFamily</i> is replaced by the appropriate <i>@ModelXXX</i> Attributes in this list.
<i>DeviceID</i> ?	stringNMTOKEN	Name Identifier of the Device. The <i>@DeviceID</i> SHALL be unique within the workflow. <i>@DeviceID</i> SHALL be the same over time for a specific Device instance (i.e., SHALL survive reboots). If the Device sends <b>JMF XJMF</b> Messages, this value SHALL also be used for <b>JMF/@SenderId XJMF@DeviceID</b> and <b>@DeviceID</b> of the specific messages. For UPNP Devices, this SHALL match UPNP:UDN. See [UPNP]. <i>@DeviceID</i> need not be specified when <b>Device</b> is used as a filter to specify a set of Devices.
<i>DeviceType</i> ?	string	Manufacturer type ID, including a revision stamp. Type of the Device. Used for grouping and filtering of Devices

**Table 8-83: Device Resource (Sheet 2 of 3)**

Name	Data Type	Description
<i>Directory</i> ? <a href="#">New in JDF 1.1</a>	URL	Defines a directory where the URLs that are associated with this <b>Device</b> can be located. If <i>@Directory</i> is specified, it SHALL be an Absolute URI [RFC3986] that implicitly also specifies a Base URI which is used to resolve any relative URL of <b>Device</b> . See Appendix K, “Resolving RunList/@Directory and FileSpec/@URL URI References” on page 1223 and [FileURL].
<i>FriendlyName</i> ? <a href="#">New in JDF 1.1</a> <a href="#">Deprecated in JDF 1.4</a>	string	Short user-friendly title. <b>Deprecation note:</b> starting with JDF 1.4, use <i>@DescriptiveName</i> .
<i>ICSVersions</i> ? <a href="#">New in JDF 1.3</a>	NMTOKENS	CIP4 Interoperability Conformance Specification (ICS) Versions that this <b>Device</b> complies with. <b>Values include those from:</b> JDF/@ <i>ICSVersions</i> (Table 3-4, “JDF XJDF Node” on page 52).
<i>JDFErrorURL</i> ? <a href="#">New in JDF 1.2</a>	URL	URL where, by default, the Device will post <b>JDF XJDF</b> output Job tickets that are aborted or in error and when <b>NodeInfo</b> /@ <i>TargetRoute</i> is not specified. If <i>@JDFErrorURL</i> is specified in the “file” scheme, it SHALL specify a directory. If not specified, <i>@JDFErrorURL</i> defaults to the value of <i>@JDFOutputURL</i> .
<i>JDFInputURL</i> ? <a href="#">New in JDF 1.2</a>	URL	URL where, by default, the Device can accept <b>JDF XJDF</b> input Job tickets. If <i>@JDFInputURL</i> is specified in the “file” scheme, it SHALL specify a directory. The persistence of JDF tickets in this location is implementation dependent. If not specified, the Device does not accept <b>JDF XJDF</b> without a <b>JMF</b> an <b>XJMF</b> <i>SubmitQueueEntry</i> .
<i>JDFOutputURL</i> ? <a href="#">New in JDF 1.2</a>	URL	URL where, by default, the Device will post <b>JDF XJDF</b> output Job tickets that are successfully completed and when <b>NodeInfo</b> /@ <i>TargetRoute</i> is not specified. If <i>@JDFOutputURL</i> is specified in the “file” scheme, it SHALL specify a directory.
<i>JDFVersions</i> ? <a href="#">New in JDF 1.1</a>	JDFJMFFormats	Whitespace separated list of supported <b>JDF XJDF</b> versions that this Device supports (e.g., “1.0 1.1” “1.3 2.0” specifies that both the 1.0 and 1.1 1.3 and 2.0 versions are supported).
<i>JMFSenderID</i> ? <a href="#">New in JDF 1.1</a>	string	ID of the Controller will process <b>JMF XJMF</b> Messages for the Device. This corresponds to the <i>@SenderID</i> Attribute that is specified for the Device in <b>JMF XJMF</b> Messages. If a Device emits its own <b>JMF XJMF</b> Messages, this value SHALL match the <i>@DeviceID</i> .
<i>JMFURL</i> ? <a href="#">New in JDF 1.1</a>	URL	URL of the Device port that will accept <b>JMF XJMF</b> Messages. A Controller that manages a Device MAY specify its own <i>@JMFURL</i> when responding to <b>KnownDevices</b> Messages. This is how a Controller inserts itself as the manager for a Device.
<i>KnownLocalizations</i> ? <a href="#">New in JDF 1.2</a>	languages	A list of all language codes supported by the Device for localization. If not specified, then the Device supports no localizations.
<i>Manufacturer</i> ? <a href="#">New in JDF 1.1</a>	string	Manufacturer name.
<i>ManufacturerURL</i> ? <a href="#">New in JDF 1.1</a>	stringURL	Web site for manufacturer.
<i>ModelDescription</i> ? <a href="#">New in JDF 1.1</a>	string	Long description for end user.

**Table 8-83: Device Resource (Sheet 3 of 3)**

Name	Data Type	Description
<i>ModelName</i> ? <a href="#">New in JDF 1.1</a>	string	Model name.
<i>ModelNumber</i> ? <a href="#">New in JDF 1.1</a>	string	Model number.
<i>ModelURL</i> ? <a href="#">New in JDF 1.1</a>	stringURL	Web site for model.
<i>Packaging</i> ?	enumerations	<p>List of packaging methods supported for job submission with <code>SubmitQueueEntry</code>, <code>ResubmitQueueEntry</code> and <code>ReturnQueueEntry</code>.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>ZIP</i> – ZIP packaging of XJMF, XJDF and digital assets is supported. See Section 11.6, JDF XJDF Packaging for details.</li> <li><i>XML</i> – unpackaged XML is supported.</li> </ul>
<i>PresentationURL</i> ? <a href="#">New in JDF 1.1</a>	stringURL	@ <i>PresentationURL</i> specifies a URL to a Device-provided user interface for configuration, status, etc. For instance, if the Device has an embedded Web server, this is a URL to the configuration page hosted on that Web server.
<i>SecureJMFURL</i> ? <a href="#">New in JDF 1.3</a>	URL	URL of the Device port that will accept <b>JMF</b> <b>XJMF</b> Messages via the " <i>https</i> " protocol.
<i>SerialNumber</i> ? <a href="#">New in JDF 1.1</a>	string	Serial number of the Device.
<i>UPC</i> ? <a href="#">New in JDF 1.1</a>	stringURL	Universal Product Code for the Device. A 12-digit, all-numeric code that identifies the consumer package. Managed by the Uniform Code.
<i>URLSchemes</i> ?	NMTOKENS	<p>List of schemes supported in for retrieving <b>JDF</b> <b>XJDF</b> files. If not specified, the Controller does not support retrieving <b>JDF</b> <b>XJDF</b> files from remote URLs.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>file</i> – The file scheme according to [RFC1738] and [RFC3986].</li> <li><i>ftp</i> – FTP (File Transfer Protocol)</li> <li><i>http</i> – HTTP (Hypertext Transport Protocol)</li> <li><i>https</i> – HTTPS (Hypertext Transport Protocol — Secure)</li> </ul>
<i>CostCenter</i> ? <i>CostCenterID</i> ?	elementstring	MIS cost center ID.
<i>DeviceCap</i> * <a href="#">New in JDF 1.1</a>	element	Description of the capabilities of the Device. The <code>DeviceCap</code> Elements are combined with a logical OR (i.e., if a <b>JDF</b> an <b>XJDF</b> resides within any parameter space defined by a <code>DeviceCap</code> , the Device can process the Job). For details see Section 9, “Device Capabilities”.
<i>IconList</i> ? <a href="#">New in JDF 1.1</a>	element	List of locations of icons that can be used to represent the Device.
<i>Location</i> ? Location ? <a href="#">New in JDF 1.4</a>	element	Description of the Device location.
<i>Module</i> * <a href="#">New in JDF 1.3</a>	element	Individual Modules that are represented by this <b>Device</b> .

### 8.47.1 Element: IconList

[New in JDF 1.1](#)

The IconList is a list of individual icon descriptions.

**Table 8-84: IconList Element**

Name	Data Type	Description
Icon +	element	Individual icon description.

### 8.47.2 Element: Icon

[New in JDF 1.1](#)

An Icon represents a Device in the user interface.

**Table 8-85: Icon Element**

Name	Data Type	Description
<i>BitDepth</i> ?	integer	Bit depth of one color.
<i>IconUsage</i> ?	enumerations	<p>Definition of the <a href="#">DeviceInfo</a> <a href="#">DeviceInfo</a>/@<a href="#">DeviceStatus</a> of the Device that this Icon represents.</p> <p>Any combination of values are allowed:</p> <p><b>Default value is:</b> a list of all values (i.e., no limit on Icon use).</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Unknown</i> – No link to the Device exists</li> <li><i>Idle</i></li> <li><i>Down</i></li> <li><i>Setup</i></li> <li><i>Running</i></li> <li><i>Cleanup</i></li> <li><i>Stopped</i></li> </ul> <p><b>Note:</b> The meaning of the individual enumerations is described in the <a href="#">DeviceInfo</a> <a href="#">DeviceInfo</a> Message Element. See Section 5.8.3, “KnownDevices”.</p>
<i>URLSchemes</i> ?	NMTOKENS	<p>List of schemes supported in for retrieving <a href="#">XJDF</a> files. If not specified, the Controller does not support retrieving <a href="#">XJDF</a> files from remote URLs.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>file</i> – The file scheme according to [RFC1738] and [RFC3986].</li> <li><i>ftp</i> – FTP (File Transfer Protocol)</li> <li><i>http</i> – HTTP (Hypertext Transport Protocol)</li> <li><i>https</i> – HTTPS (Hypertext Transport Protocol — Secure)</li> </ul>
<i>Size</i> ?	XYPair	Height and width of the icon.
<i>FileSpec</i> ?	element	Details of the file containing the icon data.

### 8.47.3 Element: Module

[New in JDF 1.3](#)

A Module represents a physical Machine or part of a **Device**.

**Table 8-86: Module Element**

Name	Data Type	Description
<i>DeviceType</i> ?	string	Manufacturer type ID, including a revision stamp.
<i>Manufacturer</i> ?	string	Manufacturer name.
<i>ManufacturerURL</i> ?	stringURL	Web site for manufacturer.
<i>ModelDescription</i> ?	string	Long description for end user.
<i>ModelName</i> ?	string	Model name.
<i>ModelNumber</i> ?	string	Model number.
<i>ModelURL</i> ?	stringURL	Web site for model.
<i>ModuleID</i> ?	stringN-MTOKEN	Name of the Module. This is a unique identifier within the workflow. <i>@ModuleID</i> SHALL be the same over time for a specific Device instance (i.e., SHALL survive reboots). <b>At least one of <i>@ModuleID</i> or <i>@ModuleIndex</i> SHALL be specified.</b> If multiple logical Devices share a physical Module, <i>@ModuleID</i> SHALL be identical. <i>@ModuleID</i> SHOULD be used to specify Machines that comprise a <b>Device</b> .
<i>ModuleIndex</i> ?	integer	Zero-based index of the module within the Machine. This index used to reference an individual Module. At least one of <i>@ModuleID</i> or <i>@ModuleIndex</i> SHALL be specified. <i>@ModuleIndex</i> SHOULD be used to specify identical modules (e.g., print modules in a complex Device).
<i>ModuleType</i> ?	NMTOKEN	Type of Module. <b>Values include those from:</b> Section C.2, “ModuleType Supported Strings” on page 1138. <b>Note:</b> the allowed values depend on the type of Device. Each type of Device has a separate table of values.
<i>SerialNumber</i> ?	string	Serial number of the Device.
<i>SubModuleIndex</i> ?	integer	Zero-based index of the <b>Module</b> in the unit as specified by the parent <b>Module</b> . SHALL NOT be specified if <b>Module</b> is a direct child of <b>Device</b> .
<b>Module</b> *	element	Recursive modules that are part of this module.

## 8.48 DieLayout

[New in JDF 1.3](#)

**DieLayout** represents a die layout described in an external file. This Resource is also used as the input for the actual die making process and is also used in **Stripping**. The external file is by preference a DDES3 file (ANSI® IT8.6-2002). The usage of other files like CFF2, DDES2, DXF or proprietary formats is not excluded but MAY have a negative impact on interoperability.

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

BinderySignature, ShapeCuttingParams

**Example Partition:**

—

**Input of Processes:**

DieDesign, DieMaking

**Output of Processes:**

DieDesign, DieLayoutProduction

**Table 8-87: DieLayout Resource**

Name	Data Type	Description
<a href="#">CutBox ? New in JDF 1.5</a>	rectangle	A rectangle describing the bounding box of all cut lines in the <b>DieLayout</b> . This is sometimes referred to as the knife to knife dimensions of the <b>DieLayout</b> . If the position on the <b>Media</b> is not known, the lower left SHOULD be set to 0 0.
<a href="#">DieSide ? New in JDF 1.4</a>	enumeration	Determines the die side for which the <b>DieLayout</b> is made. <b>Allowed values are:</b> <i>Up</i> – the <b>DieLayout</b> is made with the knives pointing upwards. <i>Down</i> – the <b>DieLayout</b> is made with the knives pointing downwards.
<a href="#">MediaSide ? New in JDF 1.4</a>	enumeration	Determines the printing side for which the <b>DieLayout</b> is made. <b>Allowed values are:</b> <i>Front</i> – for a box this corresponds to the outside of a box. <i>Back</i> – for a box this corresponds to the inside of a box.
<a href="#">Rotated ? New in JDF 1.4</a>	boolean	Indicates if some of the structural designs are oriented cross grain/flute in the layout.
<a href="#">Waste ? New in JDF 1.4</a>	double	The percent of the material that is wasted. Inner waste (i.e., cut out windows are not included in the waste).
<a href="#">Device * New in JDF 1.4</a>	refelement	The Devices for which this <b>DieLayout</b> was made (printing press and die cutter). Typically only the type of Device would be used (e.g., the model of the die cutter).
<a href="#">FileSpec ?</a>	refelement	Reference to an external URL that represents the die. <b>This is typically a CAD design file.</b>
<a href="#">Media ? New in JDF 1.4</a>	refelement	<b>Media</b> for which this <b>DieLayout</b> was intended. The <b>Media</b> description defines important design parameters as the type of <b>Media</b> , dimensions, grain direction or flute direction.
<a href="#">RuleLength * New in JDF 1.4</a>	element	Elements describing the length of die rules for the different types of rules. Each <b>RuleLength</b> Element describes the accumulated length of all rules of a certain type.
Station *	element	Description of the stations in a <b>DieLayout</b> . One Station produces one shape <b>type</b> .

#### 8.48.1 Element: RuleLength

[New in JDF 1.4](#)

Elements describing the length of die rules for the different types of rules. Each **RuleLength** Element describes the accumulated length of all rules of a certain type.

**Table 8-88: RuleLength Element**

Name	Data Type	Description
<a href="#">DDESCutType</a>	integer	Type of rule. <b>Values include:</b> a number between "0" and "999" corresponding to a line type as defined in DDES.
<a href="#">Length</a>	double	Accumulated length of the rules of this type in the <b>DieLayout</b> (pt).

### 8.48.2 Element: Station

Description of the stations in a **DieLayout**. One station produces one shape type. On Station element MAY represent multiple identical one-up stations on an N-up **DieLayout**.

**Table 8-89: Station Element**

Name	Data Type	Description
<i>AssemblyIDs ?</i> <i>BinderySignatureIDs</i> <i>?New in JDF 1.3</i>	NMTOKENS	The list of <i>@AssemblyIDs</i> of the graphic elements that are processed by this Station. If specified, <i>@BinderySignatureIDs</i> SHALL list the <b>BinderySignature</b> / <i>@BinderySignatureID</i> of all <b>BinderySignatures</b> that are processed by this Station. Note: <i>@AssemblyIDs</i> was added to JDF 1.3 Errata.
<i>StationAmount ?="1"</i>	integer	The number of stations in the <b>DieLayout</b> with this <i>@StationName</i> .
<i>StationName ?</i>	string	The name of the 1-up design in the <b>DieLayout</b> .
<i>ShapeDef ?</i> <i>New in JDF 1.4</i>	refelementelement	The <b>ShapeDef</b> corresponding to this station in the <b>DieLayout</b> .

## 8.49 DieLayoutProductionParams

[New in JDF 1.4](#)

Parameters for the die layout.

### Resource Properties

**Resource Class:** Parameter

**Resource referenced by:** —

**Example Partition:** —

**Input of Processes:** *DieLayoutProduction*

**Output of Processes:** —

**Table 8-90: DieLayoutProductionParams Resource**

Name	Data Type	Description
<i>Estimate ?</i>	boolean	Determines if the Process runs in estimate mode or not. When in estimate mode multiple solutions are generated.
<i>Position ?</i>	Anchor	The position of layout on the sheet.
<i>ConvertingConfig</i> +*	element	A <b>ConvertingConfig</b> Element describes a range of Sheet sizes that can be taken into account to create a new <b>DieLayout</b> . Typically a <b>ConvertingConfig</b> will correspond to 1 combination of printing press and further finishing equipment such as die cutters.
<i>RepeatDesc</i> +?	element	Step and repeat parameters for a set of <b>ShapeDef</b> . There is either a single <b>RepeatDesc</b> giving the parameters for all <b>ShapeDef</b> Resources at the input or there is exactly 1 <b>RepeatDesc</b> per <b>ShapeDef</b> in the input in which case the sequence of both determines which <b>RepeatDesc</b> should be used for a <b>ShapeDef</b> .

### 8.49.1 Element: RepeatDesc

[New in JDF 1.4](#)

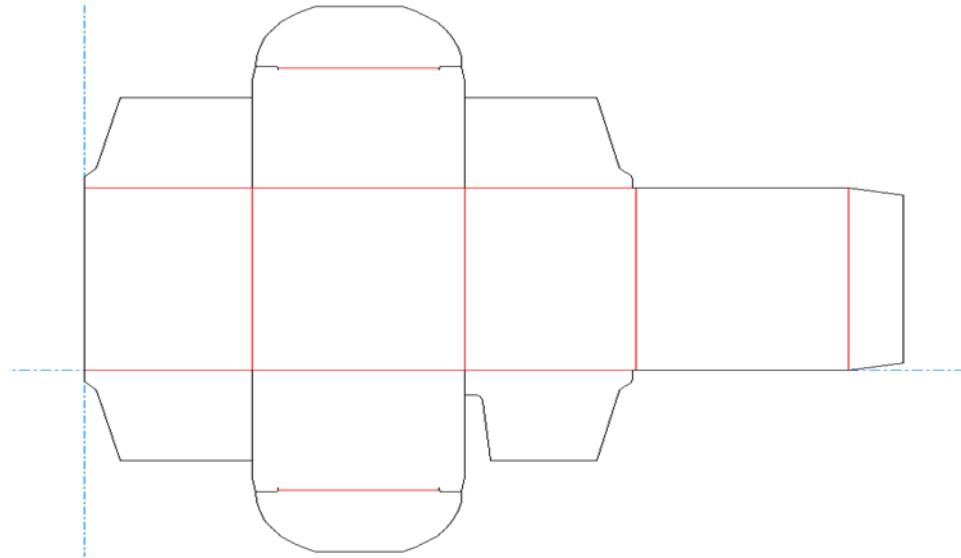
The **RepeatDesc** Element describes the layout specs for a **ShapeDef**.

**Table 8-91: RepeatDesc Element**

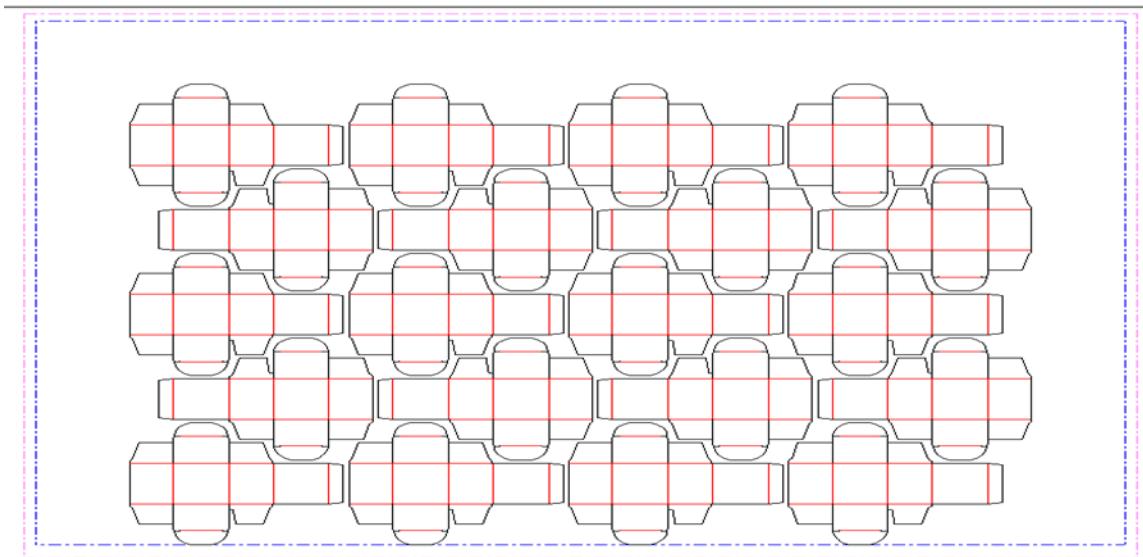
Name	Data Type	Description
<i>AllowedRotate</i> ?	enumeration	Allowed methods to rotate structural designs in with respect to grain/flute. <b>Allowed values are:</b> <i>None</i> – No Rotation at all. <i>Grain</i> – 0° or 180° Rotation. <i>MinorGrain</i> – device dependent small rotations that retain the general grain direction (e.g., +/- 10°). <i>CrossGrain</i> – Cross grain rotations (e.g., 90° are acceptable).
<i>GutterX</i> ?	double	Gutter between columns (see also @ <i>GutterX2</i> )
<i>GutterX2</i> ?	double	Secondary gutter between columns. When the @ <i>LayoutStyle</i> = "Reverse2ndColumn", the gutter between columns (2n+1) and (2n+2) is @ <i>GutterX</i> and between columns (2n+2) and (2n+3) is @ <i>GutterX2</i> . When @ <i>GutterX2</i> is not specified @ <i>GutterX2</i> = @ <i>GutterX</i> . See Figure 8-31, "RepeatDesc/@GutterX2 and @GutterY2: Secondary Gutters," on page 633.
<i>GutterY</i> ?	double	Gutter between rows (see also @ <i>GutterY2</i> ).
<i>GutterY2</i> ?	double	Secondary gutter between rows. When the @ <i>LayoutStyle</i> = "Reverse2ndRow" the gutter between rows (2n+1) and (2n+2) is @ <i>GutterY</i> and between rows (2n+2) and (2n+3) @ <i>GutterY2</i> . When @ <i>GutterY2</i> is not specified @ <i>GutterY2</i> = @ <i>GutterY</i> . See Figure 8-31, "RepeatDesc/@GutterX2 and @GutterY2: Secondary Gutters," on page 633.
<i>LayoutStyle</i> ?	NMTOKENS	The allowed styles for the <b>Layout</b> <b>Values include:</b> <i>StraightNest</i> <i>Reverse2ndRow</i> <i>Reverse2ndRowAligned</i> <i>Reverse2ndColumn</i> <i>Reverse2ndColumnAligned</i> <b>Note:</b> for diagrams of the above values, see Figure 8-25, "Basic Shape for RepeatDesc/@LayoutStyle Examples," on page 630 and the following five figures
<i>OrderQuantity</i> ?	integer	The order quantity for the 1-up for which this layout will be optimized. This information needs to be present when a <b>Layout</b> is being made for more than 1 <b>ShapeDef</b> .
<i>UseBleed</i> ?	boolean	If true, the print bleed defined in the structural design is used to calculate the layout. If false, the outer cut is used.
<b>ShapeDef</b> *	element	<b>ShapeDef</b> Resources describing the different 1-up structural designs to be stepped and repeated on the <b>Media</b> .

The following Figure shows the basic shape for subsequent Figures. that relate to RepeatDesc.

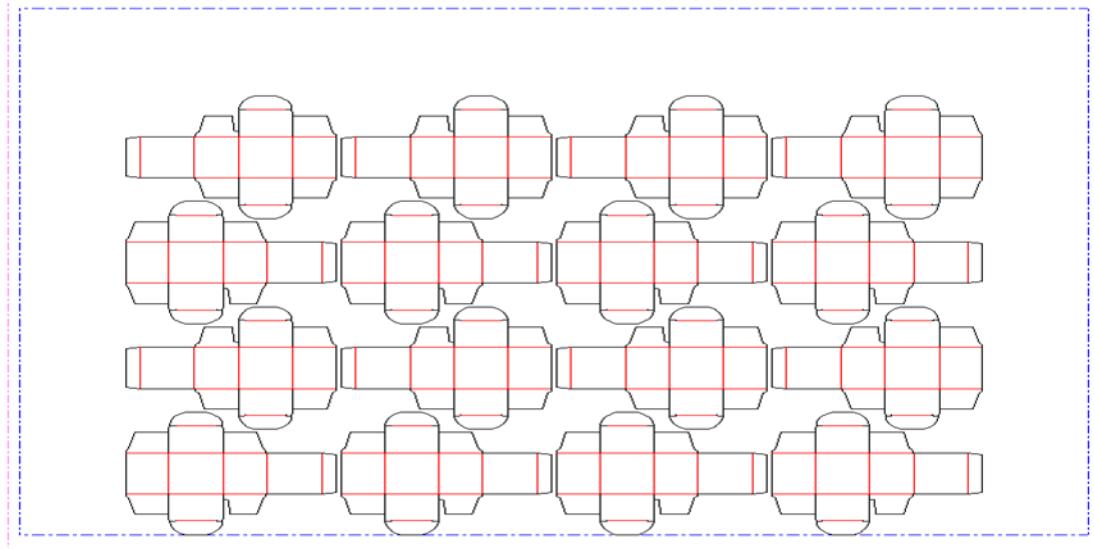
**Figure 8-25: Basic Shape for RepeatDesc/@LayoutStyle Examples**



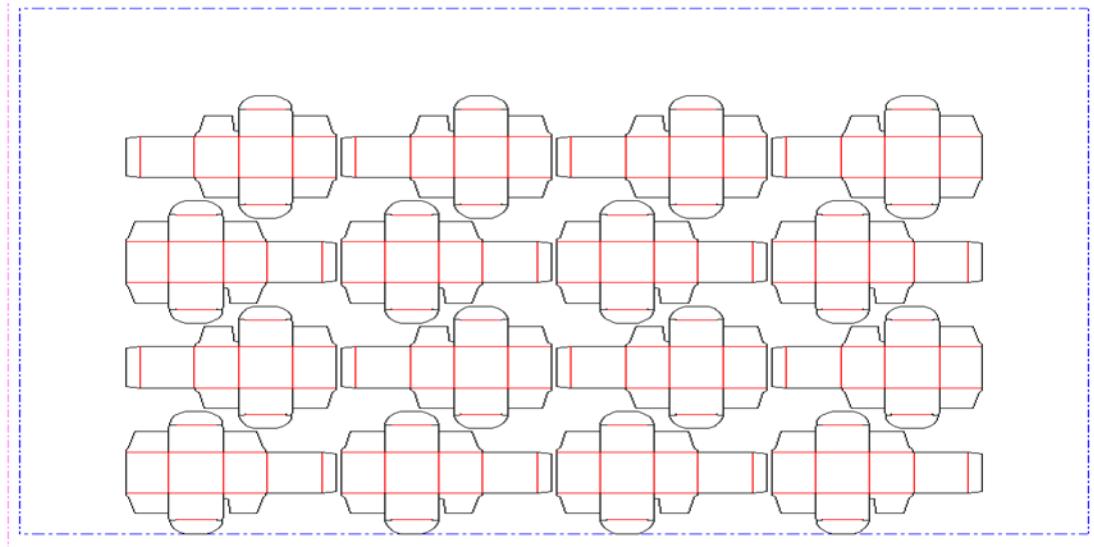
**Figure 8-26: RepeatDesc/@LayoutStyle = "StraightNest"**



In the following Figure, 1-ups on even rows are rotated 180 degrees. Even rows are shifted horizontally and vertically to obtain optimal nesting.

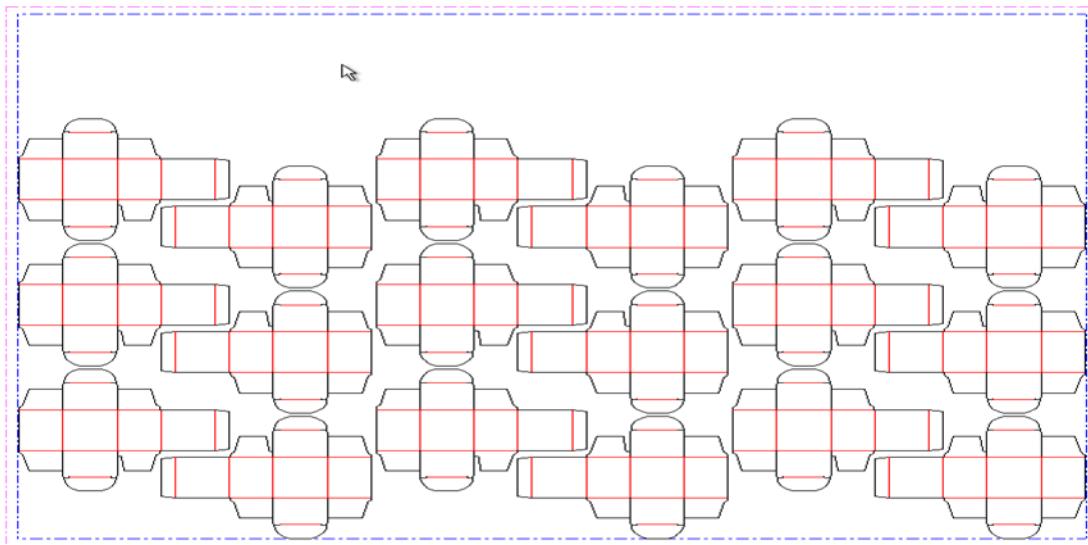
**Figure 8-27: RepeatDesc/@LayoutStyle = "Reverse2ndRow"**

In the following Figure, 1-ups on even rows are rotated 180 degrees. Even rows are shifted vertically to obtain optimal nesting. The even rows are not shifted horizontally. (Left and right edges are aligned between rows)

**Figure 8-28: RepeatDesc/@LayoutStyle = "Reverse2ndRowAligned"**

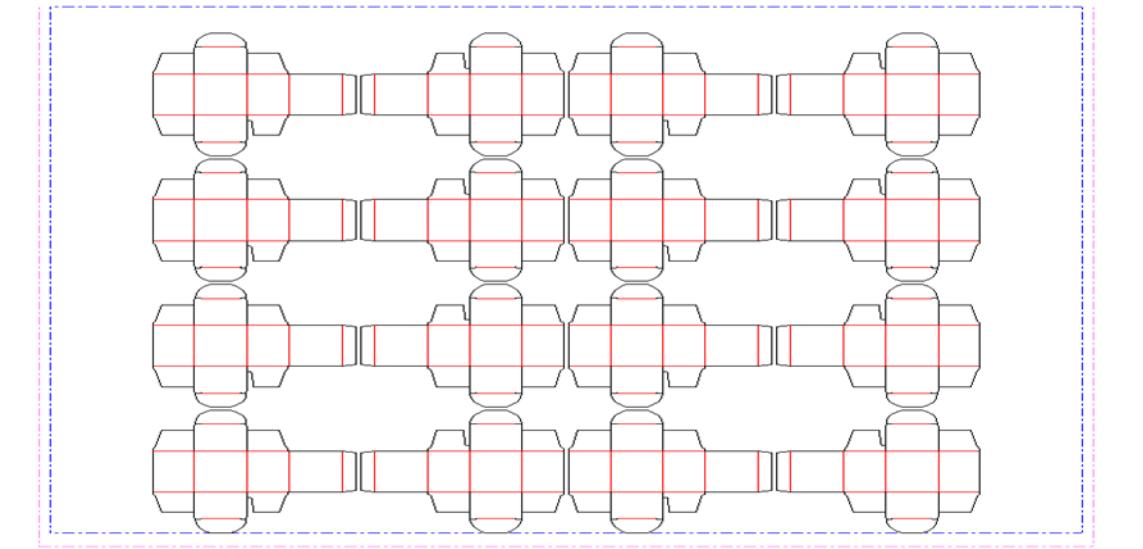
In the following Figure, 1-ups on even columns are rotated 180 degrees. Even columns are shifted vertically and horizontally to obtain optimal nesting.

**Figure 8-29: RepeatDesc/@LayoutStyle = "Reverse2ndColumn"**



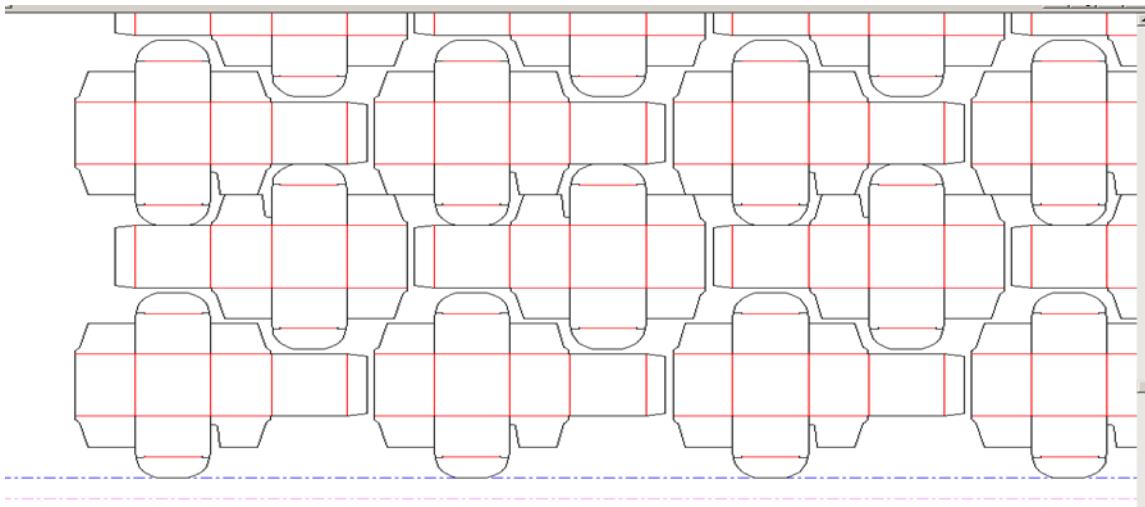
In the following Figure, 1-ups on even columns are rotated 180 degrees. Even columns are shifted horizontally to obtain optimal nesting. No vertical shifting of even columns is done (top and bottom edges are aligned between columns).

**Figure 8-30: RepeatDesc/@LayoutStyle = "Reverse2ndColumnAligned"**



In the following Figure, @LayoutStyle = "Reverse2ndRow", @GutterY = "15", @GutterY2 = "0".

**Figure 8-31: RepeatDesc/@GutterX2 and @GutterY2: Secondary Gutters**



## 8.50 DigitalDeliveryParams

New in JDF 1.2

This Resource specifies the parameters of the **DigitalDelivery** Process.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Intent Pairing:	<b>ArtDeliveryIntent</b>
Example Partition:	"Location"
Input of Processes:	<b>DigitalDelivery</b>
Output of Processes:	—

**Table 8-92: DigitalDeliveryParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>DigitalDeliveryDirection</i> ?	enumeration	<p>Describes which side activates the delivery.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Push</i> – The artwork will be sent (the source end is active).</li> <li><i>Pull</i> – The artwork will be retrieved (the destination end is active).</li> </ul>
<i>DigitalDeliveryProtocol</i> ?	NMTOKEN	<p>Identifies the delivery network protocol.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>FTP</i></li> <li><i>HTTP</i></li> <li><i>HTTPS</i></li> <li><i>SMTP</i></li> </ul>

**Table 8-92: DigitalDeliveryParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<b>Method ?</b> <a href="#">Modified in JDF 1.5</a>	NMTOKEN	<p>Identifies the delivery method.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>EMail NetworkCopy</i> – This includes LAN and VPN.</li> <li><i>WebServer</i> – Upload / Download from HTTP / FTP server.</li> <li><i>InstantMessaging</i></li> </ul> <p>Values include also: any brand name of a network provider. <a href="#">New in JDF 1.5</a></p>
<b>Contact *ContactRefs ?</b>	refelement DREFS	<p>Source and destination address for the transfer of the artwork. The destination delivery address is specified as the <b>Contact</b>[contains (@<i>ContactTypes</i>, "Delivery")]/ComChannel. Exactly one such <b>Contact</b> SHALL be specified per destination. If multiple delivery destinations are specified within one <b>DigitalDelivery</b> Process, such a <b>Contact</b> SHALL be Partitioned with the Partition Key "Location".</p> <p>If the output <b>RunList</b> completely specifies the destination, a <b>Contact</b>[contains (@<i>ContactTypes</i>, "Delivery")] SHOULD be omitted. This is generally the case if @<i>Method</i> = "NetworkCopy" or "WebServer".</p> <p>A <b>Contact</b>[contains (@<i>ContactTypes</i>, "Sender")] specifies the source address.</p>

**Compression & Encoding of the transferred files:**

In order to instruct a digital delivery Device to compress or encode the files one can use the input and output **RunList** with **FileSpec**/@*Compression* Attribute, even if no URL is specified. See Section O.7, "DigitalDelivery Examples" on page 1291 for a set of examples.

## 8.51 DigitalMedia

[New in JDF 1.2](#)

This Resource represents a processed removable digital media-based **Handling Resource Resource** such as tape or removable disk.

**Resource Properties****Resource Class:**

Handling

**Resource referenced by:****ArtDeliveryIntent/ArtDeliveryDropItem****Example Partition:**[New in JDF 1.2](#)**Input of Processes:**

—

**Output of Processes:**

—

**Table 8-93: DigitalMedia Resource (Sheet 1 of 2)**

Name	Data Type	Description
<b>Capacity ?</b>	integer	Size of the digital media in megabytes.
<b>MediaLabel ?</b>	string	Electronic label of the media.

**Table 8-93: DigitalMedia Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>MediaType</i>	NMTOKEN	<p>The digital media type.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>CD</i> – Recordable compact disc.</li> <li><i>DAT</i> – DAT tape backup media.</li> <li><i>DLT</i> – DLT tape backup media.</li> <li><i>DVD</i> – DVD disc.</li> <li><i>Exabyte</i> – Exabyte tape backup media.</li> <li><i>HardDrive</i> – Removable hard drives from a rack.</li> <li><i>Jaz</i> – Jaz removable disk drive.</li> <li><i>Optical</i> – Optical removable disk drive. Excluding CDs and DVDs.</li> <li><i>SDCard</i></li> <li><i>SSD</i></li> <li><i>Tape</i> – Tape backup media. Use only when the explicit tape type is not listed here.</li> <li><i>USBDrive</i></li> <li><i>Zip</i> – Zip removable disk drive.</li> </ul>
<i>MediaTypeDetails</i> ?	string	The digital media type details — could be vendor or model name. For example: " <i>8mm</i> " or " <i>VHS</i> " for tape media.
<i>RunList</i> ?	refelement	Link to the relevant files on the media. The URLs specified in <b>RunList</b> / <b>LayoutElement/FileSpec/@URL</b> SHOULD be relative paths to the media's mount point.

## 8.52 DigitalPrintingParams

This Resource contains Attributes and Elements used in executing the **DigitalPrinting** Process. The **@PrintingType** Attribute in this Resource defines two types of printing: "*SheetFed*" and "*WebFed*". The principal difference between them is the shape of the paper each is equipped to accept. Presses that execute "*WebFed*" Processes use substrates that are continuous and cut after printing is accomplished. Most newspapers are printed on Web Presses. "*SheetFed*" printing, on the other hand, accepts precut substrates.

### 8.52.1 Coordinate systems in DigitalPrinting

[New in JDF 1.2](#)

Figure 2-13 in Section 2.5, “Coordinate Systems in JDF XJDF” defines the coordinate system for **ConventionalPrinting** and **DigitalPrinting**. Note that the paper feed direction of the idealized Process is towards the X-axis which corresponds to bottom edge first.

#### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

—

**Example Partition:**

`"BlockName", "DocRunIndex", "DocSheetIndex", "PartVersion",  
"Run", "RunIndex", "RunTags", "DocTags", "PageTags",  
"SetTags", "SheetIndex", "Separation", "SheetName",  
"Side", "SignatureName", "DocIndex"`

**Input of Processes:**

**DigitalPrinting**

**Output of Processes:**

—

**Table 8-94: DigitalPrintingParams Resource (Sheet 1 of 5)**

Name	Data Type	Description
<a href="#">Collate ?</a> <a href="#">New in JDF 1.1</a>	enumeration	<p>Determines the sequencing of the Sheets in the document and the documents in the Job when multiple copies of a document or a Job are requested as output. Document copies can be requested by specifying <b>RunList/@DocCopies</b> and Job copies can be requested by specifying the output <b>Component @Amount</b>.</p> <p><b>Allowed values are:</b></p> <p><i>None</i> – Do not collate Sheets in the document or document(s) in the Job.</p> <p><i>Sheet</i> – Collate the Sheets in each document; do not collate the documents in the Job. The result of "<i>Sheet</i>" and "<i>SheetAndSet</i>" is the same when there is one document in the set. The result of "<i>Sheet</i>" and "<i>SheetSetAndJob</i>" is the same when there is one document in the set and one set in the Job.</p> <p><i>SheetAndSet</i> – Collate the Sheets in the document and collate the documents in the set. Do not collate the sets in the Job. The result of "<i>SheetAndSet</i>" and "<i>SheetSetAndJob</i>" is the same when there is one set in the Job.</p> <p><i>SheetSetAndJob</i> – Collate the Sheets in the document and collate the documents in the set and collate the sets in the Job.</p> <p><b>Example:</b> two documents, A and B, each have two Sheets, A1, A2 and B1, B2. The number of document copies requested is one for both documents and the number of Job copies requested is three (<b>Component/@Amount</b> = 3). The Job contains no Document Set boundaries.</p> <p>If <b>@Collate</b> = "<i>None</i>", the Sheet order will be: A1A1A1 A2A2A2 B1B1B1 B2B2B2</p> <p>If <b>@Collate</b> = "<i>Sheet</i>", the Sheet order will be: A1A2 A1A2 A1A2 B1B2 B1B2 B1B2</p> <p>If <b>@Collate</b> = "<i>SheetAndSet</i>" or "<i>SheetSetAndJob</i>", the Sheet order will be: A1A2 B1B2 A1A2 B1B2 A1A2 B1B2</p>
<a href="#">DirectProofAmount ?= "0"</a> <a href="#">New in JDF 1.2</a>	integer	If greater than zero (>0), a set of proofs is directly produced and subsequently an approval might be given by a person (e.g., the customer, foreman or floor manager) shortly after the first final-quality printed Sheet is printed. Approval is needed for the actual print run, but not for setup. If the <b>DigitalPrinting</b> Process is waiting for approval of a direct proof, the <b>JDF XJDF</b> Node's <b>@Status</b> is switched to " <i>Suspended</i> " with the <b>@StatusDetails</b> = " <i>WaitForApproval</i> ".
<a href="#">ManualFeed ?= "false"</a> <a href="#">New in JDF 1.1</a>	boolean	Indicates whether the media will be fed manually.

**Table 8-94: DigitalPrintingParams Resource (Sheet 2 of 5)**

Name	Data Type	Description
<a href="#">NonPrintableMarginBottom ?</a> <a href="#">New in JDF 1.2</a>	double	The width in points of the bottom margin measured inward from the edge of the media (before trimming if any) with respect to the idealized Process coordinate system of the <b>DigitalPrinting</b> Process. The <b>DigitalPrinting</b> Process SHALL put marks up to, but not in, the non-printable margin area. The <b>Media</b> 's origin is unaffected by <b>@NonPrintableMarginBottom</b> . These margins are independent of the PDL content.
<a href="#">NonPrintableMarginLeft ?</a> <a href="#">New in JDF 1.2</a>	double	Same as <b>@NonPrintableMarginBottom</b> except for the left margin.
<a href="#">NonPrintableMarginRight ?</a> <a href="#">New in JDF 1.2</a>	double	Same as <b>@NonPrintableMarginBottom</b> except for the right margin.
<a href="#">NonPrintableMarginTop ?</a> <a href="#">New in JDF 1.2</a>	double	Same as <b>@NonPrintableMarginBottom</b> except for the top margin.
<a href="#">OutputBin ?</a> <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.5</a>	NMTOKENS	<p>Specifies the bin or bins to which the finished documents SHALL be output. If multiple values are provided, the output bins SHALL be filled in sequence. See <b>@StackAmount</b>.</p> <p><b>Values include those from:</b> Table C-21, “Input Tray and Output Bin Names” on page 1147.</p> <p><b>Modification note:</b> starting with JDF 1.5, the data type changes from NMTOKEN to NMTOKENS.</p>
<a href="#">PageDelivery ?</a> <a href="#">New in JDF 1.1</a>	enumeration	<p>Indicates how pages are to be delivered to the output bin or finisher.</p> <p><b>Note:</b> these values refer to the orientation of the entire stack being output from the press, not individual sheets. For example, <b>"SameOrderFaceDown"</b> means that the stack can be picked up and turned over to find the output sheets in the same order as the input <b>RunList</b> with the first page on top facing up</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><b>FanFold</b> – The output is alternating face-up, face down.</li> <li><b>SameOrderFaceUp</b> – Order as defined by the <b>RunList</b>, with the <b>"Front"</b> sides of the media up and the first Sheet on top.</li> <li><b>SameOrderFaceDown</b> – Order as defined by the <b>RunList</b>, with the <b>"Front"</b> sides of the media down and the first Sheet on the bottom.</li> <li><b>ReverseOrderFaceUp</b> – Sheet order reversed compared to <b>"SameOrderFaceUp"</b>, with the <b>Front</b> sides of the media up and the last Sheet on top.</li> <li><b>ReverseOrderFaceDown</b> – Sheet order reversed compared to <b>"SameOrderFaceDown"</b>, with the <b>Front</b> sides of the media down and the last Sheet on the bottom.</li> </ul>

**Table 8-94: DigitalPrintingParams Resource (Sheet 3 of 5)**

Name	Data Type	Description
<i>PrintingType</i> ? <a href="#">Modified in JDF 1.2</a>	enumeration	Type of printing Machine. <b>Allowed values are:</b> <i>ContinuousFed</i> – connected Sheets including fan fold. <a href="#">New in JDF 1.2</a> <i>SheetFed</i> <i>WebFed</i>
<i>PrintPass</i> ? <a href="#">New in JDF 1.5</a>	enumeration	Defines how many passes are required to lay down all separations. <b>Allowed values are:</b> <i>OneShot</i> – all separations are laid down in one pass; <i>MultiShot</i> – separations are laid down individually in multiple passes.
<i>PrintQuality</i> ? <a href="#">Deprecated in JDF 1.1</a>	enumeration	Indicates how pages are to be delivered to the output bin or finisher. <b>Allowed values are:</b> <i>High</i> – Highest quality available on the printer. <i>Normal</i> – The default quality provided by the printer. <i>Draft</i> – Lowest quality available on the printer <b>Deprecation note:</b> starting with JDF 1.1, use <a href="#">InterpretingParams/@PrintQuality</a>
<i>SheetLay</i> ?	enumeration	Lay of input media. Reference edge of where paper is placed in feeder. <b>Allowed values are:</b> <i>Left</i> <i>Right</i> <i>Center</i>

**Table 8-94: DigitalPrintingParams Resource (Sheet 4 of 5)**

Name	Data Type	Description
<i>Sides</i> ? <a href="#">New in JDF 1.3</a> <a href="#">Modified in JDF 1.5</a>	enumeration	<p>Indicates whether the <b>ByteMap</b> SHALL be imaged on one or both sides of the media. If the <b>RunList</b>(<i>Surface</i>) input to <b>DigitalPrinting</b> is Partitioned by <i>@Side</i> (either explicitly or implicitly using the <b>RunList/@SheetSides</b> Attribute), then the input <b>RunList</b> provides a binding of front and back surfaces to sheets. If <i>@Sides</i> = "OneSidedFront" or "OneSidedBack", then that binding is ignored and one surface is imaged per sheet. If the <b>RunList</b> (<i>Surface</i>) does not provide the binding of surfaces to sides, then the <i>@Sides</i> Attribute specifies the binding to be applied. When a different value for this Attribute is encountered, it SHALL force a new Sheet. However, when the same value for this Attribute is restated for consecutive pages, it is the same as if that restatement was not present.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>OneSidedBack</i> <a href="#">New in JDF 1.5</a></li> <li><i>OneSidedFront</i></li> <li><i>OneSidedBackFlipX</i> <a href="#">Deprecated in JDF 1.5</a></li> <li><i>OneSidedBackFlipY</i> <a href="#">Deprecated in JDF 1.5</a></li> <li><i>TwoSided</i> <a href="#">New in JDF 1.5</a></li> <li><i>TwoSidedFlipX</i> <a href="#">Deprecated in JDF 1.5</a></li> <li><i>TwoSidedFlipY</i> <a href="#">Deprecated in JDF 1.5</a></li> </ul> <p><b>Note:</b> Starting with JDF 1.5, the <b>The</b> orientation of the front pages relative to back pages SHOULD be completely defined in the explicit or implied imposition <b>Layout</b>.</p>
<i>StackAmount</i> ? <a href="#">New in JDF 1.5</a>	integer	Specifies the maximum sheet count before switching to the next stacker in the list of <i>@OutputBin</i> values.
<i>ApprovalParams</i> ? <a href="#">New in JDF 1.2</a>	refelement	Details of the direct approval Process, when <i>@DirectProofAmount</i> > 0.
<i>Component</i> ? <i>ComponentRef</i> ? <a href="#">New in JDF 1.1</a>	refelement-DREF	Describes the preprocessed media to be used. Different <b>Media</b> and/or <b>Component</b> Resources MAY be specified in different Partition leaves to enable content-driven input <b>Media</b> selection. At most one of <b>Media</b> or <b>Component</b> SHALL be specified per Partition.
<i>Disjointing</i> ? <a href="#">New in JDF 1.1</a> <a href="#">Deprecated in JDF 1.6</a>	element	<p>Describes how individual components are separated from one another in the output bin.</p> <p><b>Deprecation note:</b> starting with JDF 1.6, use combined stacking.</p>
<i>Ink</i> ? <a href="#">New in JDF 1.3</a> <a href="#">Deprecated in JDF 1.4</a>	refelement	<p>If present indicates that overcoating is to be applied to the surface(s) of printed Sheets and specifies the ink to be used for overcoating. Overcoating ink SHALL be applied after imaging colorants have been printed.</p> <p>Note: for selective image-wise overcoating (e.g., spot varnishing) a separate separation utilizing overcoating ink SHALL be specified.</p> <p><b>Deprecation note:</b> starting with JDF 1.4, use the <b>Varnishing</b> Process.</p>

**Table 8-94: DigitalPrintingParams Resource (Sheet 5 of 5)**

Name	Data Type	Description
<b>Media ?</b> <b>MediaRef ?</b> <a href="#">New in JDF 1.1</a>	refelementI-DREF	Describes the media to be used. Different <b>Media</b> and/or <b>Component</b> Resources MAY be specified in different Partition leaves to enable content driven input <b>Media</b> selection. At most one of <b>Media</b> and <b>Component</b> SHALL be specified per Partition.
<b>MediaSource ?</b> <a href="#">Deprecated in JDF 1.1</a>	refelement	Describes the media to be used. At most one of <b>MediaSource</b> and <b>Component</b> SHALL be specified. Replaced with <b>Media</b> in JDF 1.1.

## 8.53 DividingParams

[Deprecated in JDF 1.1.](#)

Since the **Dividing** Process has been replaced by **Cutting**, this Resource is no longer needed. See Section P.6.8, “DividingParams” on page 1344 for details of this deprecated Resource.

## 8.54 ElementColorParams

[New in JDF 1.2](#)

This Resource provides a container for color management related metadata applicable to a **LayoutElement**.

### Resource Properties

**Resource Class:**

**Resource referenced by:** [ContentList](#)/[ContentData](#), [LayoutElement](#), [PageList](#), [PageList](#)/  
PageData

**Example Partition:**



**Input of Processes:**



**Output of Processes:**

**Table 8-95: ElementColorParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<b>AutomatedOverPrintParams ?</b>	element	A Resource that provides controls for the automated selection of overprinting of black text or graphics.
<b>ColorManagementSystem ?</b>	NMOKEN	Identifies the preferred ICC color management system to use when performing color transformations on the particular <b>LayoutElement</b> . When specified, this Attribute overrides any default selection of a color management system by an application and overrides the “CMM Type” value (bytes 4-7 of an ICC Profile Header) in any of the Job related ICC profiles. This string Attribute Value identifies the manufacturer of the preferred CMM and SHALL match one of the registered four-character ICC CMM Type values. <b>Values include those from:</b> the ICC Manufacturer’s Signature Registry at <a href="http://www.color.org">http://www.color.org</a> . <b>Example values:</b> "ACME" for the Acme Corp. CMM.

**Table 8-95: ElementColorParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>ICCOOutputProfileUsage</i> ?	enumeration	<p>This Attribute specifies the usage of the output intent profile or specified printing condition from the PDL.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>PDLActual</i> – The embedded PDL output printing condition defines the actual output intent profile (e.g., the final press output).</li> <li><i>PDLReference</i> – The embedded PDL output printing condition defines the reference output intent profile (e.g., the press profile for proofing).</li> <li><i>IgnorePDL</i> – The embedded ICC output profile is incorrect and SHOULD be ignored.</li> </ul>
<i>AutomatedOverPrintParams</i> ?	element	A Resource that provides controls for the automated selection of overprinting of black text or graphics.
<i>Certification</i> *	element	<p>Each Resource instance specifies a replacement colorant name string to be used instead of one or more named colorant strings found in the <b>Layout Resource</b> referenced element.</p> <p><b>Multiple Certification elements with identical values of Certification/@ReplacementColorantName SHALL NOT be specified in the same ElementColorParams resource context.</b></p>
<i>ColorCorrectionOp</i> * <a href="#">New in JDF 1.5</a>	element	List of <i>ColorCorrectionOp</i> Subelements, each of which identifies a type of object and specifies the behavior of the color correction for that type of object.
<i>ColorSpaceConversionOp</i> ?	element	List of <i>ColorSpaceConversionOp</i> Subelements, each of which identifies a type of object, defines the source color space for that type of object, and specifies the behavior of the conversion operation for that type of object. If not present, the default conversion behavior is derived from <i>@ColorStandard</i> . <i>ColorSpaceConversionOp/@Operation</i> is ignored in the context of <b>ElementColorParams</b> .
<i>FileSpec</i> ( <i>ActualOutputProfile</i> ) ?	refelement	A <b>FileSpec</b> Resource pointing to an ICC profile that describes the characterization of an actual output target Device.
<i>FileSpec</i> ( <i>ReferenceOutputProfile</i> ) ?	refelement	A <b>FileSpec</b> Resource pointing to an ICC profile that describes a reference output print condition behavior that is to be simulated as a part of a requested color transformation. This profile corresponds to the output intent contained in a PDF/X file. It SHOULD be a specific implementation of <b>ColorIntent/@ColorStandard</b> .

## 8.55 EmbossingParams

[New in JDF 1.1](#)

This Resource contains Attributes and Elements used in executing the **Embossing** Process. The **Embossing** can also be used to model a foil stamping Process.

**Resource Properties**

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	<b>EmbossingIntent</b>
<b>Example Partition:</b>	<code>"BlockName", "RibbonName", "SheetName", "SignatureName", "WebName"</code>
<b>Input of Processes:</b>	<b>Embossing</b>
<b>Output of Processes:</b>	—

**Table 8-96: EmbossingParams Resource**

Name	Data Type	Description
<code>ModuleIndex ?</code> <code>ModuleID ?</code> <a href="#">New in JDF 1.4</a>	<code>integerN-MTOKEN</code>	Index Identifier of the embossing Module in the Press. See <b>ConventionalPrintingParams</b> . In a Combined Process, all modules of the Device, including press modules, finishing modules and varnishing modules are counted to calculate <code>@ModuleIndex</code> .
<code>Emboss *</code>	element	One Emboss Element is specified for each impression.

**8.55.1 Element: Emboss****Table 8-97: Emboss Element (Sheet 1 of 3)**

Name	Data Type	Description
<code>Direction</code> <a href="#">Modified in JDF 1.3</a>	enumeration	The direction of the image. <b>Allowed values are:</b> <i>Both</i> – Both debossing and embossing in one stamp. <i>Flat</i> – The embossing foil is applied flat. Used for foil stamping. <a href="#">New in JDF 1.3</a> <i>Raised</i> – Embossing. <i>Depressed</i> – Debossing.
<code>EdgeAngle ?</code>	double	The angle of a beveled edge in degrees. Typical values are an angle of: 30, 40, 45, 50 or 60 degrees. If <code>@EdgeAngle</code> is specified, <code>@EdgeShape = "Beveled"</code> SHALL be specified.
<code>EdgeShape ?= "Rounded"</code>	enumeration	The transition between the embossed surface and the surrounding media can be rounded or beveled (angled). <b>Allowed values are:</b> <i>Rounded</i> <i>Beveled</i>

**Table 8-97: Emboss Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>EmbossingType</i> <a href="#">Modified in JDF 1.3</a>	enumeration	<p><b>Allowed values are:</b></p> <p><i>BlindEmbossing</i> – Embossed forms that are not inked or foiled. The color of the image is the same as the paper.</p> <p><i>Braille</i> – 6 dot Braille embossing. <b>Note:</b> "Braille" was added to JDF 1.3 Errata. <a href="#">New in JDF 1.3</a></p> <p><i>EmbossedFinish</i> – The overall design or pattern impressed in laminated paper when passed between metal rolls engraved with the desired pattern. Produced on a special embossing to create finishes such as linen.</p> <p><i>FoilEmbossing</i> – Combines embossing with foil stamping in one single impression.</p> <p><i>FoilStamping</i> – Using a heated die to place a metallic or pigmented image from a coated foil on the paper.</p> <p><i>RegisteredEmbossing</i> – Creates an embossed image that exactly registers to a printed image.</p>
<i>Height?</i>	double	The height of the levels. This value specifies the <i>vertical</i> distance between the highest and lowest point of the stamp, regardless of the value of <i>@Direction</i> .
<i>ImageSize?</i>	XYPair	The size of the bounding box of one single image.
<i>Level?</i>	enumeration	<p>The level of embossing.</p> <p><b>Allowed values are:</b></p> <p><i>SingleLevel</i></p> <p><i>MultiLevel</i></p> <p><i>Sculpted</i></p>
<i>Location?</i>	enumeration	<p>Position of the embossing on the product.</p> <p><b>Allowed values are:</b></p> <p><i>Back</i> – Back side of a sheet or product</p> <p><i>Bottom</i> – Bottom of a product</p> <p><i>Front</i> – Front side of a sheet or product</p> <p><i>Left</i> – Left side of a product, e.g. the spine of a left bound book.</p> <p><i>Right</i> – Right side of a product, e.g. the spine of a right bound book.</p> <p><i>Top</i> – Top of a product</p>
<i>Position?</i>	XYPair	Position of the lower left corner of the bounding box of the embossed image in the coordinate system of the <b>Component</b> .
<i>ToolRef</i>	IDREF	References the <b>Tool</b> used to make the embossing described by this element
<i>IdentificationField?</i> <a href="#">New in JDF 1.4</a>	<a href="#">refelement</a>	If <i>@EmbossingType = "Braille"</i> , <b>IdentificationField</b> describes the content of the Braille Element.
<i>Media?</i> <i>MediaRef?</i> <a href="#">New in JDF 1.4</a>	<a href="#">refelementIDREF</a>	If the <i>@EmbossingType = "FoilEmbossing"</i> or <i>"FoilStamping"</i> , <b>Media</b> describes the foil. <b>This Media SHALL only reference Media that are defined as an input resource of the Embossing Process.</b>

**Table 8-97: Emboss Element (Sheet 3 of 3)**

Name	Data Type	Description
Tool ? <a href="#">New in JDF 1.4</a>	refelement	The tool used to make the embossing described by this element.

## 8.56 Employee

Information about a specific Device or Machine operator (see Section 3.13.4.3, “ImplementationResource”). **Employee** is also used to describe the contact person who is responsible for executing a Node, as defined in **NodeInfo**.

### Resource Properties

**Resource Class:** Implementation

**Resource referenced by:** Abstract Audit, Notification, PhaseTime, ModulePhase, JMF, Message, DeviceInfo, ModuleStatus, **ContentList/ContentData/ContentMetadata**, **NodeInfo**

**Example Partition:**

**Input of Processes:** Any Process

**Output of Processes:**

**Table 8-98: Employee Resource**

Name	Data Type	Description
PersonalID ? <a href="#">New in JDF 1.2</a> <a href="#">Modified in JDF 1.4</a>	stringNMTO-KEN	ID of the relevant MIS employee. The @PersonalID attribute SHALL be unique within the site.
Roles ? <a href="#">New in JDF 1.2</a> <a href="#">Modified in JDF 1.4</a>	NMTOKENS	Defines the list of roles that the employee fills. <b>Values include:</b> Apprentice – Employee that is in training (“Auszubildender” / “Auszubildende” in German). Assistant – Assistant operator. Craftsman – Trained employee (“Geselle” / “Facharbeiter” in German). CSR – Customer Service Representative Manager – Manager. Master – Highly trained employee (“Meister” in German). Operator – Operator. ShiftLeader – The leader of the shift. StandBy – Employee who is allocated to a specific task on demand. <a href="#">New in JDF 1.4</a>
Shift ?	string	Defines the shift to which the employee belongs.
Address ? <a href="#">New in JDF 1.2</a>	element	Address of the person.
ComChannel *	element	Communication channels to the person
CostCenter ?	element	MIS cost center ID.
Person ?	element	Describes the employee. If no Person Resource is specified, the <b>Employee</b> Resource represents any employee who fulfills the selection criteria.

## 8.57 EndSheetGluingParams

This Resource describes the Attributes and Elements used in executing the ***EndSheetGluing*** Process.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Intent Pairing:	BindingIntent
Example Partition:	—
Input of Processes:	<i>EndSheetGluing</i>
Output of Processes:	—

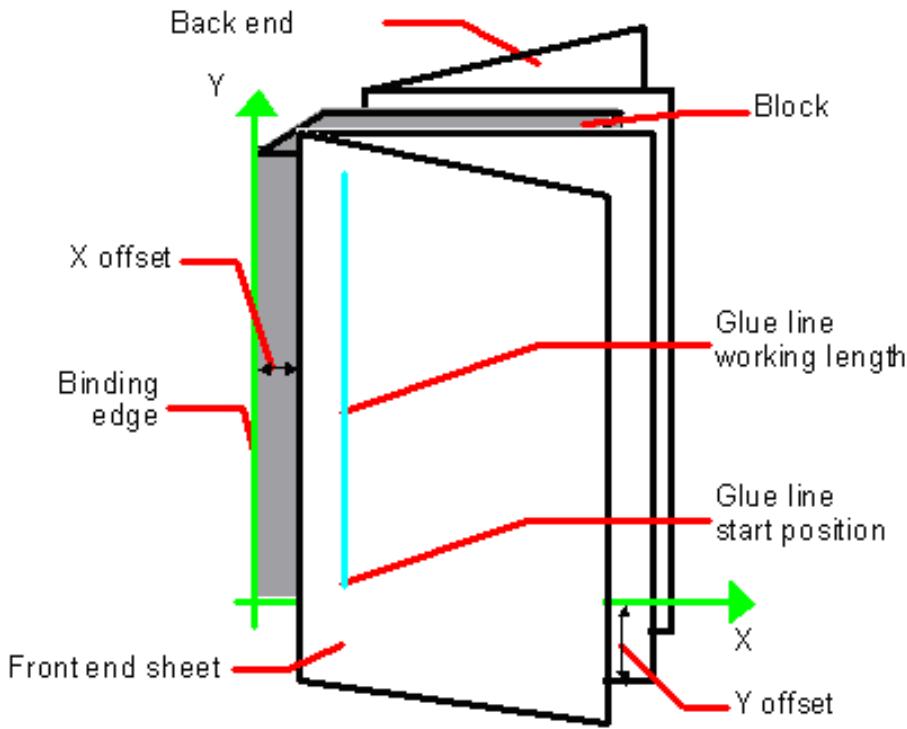
Table 8-99: EndSheetGluingParams Resource

Name	Data Type	Description
<i>EndSheet (Front) ?</i> <a href="#">Modified in JDF 1.5</a>	element	Information about the front-end Sheet. The @Side Attribute of this Element SHALL be " <i>Front</i> ". <b>Modification note:</b> starting with JDF 1.5, this element is optional.
<i>EndSheet (Back) ?</i> <a href="#">Modified in JDF 1.5</a>	element	Information about the back-end Sheet. The @Side Attribute of this Element SHALL be " <i>Back</i> ". <b>Modification note:</b> starting with JDF 1.5, this element is optional.

### 8.57.1 Element: EndSheet

Table 8-100: EndSheet Element

Name	Data Type	Description
<i>Offset ?</i> <a href="#">Deprecated in JDF 1.2</a>	XYPair	Offset of end Sheet in X and Y direction. In JDF 1.2 and beyond, @Offset is implied by the Transformation matrix in ResourceLink/@Transformation of the EndSheet Element's ComponentLink.
<i>Side</i>	enumeration	Location of the end Sheet. <b>Allowed values are:</b> <i>Front</i> <i>Back</i>
<i>GlueLine Glue ?</i>	element	Description of the glue line.

**Figure 8-32: Parameters and coordinate system used for end-Sheet gluing**

The process coordinate system is defined as follows: The Y-axis is aligned with the binding edge of the book block. It increases from the registered edge to the edge opposite to the registered edge. The X-axis is aligned with the registered edge. It increases from the binding edge to the edge opposite the binding edge (i.e., the product front edge).

## 8.58 ExposedMedia

This Resource represents a processed **Media**-based **Handling Resource Resource** such as film, or plate or paper proof. It is also used as an Input Resource for the **Scanning** Process. The **@ProductID @ExternalID** attribute in the parent **Resource element** SHALL be unique within the workflow.

### Resource Properties

**Resource Class:**

Handling

**Resource referenced by:**

**ArtDeliveryIntent/ArtDelivery**

**Example Partition:**

"DocIndex", "RunIndex", "RunTags", "DocTags", "PageTags",  
"SetTags", "Separation", "SheetName", "Side",  
"SignatureName", "TileID", "WebName"

**Input of Processes:**

**Bending, ContactCopying, ConventionalPrinting, DigitalPrinting,**  
**ImageSetting, PreviewGeneration, Scanning, Varnishing**

**Output of Processes:**

**Bending, ContactCopying, ImageSetting**

**Table 8-101: ExposedMedia Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>ColorType</i> ?  <u>New in JDF 1.3</u>	enumeration	If this <b>ExposedMedia</b> represents a proof, <i>@ColorType</i> SHALL specify the color of the proof.  <b>Allowed values are:</b> <i>Color</i> <i>GrayScale</i> <i>Monochrome</i> – Black and white.
<i>MediaRef</i>	IDREF	<i>@MediaRef</i> SHALL reference a <b>Media</b> that specifies details of the original media such as size.
<i>PageListIndex</i> ?  <u>New in JDF 1.3</u>	IntegerRangeList	List of the indices of the <b>PageData</b> Elements of the <b>PageList</b> specified in this <b>ExposedMedia</b> .
<i>PlateType</i> ?  <u>New in JDF 1.3</u>	enumeration	Specifies whether a plate is exposed or a dummy plate.  <b>Allowed values are:</b> <i>Exposed</i> – The plate has been imaged. <i>Dummy</i> – Specifies a dummy plate that has not been imaged. Usually, dummy plates are only needed on newspaper-Web Presses.
<i>Polarity</i> ?= "true"	boolean	" <i>false</i> " if the media contains a negative image.
<i>ProofName</i> ?  <u>New in JDF 1.2</u>	string	When this <b>ExposedMedia</b> specifies a proof, <i>@ProofName</i> is the name of the <b>ProofingIntent/ProofItem</b> that specified this proof in the Product Intent section.
<i>ProofQuality</i> ?  <u>Modified in JDF 1.2</u>	enumeration	This Attribute is present if the <b>ExposedMedia</b> Resource describes a proof.  <b>Allowed values are:</b> <i>None</i> – Not a proof or the quality is unknown. <u>Deprecated in JDF 1.2</u> <i>Halftone</i> – Halftones are emulated. <i>Contone</i> – No halftones, but exact color. <i>Conceptual</i> – Color does not match precisely.
<i>ProofType</i> ?  <u>Modified in JDF 1.2</u>	enumeration	<b>Allowed values are:</b> <i>None</i> – Not a proof or the type is unknown. <u>Deprecated in JDF 1.2</u> <i>Page</i> – A page proof. <i>Imposition</i> – An imposition proof.
<i>PunchType</i> ?	string <small>NMOKEN</small>	Name of the registration punch scheme. If not specified, no holes are punched.  <b>Values include:</b> <i>Bacher</i> <i>Stoesser</i>
<i>Resolution</i> ?	XYPair	Resolution of the output.
<i>FileSpec</i> ( <i>OutputProfile</i> ) ?	refelement <small>ele- ment</small>	A <b>FileSpec</b> Resource pointing to an ICC profile that describes the output Process for which this media was exposed.
<b>MediaMediaRef</b>	refelementIDREF	Describes media specifics such as size and type.

**Table 8-101: ExposedMedia Resource (Sheet 2 of 2)**

Name	Data Type	Description
<a href="#">PageList ?</a> <a href="#">PageListRef ?</a> <a href="#">New in JDF 1.3</a>	refelementIDREF	Specification of page metadata for pages described by this <b>ExposedMedia</b> .
<a href="#">ScreeningParams ?</a>	refelementelement	Used to describe the screening in case of rasterized media.

## 8.59 ExternalImpositionTemplate

[New in JDF 1.3](#)

**ExternalImpositionTemplate** specifies a reference to an external imposition template.

### Resource Properties

**Resource Class:** Parameter

**Resource referenced by:** [LayoutPreparationParams](#), [StrippingParams](#)

**Example Partition:** —

**Input of Processes:** —

**Output of Processes:** —

**Table 8-102: ExternalImpositionTemplate Resource**

Name	Data Type	Description
<a href="#">FileSpec</a>	refelement	A reference to a file that contains an external imposition template in a private (non-JDF XJDF) format.

## 8.60 FeedingParams

[New in JDF 1.2](#)

The parameters for any **JDF XJDF** Feeder processing Device.

### Resource Properties

**Resource Class:** Parameter

**Resource referenced by:** —

**Example Partition:** ["DocIndex", "RunIndex", "RunTags", "DocTags", "PageTags", "SetTags", "Separation", "SheetName", "Side", "SignatureName", "TileID", "WebName"](#)

**Input of Processes:** [Feeding](#)

**Output of Processes:** —

**Table 8-103: FeedingParams Resource**

Name	Data Type	Description
<a href="#">Feeder</a> *	element	Defines the specifics of an individual <b>Feeder</b> . If a <b>Component</b> or <b>Media</b> from the Input Resource list is not referenced from a <b>Feeder</b> in this list, a system defined <b>Feeder</b> will be used.
<a href="#">CollatingItem</a> *	element	Defines the collating sequence of the input <b>Component</b> (s). If a <b>CollatingItem</b> is not defined, then one <b>Component</b> in the order of input <b>ResourceLink</b> <b>Resource</b> list is consumed.

### 8.60.1 Element: Feeder

**Table 8-104: Feeder Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>AlternatePositions</i> ?	IntegerList	Positions of alternate feeders including the feeder specified in <i>@Position</i> on a feeding chain. Alternate feeders share the load according to the policy defined in <i>@FeederSynchronization</i> . If not specified, it defaults to the value of <i>@Position</i> . <i>@AlternatePositions</i> SHALL be non-negative.
<b>Component</b> <b>?ComponentRef</b> ?	refelementI-DREF	Specifies the <b>Component</b> that is to be loaded into this Feeder. This <b>Component</b> SHALL be an input of the <b>Feeding</b> Process. Exactly one of <b>Component</b> or <b>Media</b> SHALL be specified.
<i>FeederSynchronization</i> ?= "Primary"	enumeration	Specifies the synchronization of multiple Feeder Elements with identical <b>Component</b> Elements: <b>Allowed values are:</b> <i>Alternate</i> – The feeders specified in <i>@Position</i> alternate. <i>Backup</i> – This Feeder is the backup feeder for the <b>Component</b> in case of a misfeed or malfunction. The priority of backup feeders is defined by their position in <i>@AlternatePositions</i> . <i>Chain</i> – This feeder is activated as soon as the feeder prior to it in the list is empty. <i>Primary</i> – This Feeder is the primary feeder for the <b>Component</b> .
<i>FeederType</i> ? <a href="#">Modified in JDF 1.4</a> <a href="#">Modified in JDF 1.5</a>	NMOKEN	Specifies the feeder type. <b>Values include:</b> <i>AddOn</i> – Add on feeder (e.g., CDs). <i>BookBlock</i> – A feeder for book blocks. <a href="#">New in JDF 1.4</a> <i>Folding</i> – A folding feeder that folds the input <b>Component</b> or <b>Media</b> . <i>Gluing</i> – A gluing feeder <i>Roll</i> – Roll feeder for Web processes. These are also known as unwinders. <a href="#">New in JDF 1.5</a> <i>Sheet</i> – Single Sheet feeder. <i>Signature</i> – Single Signature feeder.
<i>Loading</i> ?	NMOKEN	Specifies the feeder loading. <b>Values include:</b> <i>Bundle</i> – Stream feeder, using the output of the <b>Bundling</b> Process. <i>FanFold</i> – Automatic loading of FanFold <b>Media</b> . <i>Manual</i> – Manual loading of stacks <i>Online</i> – Loaded by a gripper or conveyor. The " <i>Online</i> " value is also applicable for <i>@FeederType = "Roll"</i> . <i>PrintRoll</i> – Automatic loading of single products from a print Roll, using the output of the <b>PrintRolling Winding</b> Process.

**Table 8-104: Feeder Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Opening</i> ?= "None"	enumeration	Specifies the opening of Signatures: <b>Allowed values are:</b> <i>Back</i> – Overfold on back. <i>Front</i> – Overfold on front. <i>None</i> – Signatures are not opened. <i>Sucker</i> – Sucker opening, no overfold.
<i>Position</i> ?	integer	@Position of feeder on a collecting and gathering chain in chain movement direction. @Position = "0" is first feeder feeding to the collecting and gathering chain. Only one Feeder can be specified for any given @Position. If @Position is negative, it specifies the position counted from the back of the chain (e.g., "-1" = last position, "-2" = next to last position, etc.).
<b>Component</b> ?ComponentRef ?	refelementI-DREF	Specifies the <b>Component</b> that is to be loaded into this Feeder. This <b>Component</b> SHALL be an input of the <b>Feeding</b> Process. Exactly one of <b>Component</b> or <b>Media</b> SHALL be specified.
FeederQualityParams ?	element	Definition of the setup and policy for feeding quality.
<b>Media</b> ?	refelement	Specifies the <b>Media</b> that is to be loaded into this Feeder. This <b>Media</b> SHALL be an input of the <b>Feeding</b> Process. Exactly one of <b>Component</b> or <b>Media</b> SHALL be specified.

### 8.60.2 Element: FeederQualityParams

The FeederQualityParams Element defines the setup and policy for feeding quality control. It can be specified individually for each Feeder.

**Table 8-105: FeederQualityParams Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>BadFeedQuality</i> ?	enumeration	Defines the operation of the bad feed quality control. <b>Allowed values are from:</b> <i>@IncorrectComponentQuality</i> .
<i>BadFeeds</i> ?	integer	Number of consecutive bad feeds until the Device stops.
<i>DoubleFeedQuality</i> ?	enumeration	Defines the operation of the double feed quality control. <b>Allowed values are from:</b> <i>@IncorrectComponentQuality</i> .
<i>DoubleFeeds</i> ?	integer	Number of consecutive double feeds until the Device stops.

**Table 8-105: FeederQualityParams Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>IncorrectComponentQuality</i> ?	enumeration	Defines the operation of the incorrect components quality control: <b>Allowed values are:</b> <i>NotActive</i> – Quality control is not active. <i>Check</i> – Check the quality and register. <i>Waste</i> – Check the quality and register. A component failing the test is waste. <i>StopNoWaste</i> – Check the quality and register. Device will stop after the defined number of consecutive errors. The error will be corrected (e.g., manually). <i>StopWaste</i> – Check the quality and register. A component failing the test is waste, and the Device will stop after the defined number of consecutive errors.
<i>IncorrectComponents</i> ?	integer	Number of consecutive incorrect components until the Device stops.

### 8.60.3 Element: CollatingItem

**Table 8-106: CollatingItem Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Amount</i> ? = "1"	integer	Determines, how many consecutive items shall be consumed.
<i>BundleDepth</i> ?	integer	In case of nested bundles with <i>@BundleType</i> = "Stack", this parameter addresses the element to be consumed within the "tree" of such bundles. If the real bundle depth level ( <i>@BundleType</i> = "Stack") is smaller than the value of <i>@BundleDepth</i> , individual stack items (i.e., the smallest available level) shall be consumed. If the input component referenced does not contain bundles, then this parameter is ignored. A <i>@BundleDepth</i> value of "0" means the <b>Component</b> itself. A value of "1" addresses the <b>BundleItem</b> Elements referenced from the <b>Component</b> (i.e., the <b>Component/Bundle/BundleItem/Component</b> (Ref), and so on).
<b>Component</b> <b>?ComponentRef</b> ?	refelement <sup>I-</sup> DREF	References one of the input components to the Process to be (partially) consumed by the <b>CollatingItem</b> Element. This <b>Component</b> SHALL be an input of the <b>Feeding</b> Process. <b>Exactly one of Component or Media</b> SHALL be specified.
<i>Orientation</i> ?	Orientation	Named <i>@Orientation</i> of the <b>CollatingItem</b> relative to the input coordinate system. For details see Table 2-4, "Matrices and Orientation values for describing the orientation of a Component" on page 39. At most one of <i>@Orientation</i> or <i>@Transformation</i> SHALL be specified. If neither is specified, no transformation is applied. The transformation specified here is applied in addition to orientation/transformation specified in the respective <b>ResourceLink</b> Resource.

Table 8-106: CollatingItem Element (Sheet 2 of 2)

Name	Data Type	Description
<i>Transformation</i> ?	matrix	Orientation of the <b>Component</b> respective to the input coordinate system. This <i>@Transformation</i> specified here is applied in addition to orientation/transformation specified in the respective <b>ResourceLink Resource</b> . At most one of <i>@Orientation</i> and <i>@Transformation</i> SHALL be specified. If neither is specified, no transformation is applied.
<i>TransformationContext</i> ?= "StackItem"	enumeration	This parameter specifies the object, which is to be manipulated in orientation/transformation, and it is important to determine the sequence of stack items after flipping. <b>Allowed values are:</b> <i>StackItem</i> – Apply individually to the smallest element on the stack which can be manipulated individually (e.g., to a single Sheet in the case of a stack of Sheets). <i>Component</i> – Apply to each single element of a CollatingItem individually. <i>CollateItem</i> – apply to a CollatingItem as a whole. <b>Note:</b> If <i>@Amount</i> = "1", <b>Component</b> and <b>CollatingItem</b> are referring to the same object and, therefore, result in the same output.
<b>Component</b> ?ComponentRef ?	refelement-DREF	References one of the input components to the Process to be (partially) consumed by the CollatingItem Element. This <b>Component</b> SHALL be an input of the <b>Feeding</b> Process. Exactly one of <b>Component</b> or <b>Media</b> SHALL be specified.
<b>Media</b> ?	refelement	References one of the input media to the Process to be consumed by the CollatingItem Element. This <b>Media</b> SHALL be an input of the <b>Feeding</b> Process. Exactly one of <b>Component</b> or <b>Media</b> SHALL be specified.

**Note:** Most real world Devices process stack items one by one, and hence will hardly ever support *@TransformationContext* = "CollateItem". This requires some kind of buffer for the stack items belonging to a single collating item plus a flipping mechanism for **PrintRolling Winding** Process.

## 8.61 FileSpec

Specification of a file or a set of files. If a single **FileSpec** instance specifies a set of files, it SHALL do so using the *@FileFormat* and *@FileTemplate* Attributes to specify a sequence of URLs. Otherwise, each **FileSpec** instance specifies a single file. If that single file is inside a container file (e.g., a Zip file or is compressed or encoded as indicated by *@Compression*), the **FileSpec** instance SHALL define a **Container Subelement** *@ContainerRef* Attribute which defines another **FileSpec** instance that specifies the container file. In such a case, the Attributes of each **FileSpec** instance SHALL apply only to the properties of the file at that level in the context of the container.

### Resource Properties

#### Resource Class:

Parameter

#### Resource referenced by:

**ApprovalSuccess****ApprovalDetails**/ApprovalDetails,

**AssetListCreationParams**, **ByteMap****ByteMap**, **Color**, **Color/**  
**FileSpec**, **ColorCorrectionParams**, **ColorCorrectionParams/**  
**ColorCorrectionOp****ColorCorrectionOp**,  
**ColorSpaceConversionOp****ColorSpaceConversionOp**,  
**ColorSpaceConversionParams**, **DBMergeParams**, **Device/**  
**IconList/Icon**, **DieLayout**, **ElementColorParams**, **ExposedMedia**,  
**ExternalImpositionTemplate**, **FileSpec/Container**, **FileSpec/**

*@ContainerRef*, **FileSpec/FileAlias**, **FormatConversionParams**  
TIFFFormatParams/TIFFEmbeddedFile,  
**ImageReplacementParams**, **LayoutElement**,  
**LayoutElementProductionParams**, **PDLResourceAlias**,  
**PrintCondition**, **QualityControlResult**, **RunList**, **ScanParams**,  
**ShapeDef**, **ShapeDefProductionParams/ObjectModel**,  
**ShapeDefProductionParams/ShapeTemplate**

**Example Partition:** *"Separation"*

**Input of Processes:** —

**Output of Processes:** —

**Table 8-107: FileSpec Resource (Sheet 1 of 6)**

Name	Data Type	Description
<i>Application</i> ?	string	Creator application. See <i>@AppVersion</i> for the application version number.
<i>AppOS</i> ? <i>New in JDF 1.2</i>	string	<p>Operating system of the application that created the file.</p> <p><b>Values include:</b></p> <p><i>DG_UX</i>  <i>HP_UX</i>  <i>IRIX</i>  <i>Linux</i>  <i>Mac</i>  <i>Solaris</i>  <i>Windows</i></p> <p><b>Note:</b> Additional values can be used from the IANA Operating System Names [iana-os] which allows up to 40 uppercase US ASCII alphabetical values as well as “-”, “_” and “/” — but only for values not covered by the above values. For example, “OS/2”. See Appendix S, “AppOS and OSVersion Attributes” on page 739 for combinations of <i>@AppOS</i> and <i>@OSVersion</i> values.</p>
<i>AppVersion</i> ?	string	<p>Version of the value of the <i>@Application</i> Attribute.</p> <p><b>Examples are:</b></p> <p><i>"8.1"</i>  <i>"8.1 (4331)"</i>  <i>"9.0.3 SR3437"</i></p>
<i>CheckSum</i> ? <i>New in JDF 1.1</i> <i>Modified in JDF 1.1A</i>	hexBinary	Checksum of the file being referenced using the RSA MD5 algorithm. In JDF 1.1A, the term RSA MD was completed to RSA MD5. The data type was modified to chosen as hexBinary to accommodate the 128 bit output of the MD5 algorithm. The <i>@CheckSum</i> SHALL be for calculated from the entire file, not just parts of the file.

**Table 8-107: FileSpec Resource (Sheet 2 of 6)**

Name	Data Type	Description
<i>Compression</i> ?= "None" <a href="#">Modified in JDF 1.2</a>	NMTOKEN	<p>Indicates the compression or encoding for the entire file. This is not compression used internally within the file.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Base64</i> – A format for encoding arbitrary binary information for transmission by electronic mail. [RFC3548]</li> <li><i>BinHex</i> – BinHex encoding converts an 8-bit file into a 7-bit format, similar to Uuencoding [RFC1741].</li> <li><i>Compress</i> – UNIX compression [RFC1977].</li> <li><i>Deflate</i> – The file is compressed using Zip public domain compression format [RFC1951].</li> <li><i>Gzip</i> – GNU Zip compression technology [RFC1952].</li> <li><i>MacBinary</i> – A format that combines the two forks of a Mac file, together with the file information into a single binary data stream, suitable for storage or transferring through non-Mac systems. [macbinary]</li> <li><i>None</i> – The file is neither compressed nor encoded.</li> <li><i>UUEncode</i> – A set of algorithms for converting files into a series of 7-bit ASCII characters that can be transmitted over the Internet. [uuencode]</li> <li><i>ZLIB</i> – ZLIB compression [RFC1950].</li> </ul>
<i>Container</i> ? <i>ContainerRef</i> ? <a href="#">New in JDF 1.2</a>	refelementI-DREF	<p>Specifies References the container <b>FileSpec</b> for this file. When a container <b>FileSpec</b> is pointed to by <i>Container@ContainerRef</i>, that <b>FileSpec</b> SHALL NOT also specify <i>@FileFormat</i> and <i>@FileTemplate</i> Attributes.</p> <p>The container mechanism MAY be used recursively (e.g., for a Zip file held in a tar file, a Zip file in a Zip file, an encoded Zip file, etc.). See Appendix K, “Resolving RunList/@Directory and FileSpec/@URL URI References” on page 1223 for details.</p>
<i>Disposition</i> ? <a href="#">Deprecated in JDF 1.2</a>	enumeration	<p>Indicates what the Device is to do with the file when the Process that uses this Resource as an Input Resource completes.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Unlink</i> – The Device is to release the file.</li> <li><i>Delete</i> – The Device is to attempt to delete the file.</li> <li><i>Retain</i> – The Device is to do nothing with the file.</li> </ul> <p><b>Deprecation note:</b> starting with JDF 1.2, retention of assets is specified in the <b>Disposition</b> Resource.</p>
<i>DocumentNaturalLang</i> ?	language	The natural language of the document this <b>FileSpec</b> refers to. If the document contains more than one language, the value is the primary language of the document.
<i>Encoding</i> ? <a href="#">New in JDF 1.4</a>	stringN-MTOKEN	<p>Encoding or code page of the file contents.</p> <p><b>Values include those from:</b>  <a href="http://www.iana.org/assignments/character-sets">http://www.iana.org/assignments/character-sets</a>.</p>

**Table 8-107: FileSpec Resource (Sheet 3 of 6)**

Name	Data Type	Description
<i>FileFormat</i> ?  <a href="#">Modified in JDF 1.2</a>	string	A formatting string used with the <i>@FileTemplate</i> Attribute to define a sequence of URLs in a batch Process, each of which has the same semantics as the <i>@URL</i> Attribute.  <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.  <b>Constraint:</b> if neither <i>@URL</i> nor <i>@UID</i> is present, both <i>@FileFormat</i> and <i>@FileTemplate</i> SHALL be present, unless the Resource is a pipe. If either <i>@URL</i> or <i>@UID</i> is specified, then <i>@FileFormat</i> and <i>@FileTemplate</i> SHALL NOT be specified.
<i>FileSize</i> ?  <a href="#">Modified in JDF 1.2</a>	LongInteger	Size of the file in bytes. <a href="#">The data type was changed from integer to LongInteger in JDF 1.2.</a>
<i>FileTargetDeviceModel</i> ?  <a href="#">New in JDF 1.2</a>	string	Identifies the model of the JDF Device for which the document was formatted, including manufacturer name, when the file is Device-dependent.  <b>Default behavior:</b> the file is Device independent  <b>Value format is from:</b> IEEE 1284-2000 Device ID string.  <b>Note:</b> the value of this Attribute SHALL exactly match the IEEE 1284-2000 Device ID string, except the length field SHALL NOT be specified. See the Microsoft Universal Plug-and-Play [UPNP] section 2.2.6 <i>DeviceId</i> parameter for details.  <b>Example:</b> it shows only the REQUIRED fields for a PostScript document formatted for a <i>LaserBeam 9</i> :  MANUFACTURER:ACME Co.;COMMAND SET:PS;MODEL:LaserBeam 9; (See <a href="#">[IEEE1284]</a> clause 7.6).
<i>FileTemplate</i> ?	string	A template, used with <i>@FileFormat</i> , to define a sequence of URLs in a batch Process, each of which has the same semantics as the <i>@URL</i> Attribute.  <b>Constraint:</b> if neither <i>@URL</i> nor <i>@UID</i> is present, both <i>@FileFormat</i> and <i>@FileTemplate</i> SHALL be present, unless the Resource is a pipe.  <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.
<i>FileVersion</i> ?  <a href="#">New in JDF 1.1</a>	string	Version of the file referenced by this <b>FileSpec</b> .

**Table 8-107: FileSpec Resource (Sheet 4 of 6)**

Name	Data Type	Description
<i>MimeType</i> ? <a href="#">Modified in JDF 1.2</a>	string	<p>MIME type or file type of the file (or files of identical type when specifying a sequence of file names using the <i>@FileFormat</i> and <i>@FileTemplate</i> Attributes). See <i>@Compression</i> for the indication of compression or encoding of the file. See <i>@MimeTypeVersion</i> for the format version.</p> <p>If the file format has a MIME Media Type [iana-mt] registered with IANA, that value SHALL be used. The [RFC2046] defines that MIME Media Types are case-insensitive.</p> <p>If the file format does not have a MIME Media Type registered with IANA, then the <b>JDF XJDF</b> spec defines string values, called file types, which SHALL be used.</p> <p><b>Values include those from:</b> Appendix H, “MimeType and MimeTypeVersion Attributes” on page 1165.</p>
<i>MimeTypeVersion</i> ? <a href="#">New in JDF 1.2</a>	string	<p>The level or version of the file format identified by <i>@MimeType</i>, whether the value of <i>@MimeType</i> is a MIME Media Type or a file type value defined by the <b>JDF XJDF</b> spec. Example values include:  <i>"PDF/1.3"</i>, <i>"PDF/1.4"</i> and <i>"PDF/X-1a:2001"</i> for <i>@MimeType = "application/pdf"</i>  <i>"TIFF-IT/FP:1998"</i>, <i>"TIFF-IT/CT:1998"</i> and  <i>"TIFF-IT/LW/P1:1998"</i> for <i>@MimeType = "TIFF/IT"</i></p> <p><b>Values include those from:</b> Appendix H, “MimeType and MimeTypeVersion Attributes” on page 1165.</p>
<i>OSVersion</i> ? <a href="#">Modified in JDF 1.2</a>	string	<p>Version of the operating system specified by <i>@AppOS</i>. The IANA Registry provides a list.</p> <p><b>Values include those from:</b> Table S-1, “AppOS and OSVersion Examples” on page 739.</p>
<i>OverwritePolicy</i> ? <a href="#">New in JDF 1.2</a>	enumeration	<p>Policy that specifies the policy to follow when a file already exists and the <b>FileSpec</b> is used as an Output Resource.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Overwrite</i> – Overwrite the old file.</li> <li><i>RenameNew</i> – Rename the new file.</li> <li><i>RenameOld</i> – Rename the old file.</li> <li><i>NewVersion</i> – Create a new file version. Only valid when the <b>FileSpec</b> references a file on a version aware file system.</li> <li><i>OperatorIntervention</i> – Present a dialog to an operator.</li> <li><i>Abort</i> – Abort the Process without modifying the old file.</li> </ul>
<i>PageOrder</i> ?	enumeration	<p>Indicates the order of pages in the file containing pages.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Ascending</i> – The first page in the file is the lowest numbered page.</li> <li><i>Descending</i> – The first page in the file is the highest numbered page.</li> </ul>
<i>Password</i> ? <a href="#">New in JDF 1.3</a>	string	<p>Password or decryption key that is needed to read the file contents. Note: since this password string is not encrypted, it SHOULD only be passed around within a protected environment.</p>

**Table 8-107: FileSpec Resource (Sheet 5 of 6)**

Name	Data Type	Description
<i>RequestQuality</i> ? <a href="#">New in JDF 1.3</a>	double	<p><i>@RequestQuality</i> specifies a requested quality of the encoded data when reading image data with selected <i>@MimeType</i> values which support variable quality. <i>@RequestQuality</i> is ignored when the <b>FileSpec</b> is referenced from an Output Resource or the <b>FileSpec</b> does not reference image data which support variable quality.</p> <p>The value in the range of 0 to 1.0 represents a factor of the maximum quality encoded in the file. If left unspecified, the value defaults to 1.0 meaning all information encoded will be returned. The following details how values are interpreted for the supported <i>@MimeType</i> values:</p> <ul style="list-style-type: none"> <li>"image/jp2", "image/jpx" – The value represents the ratio of the encoding bitrate of the maximum bitrate layer encoded in the file.</li> <li>"image/gif" – (Note: Only interleaved GIF) The number represents a ratio of the total interleaved layers of the file.</li> <li>"image/tiff" – (Note: Only pyramid TIFF) The number represents the ratio of the total resolution of the complete image.</li> </ul>
<i>ResourceUsage</i> ?	NMTOKEN	If an Element uses more than one <b>FileSpec</b> Subelement, this Attribute is used to refer from the parent Element to a certain child Element of this type, for example, see <b>FormatConversionParams</b> . <b>Values include those from:</b> Table 8-108, “ResourceUsage Attribute Values” on page 658.
<i>SearchDepth</i> ? <a href="#">New in JDF 1.2</a>	integer	Used when <i>@ResourceUsage = "SearchPath"</i> <b>FileSpec refers to a directory</b> to specify the maximum directory depth that will be recursively searched. 0 specifies this directory only, " <i>"INF"</i> -1 specifies an unlimited search.
<i>UID</i> ? <a href="#">New in JDF 1.1</a>	stringN-MTOKEN	<p>Internal ID of the referenced file. The <i>@UID</i> SHALL be unique within the workflow. This Attribute is dependent on the type of file that is referenced:</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li>PDF – Variable unique identifier in the ID field of the PDF file’s trailer.</li> <li>ICC Profile – The Profile ID in bytes 84-99 of the ICC profile header.</li> <li>Others – Format specific.</li> </ul> <p><b>Constraint:</b> If neither <i>@URL</i> nor <i>@UID</i> is present on an input <b>FileSpec</b>, and neither <i>@FileFormat</i> nor <i>@FileTemplate</i> is present, the referencing Resource SHALL be a pipe. If either <i>@URL</i> or <i>@UID</i> is specified, then <i>@FileFormat</i> and <i>@FileTemplate</i> SHALL NOT be specified.</p>

**Table 8-107: FileSpec Resource (Sheet 6 of 6)**

Name	Data Type	Description
<i>URL</i> ?	URL	<p>Location of the file specified as either an Absolute URI or a Relative URI. If neither <i>@URL</i> nor <i>@UID</i> is present on an input <b>FileSpec</b>, and neither <i>@FileFormat</i> nor <i>@FileTemplate</i> is present, the referencing Resource SHALL be a pipe. If either <i>@URL</i> or <i>@UID</i> is specified, then <i>@FileFormat</i> and <i>@FileTemplate</i> SHALL NOT be specified.</p> <p>If <i>@URL</i> is not specified in an Output Resource, the system-specified location will be assumed, but this value SHALL be updated as soon as the Output Resource is available. For example, an instruction for a digital delivery <b>JDF XJDF</b> Device to compress the files MAY specify the output <b>RunList</b> with the <i>@Compression</i> Attribute without the <i>@URL</i> Attribute.</p> <p>See [RFC3986] and Appendix K, “Resolving RunList/@Directory and FileSpec/@URL URI References” on page 1223 and Appendix N, “FileSpec Attributes and Container Subelement” on page 1249 for the syntax and examples. For the “<i>file</i>” URL scheme see also [RFC1738] and [FileURL].</p>
<i>UserFileName</i> ?	string	<p>A user-friendly name which can be used to identify the file. MAY be used by an agent a <b>Controller</b> to identify a file on a Device without knowing the file’s internal location.</p>
<i>Container</i> ? <i>ContainerRef</i> ? <a href="#">New in JDF 1.2</a>	refelementI-DREF	<p>Specifies References the container <b>FileSpec</b> for this file. When a container <b>FileSpec</b> is pointed to by <i>Container@ContainerRef</i>, that <b>FileSpec</b> SHALL NOT also specify <i>@FileFormat</i> and <i>@FileTemplate</i> Attributes.</p> <p>The container mechanism MAY be used recursively (e.g., for a Zip file held in a tar file, a Zip file in a Zip file, an encoded Zip file, etc.). See Appendix K, “Resolving RunList/@Directory and FileSpec/@URL URI References” on page 1223 for details.</p>
<i>Disposition</i> ? <i>Disposition</i> ? <a href="#">New in JDF 1.2</a>	element	<p>Indicates what the Device SHOULD do with the file when the Process that uses this Resource completes. If not specified here or in the parent <b>RunList</b>, the file specified by this <b>FileSpec</b> SHOULD NOT be deleted by the Device. <b>If FileSpec/Disposition is specified, it takes precedence over RunList/Disposition.</b></p>
<i>FileAlias</i> *	element	<p>Defines a set of mappings between file names that can occur in the document and URLs (which can refer to external files or parts of a MIME message).</p>

### — Attribute: ResourceUsage

**Table 8-108: ResourceUsage Attribute Values (Sheet 1 of 2)**

Value	Description
<i>AbstractProfile</i>	Used for <b>ColorCorrectionOp/ColorCorrectionOp/FileSpec</b> and <b>ColorSpaceConversionOp/ColorSpaceConversionOp/FileSpec</b>
<i>ActualOutputProfile</i>	Used for <b>ElementColorParams/FileSpec</b>
<i>ColorProfile</i>	Used in <b>Color/FileSpec</b>
<i>CorrectionProfile</i>	Used for <b>ScanParams/FileSpec</b>

**Table 8-108: ResourceUsage Attribute Values (Sheet 2 of 2)**

Value	Description
<i>DeviceLinkProfile</i>	Used for <b>ColorCorrectionOp/ColorCorrectionOp/FileSpec</b> and <b>ColorSpaceConversionOp/ColorSpaceConversionOp/FileSpec</b> .
<i>FinalTargetDevice</i>	Used for <b>ColorCorrectionParams/FileSpec</b> and <b>ColorSpaceConversionParams/FileSpec</b>
<i>InputFormat</i>	Used for <b>FormatConversionParams/FileSpec</b>
<i>OutputFormat</i>	Used for <b>FormatConversionParams/FileSpec</b>
<i>OutputProfile</i>	Used for <b>ExposedMedia/FileSpec</b>
<i>RasterFileLocation</i>	Used for <b>ByteMap/FileSpec</b>
<i>ReferenceOutputProfile</i>	Used for <b>ElementColorParams/FileSpec</b>
<i>ScanProfile</i>	Used for <b>ScanParams/FileSpec</b>
<i>SearchPath</i>	Used for <b>AssetListCreationParams/FileSpec</b> and <b>ImageReplacementParams/FileSpec</b> .
<i>SourceProfile</i>	Used for <b>ColorSpaceConversionOp/ColorSpaceConversionOp/FileSpec</b>
<i>TargetProfile</i>	Used for <b>PrintCondition/FileSpec</b> , <b>ScanParams/FileSpec</b> , and <b>Color/FileSpec</b> and <b>FileSpec/FileSpec</b> .
<i>WorkingColorSpace</i>	Used for <b>ColorCorrectionParams/FileSpec</b> and <b>ColorSpaceConversionParams/FileSpec</b>

### 8.61.1 Element: Container

New in JDF 1.2

The **Container** specifies the containing file for a **FileSpec** (e.g., a zip file or tar archive). The **Container** Elements MAY be specified recursively in their respective child **FileSpec** Elements.

**Table 8-109: Container Element**

Name	Data Type	Description
<b>FileSpec</b>	refelement	Link to another <b>FileSpec</b> Resource that describes the container (e.g., a packaging file, such as Zip, Multipart/Related, tar file or an otherwise compressed or encoded file that contains the file represented by this <b>FileSpec</b> Resource). The link value is only to be used for locating that container <b>FileSpec</b> Resource. See Appendix K, “Resolving RunList/@Directory and FileSpec/@URL URI References” on page 1223 for details.

### 8.61.2 Element: Disposition

This Element describes how long an asset SHOULD be maintained by a Device. The Device will perform an action defined by **Disposition/@DispositionAction** when a “disposition time” occurs. Disposition time is defined either as:

*Until <= "Disposition time" <= Until + ExtraDuration*

*ProcessCompleteTime+MinDuration <= "Disposition time" <=*

*ProcessCompleteTime+MinDuration+ExtraDuration*

**Table 8-110: Disposition Element**

Name	Data Type	Description
<i>DispositionAction</i> ?= "Delete"	enumeration	<b>Allowed values are:</b> <i>Delete</i> – The asset is deleted when disposition time occurs. <i>Archive</i> – The asset is archived when disposition time occurs.
<i>DispositionUsage</i> ?	enumeration	Specifies the usage of the asset by the Process. <b>Default behavior:</b> Disposition applies to all Processes that link to the Disposition Resource (if @ <i>DispositionUsage</i> not specified). <b>Allowed values are:</b> <i>Input</i> – Disposition applies only to Processes that use the asset as an Input Resource. <i>Output</i> – Disposition applies only to Processes that use the asset as an Output Resource.
<i>ExtraDuration</i> ?	duration	Indicates the maximum duration that the Device is allowed to retain the asset after the time specified by @ <i>MinDuration</i> or @ <i>Until</i> . If @ <i>ExtraDuration</i> , @ <i>MinDuration</i> and @ <i>Until</i> are all unspecified, the asset is retained for a system specified time.
<i>MinDuration</i> ?	duration	Indicates the minimum duration that the Device SHOULD retain the asset after the Process that uses the asset completes.
<i>Priority</i> ?= "0"	integer	Value between 0 and 100 that specifies the order in which assets are deleted or archived when the values of @ <i>ExtraDuration</i> , @ <i>MinDuration</i> and @ <i>Until</i> cannot be honored (e.g., when local storage runs low). Assets with @ <i>Priority</i> = "0" will be deleted first.
<i>Until</i> ?	dateTime	Indicates an absolute point in time when the Device or application SHOULD stop the asset retention. If @ <i>Until</i> is specified, @ <i>MinDuration</i> SHALL be ignored.

### 8.61.3 Element: [FileAlias](#)

**Table 8-111: FileAlias Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Alias</i>	string	The filename which is expected to occur in the file.
<i>Disposition</i> ? <a href="#">Deprecated in JDF 1.2</a>	enumeration	Indicates what the Device is to do with the file referenced by this alias when the Process that uses this Resource as an Input Resource completes. <b>Allowed values are:</b> <i>Unlink</i> – The Device is to release the file. <i>Delete</i> – The Device is to attempt to delete the file. <i>Retain</i> – The Device is to do nothing with the file. <b>Deprecation note:</b> starting with JDF 1.2, use <a href="#">FileSpec/Disposition</a> .
<i>MimeType</i> ? <a href="#">Deprecated in JDF 1.2</a>	string	MIME type of the file. <b>Deprecation note:</b> starting with JDF 1.2, use <a href="#">FileSpec/@MimeType</a> .
<i>RawAlias</i> ? <a href="#">New in JDF 1.2</a>	hexBinary	Representation of the original 8-bit byte stream of the Alias Name. Used to transport the original byte representation of an Alias name when moving <a href="#">JDF XJDF</a> tickets between computers with different locales.

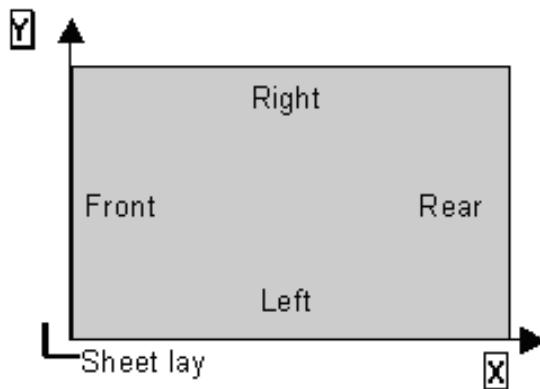
**Table 8-111: FileAlias Element (Sheet 2 of 2)**

Name	Data Type	Description
<a href="#">URL ?</a> <a href="#">Deprecated in JDF 1.2</a>	URL	The URL which identifies the file the alias refers to. In JDF/1.2 and beyond, use <b>FileSpec</b> @ <i>URL</i> .
<a href="#">FileSpec ?</a> <a href="#">New in JDF 1.2</a>	refelement	For JDF version 1.2 and beyond, <b>FileSpec</b> SHALL be present, and SHALL contain a @ <i>URL</i> Attribute. <b>FileSpec</b> MAY contain additional properties of the file (e.g., Disposition, @ <i>MimeType</i> , @ <i>MimeTypeVersion</i> , etc.). reference to a <b>FileSpec</b> that describes the aliased file.

## 8.62 FoldingParams

This Resource describes the folding parameters, including the sequence of folding steps. It is also possible to execute the predefined steps of the folding catalog. After each folding step of a folding procedure, the origin of the coordinate system is moved to the lower left corner of the intermediate folding product. For details see Section 2.5.4, “Product Example: Simple Brochure” on page 40.

The specification of reference edges (i.e., “Front”, “Rear”, “Left” and “Right”) for the description of an operation (e.g., the positioning of a tool) is done by means of determined names as shown in Figure 8-33, below.

**Figure 8-33: Names of the reference edges of a Sheet in the FoldingParams Resource**

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

—

**Intent Pairing:**

FoldingIntent

**Example Partition:**

`"BlockName", "RibbonName", "SheetName", "SignatureName",  
"WebName"`

**Input of Processes:**

Folding

**Output of Processes:**

—

**Table 8-112: FoldingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>DescriptionType</i> ? <a href="#">Deprecated in JDF 1.2</a>	enumeration	How the folding operations are described.  <b>Allowed values are:</b> <i>FoldProc</i> – Detailed description of each individual fold. <i>FoldCatalog</i> – Selection of fold procedure from <i>FoldCatalog</i> . <b>Deprecation note:</b> starting with JDF 1.2, the <i>FoldCatalog</i> defines the topology of the folding scheme. The specifics of each individual fold can be described using <i>Fold</i> Elements. If both <i>FoldCatalog</i> and <i>Fold</i> are specified, <i>Fold</i> takes precedence
<i>FoldCatalog</i> ? <a href="#">Modified in JDF 1.4</a>	stringN-MTOKEN	Describes the type of fold according to the folding catalog in Figure 8-34, “Fold catalog part 1,” on page 664 and Figure 8-35, “Fold catalog part 2,” on page 665. In case of any ambiguity, the folding notation takes precedence over the graphic illustration in the aforementioned Figures.  <b>Value format is:</b> " <i>Fn-i</i> " where "n" is the number of finished pages and "i" is either an integer, which identifies a particular fold or the letter "X", which identifies a generic fold (e.g., " <i>F6-2</i> " describes a Z-fold of 6 finished pages, and " <i>F6-X</i> " describes a generic fold with 6 finished pages).  <b>Modification note:</b> starting with JDF 1.4, the letter "X" is added for a generic fold
<i>FoldingDetails</i> ? <a href="#">New in JDF 1.6</a>	NMTOKEN	@ <i>FoldingDetails</i> is a system dependent descriptor of the folding. @ <i>FoldingDetails</i> MAY be used to differentiate differing fold dimensions with the same general topology.
<i>FoldSheetIn</i> ? <a href="#">Deprecated in JDF 1.1</a>	XYPair	Input Sheet format. If the specified size does not match the size of the X and Y dimensions of the input <b>Component</b> , all coordinates of the folding procedure are scaled accordingly. The scaling factors in X and Y direction MAY differ.  <b>Implementation Note:</b> This Attribute SHOULD always match the @Size Attribute of the input <b>Component</b> , which is the default.
<i>SheetLay</i> ?= "Left"	enumeration	Lay of input media.  <b>Allowed values are:</b> <i>Left</i> <i>Right</i> <b>Note:</b> @ <i>SheetLay</i> does not modify the coordinate references of the <i>Folding</i> Process.
<i>Crease</i> *	element	Defines one or more <i>Crease</i> lines.
<i>Cut</i> *	element	<i>Cut</i> Elements describe an individual cut.
<i>FileSpec</i> (CIP3) ? <a href="#">New in JDF 1.5</a>	refelement	Reference to a CIP3 file that contains folding instructions in the CIP3 format.

**Table 8-112: FoldingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
Fold *	element	Describes the folding operations in the sequence in which they are to be carried out.  It is RECOMMENDED to specify a set of subsequent <b>Fold</b> operations as multiple <b>Fold</b> Elements in one <b>Folding</b> procedure, rather than specifying a Combined Process that combines multiple <b>Folding</b> Processes. If both <b>@FoldCatalog</b> and <b>Fold</b> Elements are specified, the <b>Fold</b> Elements have precedence, and the <b>@FoldCatalog</b> specifies only the topology. For instance a cover-fold with a page size ratio of 0.52 to 0.48 would still be defined as an " <i>F4-1</i> ".
FoldOperation *	element	Abstract Element that describes the folding operations in the sequence in which they are to be carried out. Replaced by the explicit <b>Fold</b> Element in JDF 1.1 and beyond.
Perforate *	element	Defines one or more Perforate lines. The order of Cut, Crease, Fold, Perforate specifies the sequence of operations in the folding machine.

Figure 8-34: Fold catalog part 1

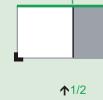
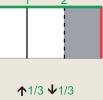
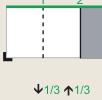
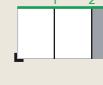
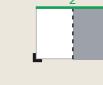
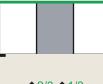
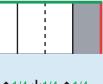
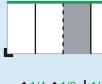
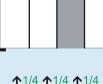
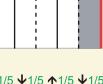
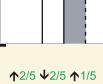
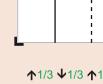
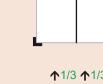
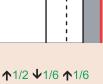
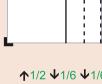
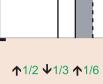
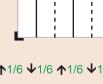
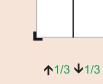
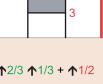
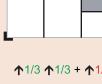
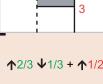
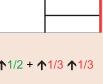
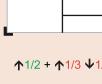
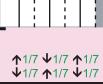
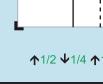
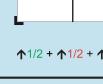
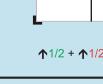
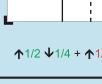
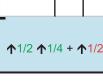
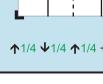
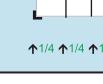
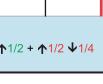
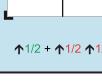
F2-1 	F4-1 2x1 	F4-2 2x1 	F6-1 3x1 	F6-2 3x1 
F6-3 3x1 	F6-4 3x1 	F6-5 3x1 	F6-6 3x1 	F6-7 3x1 
F6-8 3x1 	F8-1 4x1 	F8-2 4x1 	F8-3 4x1 	F8-4 4x1 
F8-5 4x1 	F8-6 4x1 	F8-7 2x2 	F10-1 5x1 	F10-2 5x1 
F10-3 5x1 	F12-1 6x1 	F12-2 6x1 	F12-3 6x1 	F12-4 6x1 
F12-5 6x1 	F12-6 6x1 	F12-7 3x2 	F12-8 3x2 	F12-9 3x2 
F12-10 3x2 	F12-11 3x2 	F12-12 2x3 	F12-13 2x3 	F12-14 2x3 
F14-1 7x1 	F16-1 8x1 	F16-2 8x1 	F16-3 8x1 	F16-4 8x1 
F16-5 8x1 	F16-6 4x2 	F16-7 4x2 	F16-8 4x2 	F16-9 4x2 
F16-10 4x2 	F16-11 4x2 	F16-12 4x2 	F16-13 2x4 	F16-14 2x4 

Figure 8-35: Fold catalog part 2

F18-1 9x1	F18-2 9x1	F18-3 9x1	F18-4 9x1	F18-5 3x3
F18-6 3x3	F18-7 3x3	F18-8 3x3	F18-9 3x3	F20-1 5x2
F20-2 5x2	F24-1 6x2	F24-2 6x2	F24-3 6x2	F24-4 6x2
F24-5 6x2	F24-6 6x2	F24-7 6x2	F24-8 3x4	F24-9 3x4
F24-10 3x4	F24-11 4x3	F28-1 7x2	F32-1 16x1	F32-2 8x2
F32-3 8x2	F32-4 4x4	F32-5 4x4	F32-6 4x4	F32-7 4x4
F32-8 4x4	F32-9 4x4	F36-1 9x2	F36-2 6x3	F40-1 5x4
F48-1 6x4	F48-2 4x6	F64-1 8x4	F64-2 8x4	

**LEGEND**

- Fold up
- - - - Fold down
- Finished format folded sheet
- 1, 2, 3 Folds in numeric order
- L Lay
- Green: open sheet length
- Red: open sheet width

Example: F32-3, 8x2

F32-3: Signature with 32 pages

8x2: Split: 8 sheet parts lengthwise 2 sheet parts cross

↑1/2: Fold up with 1/2 of the open sheet format length

↓1/4: Fold down with 1/4 of the open sheet format length

↓1/4: Fold down with 1/4 of the open sheet format length

+ : Fold direction change: 90...

↑1/2: Fold up with 1/2 of the open sheet format

+ : Fold direction change: 90...

↓1/8: Fold down with 1/8 of the open sheet format length

## 8.63 FontParams

This Resource describes how fonts are handled when converting PostScript or other PDL files to PDF.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	
<b>Example Partition:</b>	"DocIndex", "RunIndex", "RunTags", "DocTags", "PageTags", "SetTags", "SheetName", "Side", "SignatureName"
<b>Input of Processes:</b>	PSToPDFConversion
<b>Output of Processes:</b>	

Table 8-113: FontParams Resource

Name	Data Type	Description
AlwaysEmbed ?	NMTOKENS	One or more names of fonts that are always to be embedded in the PDF file. Each name SHALL be the PostScript language name of the font. An entry that occurs in both the <i>@AlwaysEmbed</i> and <i>@NeverEmbed</i> lists constitutes an error.
CannotEmbedFontPolicy ?= "Warning"	enumeration	Determines what occurs when a font cannot be embedded. <b>Allowed values are:</b> <i>Error</i> – Log an error and abort the Process if any font can not be found or embedded. <i>Warning</i> – Warn and continue if any font cannot be found or embedded. <i>OK</i> – Continue without warning or error if any font can not be found or embedded.
EmbedAllFonts ?= "false"	boolean	If "true", specifies that all fonts, except those in the <i>@NeverEmbed</i> list, are to be embedded in the PDF file.
MaxSubsetPct ?	integer	The maximum percentage of glyphs in a font that can be used before the entire font is embedded instead of a subset. This value is only used if <i>@SubsetFonts</i> = "true".
NeverEmbed ?	NMTOKENS	One or more names of fonts that are never to be embedded in the PDF file. Each name SHALL be the PostScript language name of the font. An entry that occurs in both the <i>@AlwaysEmbed</i> and <i>@NeverEmbed</i> lists constitutes an error.
SubsetFonts ?	boolean	If "true", font subsetting is enabled. If "false", it is not. Font subsetting embeds only those glyphs that are used, instead of the entire font. This reduces the size of a PDF file that contains embedded fonts. If font subsetting is enabled, the decision whether to embed the entire font or a subset is determined by number of glyphs in the font that are used and the value of <i>@MaxSubsetPct</i> . <b>Note:</b> Embedded instances of multiple master fonts are always subsetted, regardless of the setting of <i>@SubsetFonts</i> .

## 8.64 FontPolicy

This Resource defines the policies that Devices follow when font errors occur while PDL files are being processed. When fonts are referenced by PDL files but are not provided, Devices SHALL provide one of the following two fall-back behaviors:

- 1 The Device provides a standard default font which is substituted whenever a font cannot be found.

2 The Device provides an emulation of the missing font.  
 If neither fallback behavior is requested (i.e., both `@UseDefaultFont` and `@UseFontEmulation` are `"false"`), then the Job will fail if a referenced font is not provided. The **FontPolicy** allows Jobs to specify whether either of these fallback behaviors are to be employed when missing fonts occur.

## Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Example Partition:</b>	<code>"DocIndex", "RunIndex", "RunTags", "DocTags", "PageTags", "SetTags", "SheetName", "Side", "SignatureName"</code>
<b>Input of Processes:</b>	<i>Interpreting, Trapping</i>
<b>Output of Processes:</b>	—

**Table 8-114: FontPolicy Resource**

Name	Data Type	Description
<code>PreferredFont</code>	NMOKEN	The name of a font to be used as the default font for this Job. It is not an error if the Device cannot use the specified font as its default font.
<code>UseDefaultFont</code>	boolean	If <code>"true"</code> , the Device SHALL resort to a default font if a font cannot be found. This is the normal behavior of the PostScript interpreter, which defaults to Courier when a font cannot be found.
<code>UseFontEmulation</code>	boolean	If <code>"true"</code> , the Device SHALL emulate a requested font if a font cannot be found.

## 8.65 FormatConversionParams

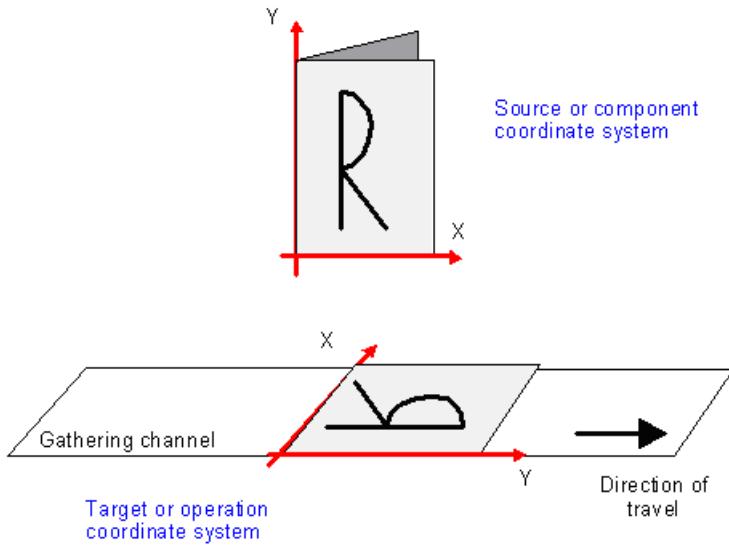
[New in JDF 1.1](#)

[Deprecated in JDF 1.5](#)

See Section P.6.9, “FormatConversionParams” on page 1344 for details. For **TIFFFormatParams**, see .Section 8.130.1, “TIFFFormatParams” on page 866

## 8.66 GatheringParams

This Resource contains the Attributes of the **Gathering** Process.

**Figure 8-36: Coordinate system used for Gathering****Resource Properties**

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	<i>Gathering</i>
<b>Output of Processes:</b>	—

**Table 8-115: GatheringParams Resource**

Name	Data Type	Description
<u>Disjointing ?</u> <u>Deprecated in JDF 1.6</u>	element	Description of the separation properties between individual components on a gathered pile. <b>The default case is that no physical separation between components is used and this Element is omitted.</b> <b>Deprecation note:</b> starting with JDF 1.6, use a combined Stacking process.

**8.67 GlueApplication**New in JDF 1.1

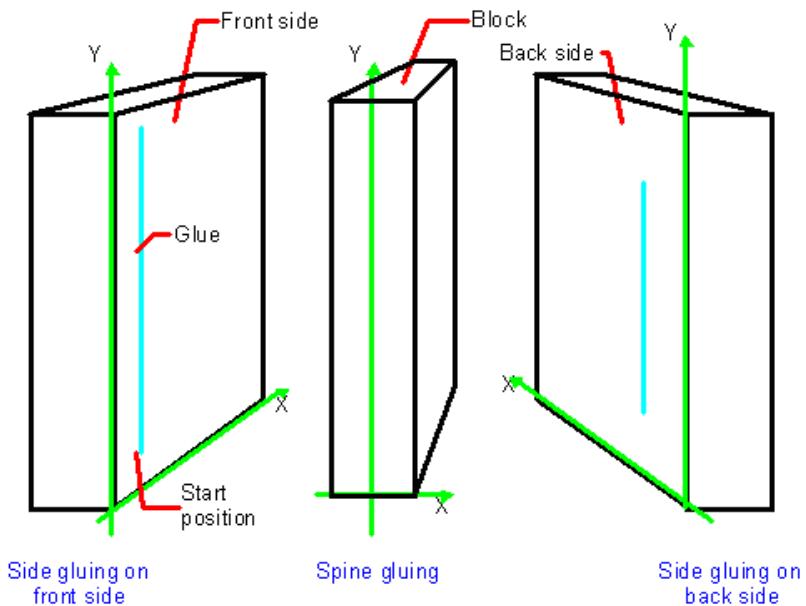
This Resource specifies glue application in hard and soft cover book production.

**Resource Properties**

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	<b>CasingInParams, CoverApplicationParams, GluingParams/Glue, SpineTapingParams</b>
<b>Intent Pairing:</b>	<b>BindingIntent</b>
<b>Input of Processes:</b>	—
<b>Output of Processes:</b>	—

**Table 8-116: GlueApplication Resource**

Name	Data Type	Description
<i>GluingTechnique</i>	enumeration	Type or technique of gluing application. <b>Allowed values are:</b> <i>SpineGluing</i> <i>SideGluingFront</i> <i>SideGluingBack</i>
<i>GlueLine</i> ?	element	Structure of the glue line.

**Figure 8-37: Parameters and coordinate system for glue application**

## 8.68 GluingParams

[New in JDF 1.1](#)

**GluingParams** define the parameters applying a generic line of glue to a component.

### Resource Properties

**Resource Class:**

[Parameter](#)

**Resource referenced by:**

—

**Intent Pairing:**

[BindingIntent](#)

**Example Partition:**

["WebName", "WebProduct"](#)

**Input of Processes:**

[Gluing](#)

**Output of Processes:**

—

**Table 8-117: GluingParams Resource**

Name	Data Type	Description
<i>GluingProductionID</i> ? <u>New in JDF 1.3</u>	stringN-MTOKEN	Defines a gluing scheme for production.
<i>GlueLine</i> * <i>Glue</i> *	element	Definition of one or more <i>GlueLine</i> <i>Glue</i> line applications.

**8.68.1 Element: *Glue***

The *Glue* Element describes how to apply a line of glue.

**Table 8-118: Glue Element**

Name	Data Type	Description
<i>WorkingDirection</i> ? <u>Modified in JDF 1.5</u>	enumeration	<p>Direction from which the tool is working.</p> <p><b>Allowed values are:</b></p> <p><i>Top</i> – From above.</p> <p><i>Bottom</i> – From below.</p> <p><b>Modification Note:</b> starting in JDF 1.5, @<i>WorkingDirection</i> is optional.</p>
<i>GlueApplication</i> ? <u>Modified in JDF 1.3</u>	refelement	Describes the glue application. Exactly one of <i>GlueApplication</i> or <i>GlueLine</i> SHALL be specified.
<i>GlueLine</i> ? <u>New in JDF 1.3</u>	element	<p>Structure of the <i>GlueLine</i> used for generic gluing.</p> <p>Exactly one of <i>GlueApplication</i> or <i>GlueLine</i> SHALL be specified.</p>

**8.69 HeadBandApplicationParams**

New in JDF 1.1

This Resource specifies how to apply headbands in hard cover book production.

**Resource Properties**

**Resource Class:** Parameter

**Resource referenced by:** —

**Example Partition:** —

**Input of Processes:** *HeadBandApplication*

**Output of Processes:** —

**Table 8-119: HeadBandApplicationParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>Brand</i> ?	string	Head band brand.
<i>Color</i> ?	NamedColor	Color of the head band.
<i>ColorDetails</i> ?	string	A more specific, specialized or site-defined name for the color. If @ <i>ColorDetails</i> is supplied, @ <i>Color</i> SHOULD also be supplied.

Table 8-119: HeadBandApplicationParams Resource (Sheet 2 of 2)

Name	Data Type	Description
<i>Length</i> ?	double	<p>Length of the carrier material of the head band along binding edge. If not specified the head band has the length of the book block.</p> <p>If both top and bottom head bands are specified in a partitioned ResourceSet (using <i>Part/@Option</i>), then:</p> <ul style="list-style-type: none"> <li>• If none of the partitions supplies <i>@Length</i>, then both head bands are on one carrier which has the length of the book block.</li> <li>• If exactly one of the partitions supplies <i>@Length</i>, then both head bands are on one carrier of the given length.</li> <li>• If both of the partitions supplies <i>@Length</i>, then each head band is on a separate carrier of the given length.</li> </ul>
<i>BottomBrand</i> ?	string	Bottom head band brand. If not specified, defaults to the value of <i>@TopBrand</i> .
<i>BottomColor</i> ?	NamedColor	Color of the bottom head band. If not specified, defaults to the value of <i>@TopColor</i> .
<i>BottomColorDetails</i> ? <a href="#">New in JDF 1.4</a>	string	A more specific, specialized or site-defined name for the color. If <i>@BottomColorDetails</i> is supplied, <i>@BottomColor</i> SHOULD also be supplied.
<i>BottomLength</i> ?	double	Length of the carrier material of the bottom head band along binding edge. If not specified, both head bands are on one carrier.
<i>StripMaterial</i> ?	enumeration	<p>Strip material.</p> <p><b>Allowed values are:</b></p> <p><i>Calico</i>  <i>Cardboard</i>  <i>CrepePaper</i>  <i>Gauze</i>  <i>Paper</i>  <i>PaperlinedMules</i>  <i>Tape</i></p>
<i>TopBrand</i> ?	string	Top head band brand.
<i>TopColor</i> ?	NamedColor	Color of the top head band.
<i>TopColorDetails</i> ? <a href="#">New in JDF 1.4</a>	string	A more specific, specialized or site-defined name for the color. If <i>@TopColorDetails</i> is supplied, <i>@TopColor</i> SHOULD also be supplied.
<i>TopLength</i> ?	double	Length of carrier material of the top head band along binding edge. If not specified, both head bands are on one carrier which has the length of the book block.
<i>Width</i> ?	double	Width of the head bands and carrier.
<i>GlueLine *Glue *</i>	element	The carrier can be applied to the book block with glue. The coordinate system for the <i>GlueLine Glue</i> is defined in the Section 8.57, “EndSheetGluingParams”.

## 8.70 HoleList

This Resource is used to describe holes or rows of holes in Intent Resources or **Media**. Note that it was an Intent Resource Subelement prior to JDF 1.2.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	<b>BindingIntent/CoilBinding</b> , <b>BindingIntent/PlasticCombBinding</b> , <b>BindingIntent/StripBinding</b> , <b>BindingIntent/WireCombBinding</b> , <b>BindingIntent/BindList/BindItem/CoilBinding</b> , <b>BindingIntent//BindItem/PlasticCombBinding</b> , <b>BindingIntent/BindList/BindItem/StripBinding</b> , <b>BindingIntent/BindList/BindItem/WireCombBinding</b> , <b>HoleMakingIntent</b> , <b>Media</b>
Example Partition:	—
Input of Processes:	—
Output of Processes:	—

Table 8-120: HoleList Resource

Name	Data Type	Description
HolePattern *	element	Description of individual holes. See Section 10.24, HolePattern. Modified in JDF 1.1
HoleLine *	element	Array of all HoleLine Elements. See Section 10.25, HoleLine. New in JDF 1.1

## 8.71 HoleMakingParams

This Resource specifies where to make a hole of what shape in components. This information is used by the **HoleMaking** Process.

**Default behavior for @HoleCount:** For dealing with the Default case of @HoleCount (i.e., when not supplied), intelligent systems will take into consideration Job parameters like the length of the binding edge or distance of holes to the paper edges to calculate the appropriate number of holes. For production of the holes and selection/production of the matching binding Element, the “system specified” values need to match 100% between the **HoleMaking** and the binding Process for obvious reasons. In practice, if no details are specified for **HoleMaking**, they SHOULD also be absent for binding. In this case, either the operator provides the missing value when setting up the binding Device for the Job, or the Device itself needs to have some kind of automatic hole detection mechanism.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	<b>CoilBindingParams</b> , <b>LooseBindingParams</b> , <b>PlasticCombBindingParams</b> , <b>RingBindingParams</b> , <b>StripBindingParams</b> , <b>WireCombBindingParams</b>
Intent Pairing:	<b>HoleMakingIntent</b>
Example Partition:	<code>"SheetName", "SignatureName"</code>
Input of Processes:	<b>HoleMaking</b>
Output of Processes:	—

**Table 8-121: HoleMakingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>Center</i> ? <a href="#">Modified in JDF 1.1</a>	XYPair	Position of the center of the hole pattern relative to the <b>Component</b> coordinate system if @HoleType is not "Explicit". If not specified, it defaults to the value implied by @HoleType.
<i>CenterReference</i> ?= "TrailingEdge" <a href="#">New in JDF 1.1</a>	enumeration	Defines the reference coordinate system for @Center. <b>Allowed values are:</b> TrailingEdge – Physical coordinate system of the component. RegistrationMark – The center is relative to a registration mark.
<i>Extent</i> ?	XYPair	Size (Bounding Box) of the hole in points if @HoleType is not "Explicit". If @Shape is "Round", only the first entry of @Extent is evaluated and defines the hole diameter. If not specified, it defaults to the value implied by @HoleType.
<i>HoleCount</i> ? <a href="#">New in JDF 1.2</a>	IntegerList	For patterns with @HoleType whose enumeration values begin with a "P", "W" or "C", this parameter specifies the number of consecutive holes and spaces. The first entry defines the number of holes, the second entry defines the number of spaces, and consecutive entries alternately define holes (h) and spaces (s), for instance: "2 2 2" = "h h s s h h". "0 3 3 3 3" = "s s s h h s s s h h h". Note: @HoleCount is typically applied to patterns with @HoleType whose enumeration values begin with a "P", "W" or "C in Table M-1, "Naming Scheme for Hole Patterns". <b>Default behavior:</b> see "Default behavior for @HoleCount"
<i>HoleReferenceEdge</i> ? <a href="#">New in JDF 1.1</a> <a href="#">Deprecated in JDF 1.2</a>	enumeration	The edge of the media relative to where the holes are to be punched. Use with @HoleType. <b>Default value:</b> if @HoleType is "Explicit", "Pattern"; otherwise "Left". <b>Allowed values are:</b> Left Right Top Bottom Pattern – Specifies that the reference edge implied by the value of @HoleType in Appendix M, "JDF XJDF/CIP4 Hole Pattern Catalog" on page 1239 is used. <b>Deprecation note:</b> starting with JDF 1.1, use an explicit @Transformation or @Orientation of the input <b>Component</b> . If either @Transformation or @Orientation along with @HoleReferenceEdge is specified, the result is the matrix product of both transformations. @Transformation or @Orientation SHALL be applied first.

**Table 8-121: HoleMakingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>HoleType</i> <a href="#">New in JDF 1.1</a>	enumerations	<p>Predefined hole pattern. Multiple hole patterns are specified as one NMTOKENS string (e.g., 3-hole ring binding and 4-hole ring binding holes on one piece of media).</p> <p><b>Allowed values are:</b></p> <p><i>Explicit</i> – Holes are defined in an array of Hole Elements.</p> <p><i>2HoleEuro</i> – Replaced by either <i>R2m-DIN</i> or <i>R2m-ISO</i>. <a href="#">Deprecated in JDF 1.0</a></p> <p><i>3HoleUS</i> – Replaced by <i>R3I-US</i>. <a href="#">Deprecated in JDF 1.0</a></p> <p><i>4HoleEuro</i> – Replaced by either <i>R4m-DIN-A4</i> or <i>R4m-DIN-A5</i>. <a href="#">Deprecated in JDF 1.0</a></p> <p><b>Allowed values are from:</b> Appendix M, “JDF XJDF/CIP4 Hole Pattern Catalog” on page 1239.</p>
<i>Shape?</i> <a href="#">Modified in JDF 1.1</a>	enumeration	<p>Shape of the holes if <i>@HoleType</i> is not "Explicit".</p> <p><b>Default value is:</b> value implied by <i>@HoleType</i>.</p> <p><b>Allowed values are:</b></p> <p><i>Elliptic</i></p> <p><i>Round</i></p> <p><i>Rectangular</i></p>
<i>HolePattern</i> *	element	Description of individual or lines of HolePattern Elements.
<i>HoleLine</i> * <a href="#">New in JDF 1.1</a>	element	Description of HoleLine Elements.
<i>RegisterMark?</i> <i>RegisterMarkRef</i> ? <a href="#">New in JDF 1.1</a>	refelementI-DREF	Reference to the registration mark that defines the coordinate system origin for <i>HoleMaking</i> .

## 8.72 IdentificationField

This Resource contains information about a mark on a document (e.g., a bar code) used for OCR-based verification purposes or document separation.

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

Abstract PhysicalResource, Resource, Disjoining, EmbossingParams/Emboss, Layout/MarkObject, **LayoutElementProductionParams/** LayoutElementPart/BarcodeProductionParamsContent/BarcodeProductionParams

**Example Partition:**

—

**Input of Processes:**

Verification

**Output of Processes:**

—

**Table 8-122: IdentificationField Resource (Sheet 1 of 3)**

Name	Data Type	Description
<i>BoundingBox</i> ?	rectangle	<p>Box that provides the boundaries of the mark that indicates where the <b>IdentificationField</b> is placed. If the <b>IdentificationField</b> is specified in a <b>Layout</b>, the coordinate system is defined by the <b>MarkObject</b> containing the <b>IdentificationField</b>. If no <b>Layout</b> context is available, the origin of the coordinate system is defined as the lower left corner of the Resource surface that <i>@Position</i> specifies when the specified surface is viewed in its natural orientation.</p> <p>Each item in the list below specifies a value of <i>@Position</i> and the corner that is the origin for the specified value when the viewer is positioned in front of the front surface. For example, when <i>@Position</i> = "Left", the origin is the bottom-back corner of left surface when viewed from the front surface of the Resource and lower-left corner when viewed from the left surface.</p> <ul style="list-style-type: none"> <li>• "Front" – Bottom-left corner</li> <li>• "Left" – Bottom-back corner</li> <li>• "Back" – Bottom-right corner</li> <li>• "Right" – Bottom-front corner</li> <li>• "Top" – Front-left corner</li> <li>• "Bottom" – Back left corner</li> </ul> <p>If no <i>@BoundingBox</i> is defined and the <b>IdentificationField</b> is specified</p> <ul style="list-style-type: none"> <li>• outside the context of a <b>Layout</b>, the complete visible surface SHALL be scanned for an appropriate bar code.</li> <li>• within the context of a <b>Layout</b>, the implied <i>@BoundingBox</i> is specified by <b>MarkObject</b>/<i>@ClipBox</i>.</li> </ul> <p>The <i>@BoundingBox</i> is used only as metadata when searching or scanning <b>IdentificationField</b> Elements and not used when generating <b>IdentificationField</b> Elements in a <b>LayoutElementProduction</b> Process.</p> <p><b>Modification note:</b> starting with JDF 1.4, all text is new.</p>
<i>Encoding</i> ? <a href="#">Modified in JDF 1.4</a>	enumeration	<p>Encoding of the information.</p> <p><b>Allowed values are:</b></p> <p><i>ASCII</i> – Plain-text font.</p> <p><i>Barcode</i> – Any bar code. <a href="#">New in JDF 1.3</a></p> <p><i>BarCode1D</i> – One-dimensional bar code. <a href="#">Deprecated in JDF 1.3</a></p> <p><i>BarCode2D</i> – Two-dimensional bar code. <a href="#">Deprecated in JDF 1.3</a></p> <p><i>Braille</i> – Braille text. <a href="#">New in JDF 1.4</a></p> <p><i>RFID</i> – Radio Frequency Identification tag. <a href="#">New in JDF 1.3</a></p>
<i>EncodingDetails</i> ?	NMTOKEN	<p>Details about the encoding type. An example is the bar code scheme.</p> <p><b>Values include those from:</b> Table 8-123, "EncodingDetails Attribute Values".</p>

**Table 8-122: IdentificationField Resource (Sheet 2 of 3)**

Name	Data Type	Description
<i>Format ?</i> <a href="#">Modified in JDF 1.2</a>	regExp	Regular expression that defines the expected format of the expression (e.g., the number of digits, alphanumeric or numeric). Note that this field MAY also be used to define constant fields (e.g., the end of document markers or packaging labels). If not specified, any expression is valid. Exactly one of <i>@Format</i> , <i>@Value</i> or the pair <i>@ValueFormat</i> and <i>@ValueTemplate</i> SHALL be specified.
<i>Orientation ?</i>	matrix	Orientation of the contents within the <b>IdentificationField</b> . The coordinate system is defined in the system of the Sheet or component where the <b>IdentificationField</b> resides. The <i>@Orientation</i> is used only as metadata when searching or scanning <b>IdentificationField</b> Elements and not used when generating <b>IdentificationField</b> Elements in a <i>LayoutElementProduction</i> Process.
<i>Page ?</i>	integer	If <i>@Position = "Page"</i> , this refers to the page where the <b>IdentificationField</b> can be found. Negative values denote an offset relative to the last page in a stack of pages.
<i>Position ?</i>	enumeration	<p>Position with respect to the Instance Document or <a href="#">PhysicalResource</a> <a href="#">Resource</a> to which the Resource refers.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Header</i> – Sheet before the document.</li> <li><i>Trailer</i> – Sheet after the document.</li> <li><i>Page</i> – A page of the document.</li> <li><i>Top</i> – The top of the Resource.</li> <li><i>Bottom</i> – The bottom of the Resource.</li> <li><i>Left</i> – The left side of the Resource.</li> <li><i>Right</i> – The right side of the Resource.</li> <li><i>Front</i> – The front side of the Resource.</li> <li><i>Back</i> – The back side of the Resource.</li> <li><i>Any</i> – <a href="#">Deprecated in JDF 1.2</a></li> </ul>
<i>Purpose ?</i>	enumeration	<p>Purpose defines the usage of the field.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Label</i> – Used to mark a product or component.</li> <li><i>Separation</i> – Used to separate documents.</li> <li><i>Verification</i> – Used for verification of documents.</li> </ul>
<i>PurposeDetails ?</i> <a href="#">New in JDF 1.3</a>	NMTOKEN	<p>More detail about the usage of the barcode.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>ProductIdentification</i> – End product identification (e.g., scanning in the super market).</li> </ul>
<i>Value ?</i> <a href="#">New in JDF 1.1</a>	string	Fixed value of the <b>IdentificationField</b> (e.g., on a label). Exactly one of <i>@Format</i> , <i>@Value</i> or the pair <i>@ValueFormat</i> and <i>@ValueTemplate</i> SHALL be specified.

**Table 8-122: IdentificationField Resource (Sheet 3 of 3)**

Name	Data Type	Description
<i>ValueFormat</i> ? <a href="#">New in JDF 1.3</a>	string	A formatting string used with <i>@ValueTemplate</i> to define fixed and/or variable content of barcodes or text. <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171. <b>Constraint:</b> exactly one of <i>@Format</i> , <i>@Value</i> or the pair <i>@ValueFormat</i> and <i>@ValueTemplate</i> SHALL be specified.
<i>ValueTemplate</i> ? <a href="#">New in JDF 1.3</a>	string	A list of values used with <i>@ValueFormat</i> to define fixed and/or variable content of barcodes or text. If <b>MetadataMap</b> Elements are present, <b>MetadataMap/@Name</b> SHALL be included in <i>@ValueTemplate</i> to select the data from the <b>MetadataMap</b> . <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171. <b>Constraint:</b> exactly one of <i>@Format</i> , <i>@Value</i> or the pair <i>@ValueFormat</i> and <i>@ValueTemplate</i> SHALL be specified.
<i>BarcodeDetails</i> ? <a href="#">New in JDF 1.3</a>	element	Additional specification for complex barcodes.
<i>ExtraValues</i> ? <a href="#">New in JDF 1.3</a>	element	Additional values encoded in the <b>IdentificationField</b> .
<i>MetadataMap</i> * <a href="#">New in JDF 1.5</a>	element	Describes the mapping of metadata that is encoded in an <b>IdentificationField</b> to <i>@PartIDKeys</i> . This allows for automated selective finishing based on bar codes.

**— Attribute: EncodingDetails**

The following list provides a sample of Barcode encoding details. Values that are not present in this list MAY be valid in a **JDF** an **XJDF** workflow.

**Table 8-123: EncodingDetails Attribute Values (Sheet 1 of 2)**

Value	Description	Value	Description
<i>BOBST</i>		<i>ITF_14</i>	
<i>BrailleASCII</i> <a href="#">New in JDF 1.4</a>	A binary representation for 6 dot Braille messages. See <a href="http://en.wikipedia.org/wiki/Braille_ASCII">http://en.wikipedia.org/wiki/Braille_ASCII</a>	<i>ITF_6</i>	
<i>BrailleUnicode</i> <a href="#">New in JDF 1.4</a>	A binary representation for Braille messages. See <a href="http://www.unicode.org/charts/PDF/U2800.pdf#search=%22braille%20unicode%22">http://www.unicode.org/charts/PDF/U2800.pdf#search=%22braille%20unicode%22</a>	<i>ITF_16</i>	
<i>CODABAR</i>		<i>KURANDT</i>	
<i>CODABAR_Tradional</i>		<i>LAETUS_PHARMA</i>	
<i>CODABLOCK</i>		<i>MSI</i>	
<i>CODABLOCK_F</i>		<i>NDC_HRI</i>	
<i>Code128</i>		<i>PARAF</i>	

**Table 8-123: EncodingDetails Attribute Values (Sheet 2 of 2)**

<b>Value</b>	<b>Description</b>	<b>Value</b>	<b>Description</b>
<i>Code25</i>		<i>Plessey</i>	
<i>Code39</i>		<i>PDF417</i>	
<i>Code39_Extended</i>		<i>PZN</i>	
<i><a href="#">DATAMATRIX</a></i> <i><a href="#">Deprecated in JDF 1.3</a></i>	<b>Deprecation note:</b> starting with JDF 1.3, use " <i>HIBC_DATAMATRIX</i> "	<i>QR</i>	
<i>EAN</i>	includes Bookland_EAN and ISSN.	<i>RSS_14</i>	
<i>EAN_13</i>		<i>RSS_14_Stacked</i>	
<i>EAN_8</i>		<i>RSS_14_Stacked_Omnidir</i>	
<i>EAN_Coupon</i>		<i>RSS_14_Truncated</i>	
<i>EAN_128</i>		<i>RSS_Limited</i>	
<i>HIBC_Code39</i>		<i>RSS_Expanded</i>	
<i>HIBC_Code128</i>		<i>RSS_Expanded_Stacked</i>	
<i>HIBC_Code39_2</i>		<i>UPC_A</i>	
<i>HIBC_CODABLOCK_F</i>		<i>UPC_Coupon</i>	
<i>HIBC_QR</i>		<i>UPC_E</i>	
<i>HIBC_DATAMATRIX</i>		<i>UPC_SCS</i>	
<i>Interleave25</i>			

### 8.72.1 Element: BarcodeDetails

**Table 8-124: BarcodeDetails Element (Sheet 1 of 2)**

<b>Name</b>	<b>Data Type</b>	<b>Description</b>
<i>BarcodeVersion ?</i>	NMTOKEN	The version of a barcode. <b>Values include those from:</b> Table 8-127, “BarcodeVersion Values – for HIBC_DATAMATRIX” on page 680. <b>Values include those from:</b> Table 8-128, “BarcodeVersion Values – for QR barcodes” on page 681.

**Table 8-124: BarcodeDetails Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>ErrorCorrectionLevel</i> ?	NMTOKEN	<p>Error correction level for barcodes having a separately definable error correction level.</p> <p>Each value can be used only for certain values of <b>IdentificationField/@EncodingDetails</b>.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>PDF417_EC_0</i> – for <b>@EncodingDetails = "PDF417"</b></li> <li><i>PDF417_EC_1</i> – for <b>@EncodingDetails = "PDF417"</b></li> <li><i>PDF417_EC_2</i> – for <b>@EncodingDetails = "PDF417"</b></li> <li><i>PDF417_EC_3</i> – for <b>@EncodingDetails = "PDF417"</b></li> <li><i>PDF417_EC_4</i> – for <b>@EncodingDetails = "PDF417"</b></li> <li><i>PDF417_EC_5</i> – for <b>@EncodingDetails = "PDF417"</b></li> <li><i>PDF417_EC_6</i> – for <b>@EncodingDetails = "PDF417"</b></li> <li><i>PDF417_EC_7</i> – for <b>@EncodingDetails = "PDF417"</b></li> <li><i>PDF417_EC_8</i> – for <b>@EncodingDetails = "PDF417"</b></li> <li><i>QR_EC_L</i> – for <b>@EncodingDetails = "QR"</b></li> <li><i>QR_EC_M</i> – for <b>@EncodingDetails = "QR"</b></li> <li><i>QR_EC_Q</i> – for <b>@EncodingDetails = "QR"</b></li> <li><i>QR_EC_H</i> – for <b>@EncodingDetails = "QR"</b></li> </ul>
<i>XCells</i> ?	integer	<p>The number of cells in x direction of a matrix barcode. For "DATAMATRIX" this field can be omitted since <b>@BarcodeVersion</b> already defines this.</p> <p>For "PDF417" this is the number of codewords/row.</p>
<i>YCells</i> ?	integer	<p>The number of cells in y direction of a matrix barcode For "DATAMATRIX" this field can be omitted since <b>@BarcodeVersion</b> already defines this.</p> <p>For "PDF417" this is the number of rows.</p>

### 8.72.2 Element: ExtraValues

**Table 8-125: ExtraValues Element**

Name	Data Type	Description
<i>Usage</i>	NMTOKEN	<p>The usage of the value.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Supplemental</i> – UPC supplemental 2/5 digit symbology</li> <li><i>CompositeCode</i> – This is applicable for barcodes like RSS-14 that have an optional composite code part.</li> <li><i>Coupon</i> – The additional message for the EAN128 part of a UPC or EAN coupon.</li> </ul>
<i>Value</i>	string	Additional value of the <b>IdentificationField</b> as specified in <b>@Usage</b> .

### 8.72.3 Usage of barcode Attributes

The following table specifies whether the Attributes **@Height**, **@Magnification** and **@Ratio** are applicable for a given barcode type that is specified by **@EncodingDetails**.

**Table 8-126: Usage of Barcode Attributes for Certain Barcode Types**

<b>EncodingDetails values (barcode types)</b>	<b>Height</b>	<b>Magnification</b>	<b>Ratio</b>
<i>Code25</i> <i>Code39</i> <i>Code39_Extended</i> <i>Interleave25</i> <i>MSI</i> <i>Plessey</i>	Used	Used	Used
<i>CODABAR</i> <i>Code128</i> <i>EAN_13</i> <i>EAN_8</i> <i>EAN_128</i> <i>HIBC_Code39</i> <i>HIBC_Code128</i> <i>ITF_14</i> <i>ITF_16</i> <i>NDC_HRI</i> <i>PARAF</i> <i>UPC_A</i> <i>UPC_E</i> <i>UPC_SCS</i> <i>UPC_SCS</i>	Used	Used	Not used
<i>BOBST</i> <i>KURANDT</i> <i>LAETUS_PHARMA</i>	Used	Not used	Not used
<i>RSS_14</i> <i>RSS_14_Stacked</i> <i>RSS_14_Stacked_Omnidir</i> <i>RSS_14_Truncated</i> <i>RSS_Limited</i> <i>RSS_Expanded</i> <i>RSS_Expanded_Stacked</i>	Not used	Used	Not used
<i>PZN</i>	Not used	Not used	Not used

**— Attribute: BarcodeVersion – for HIBC\_DATAMATRIX**

The following table specifies valid values of `BarcodeDetails/@BarcodeVersion` for a "[HIBC\\_DATAMATRIX](#)" barcode:

**Modification note:** starting with JDF 1.3, these values are for "[HIBC\\_DATAMATRIX](#)" rather than "[DATAMATRIX](#)"

**Table 8-127: BarcodeVersion Values – for HIBC\_DATAMATRIX (Sheet 1 of 2)**

<b>Values</b>			
<i>DM_8_by_18</i>	<i>DM_16_by_16</i>	<i>DM_26_by_26</i>	<i>DM_72_by_72</i>

**Table 8-127: BarcodeVersion Values – for HIBC\_DATAMATRIX (Sheet 2 of 2)**

Values			
DM_8_by_32	DM_16_by_36	DM_32_by_32	DM_80_by_80
DM_10_by_10	DM_16_by_48	DM_40_by_40	DM_88_by_88
DM_12_by_12	DM_18_by_18	DM_44_by_44	DM_96_by_96
DM_12_by_26	DM_20_by_20	DM_48_by_48	DM_104_by_104
DM_12_by_36	DM_22_by_22	DM_52_by_52	DM_120_by_120
DM_14_by_14	DM_24_by_24	DM_64_by_64	DM_132_by_132
			DM_144_by_144

**— Attribute: BarcodeVersion – for QR barcodes**

The following table specifies valid values of BarcodeDetails/@BarcodeVersion for a QR barcode.

**Table 8-128: BarcodeVersion Values – for QR barcodes**

Values							
QR_1	QR_6	QR_11	QR_16	QR_21	QR_26	QR_31	QR_36
QR_2	QR_7	QR_12	QR_17	QR_22	QR_27	QR_32	QR_37
QR_3	QR_8	QR_13	QR_18	QR_23	QR_28	QR_33	QR_38
QR_4	QR_9	QR_14	QR_19	QR_24	QR_29	QR_34	QR_39
QR_5	QR_10	QR_15	QR_20	QR_25	QR_30	QR_35	QR_40

**Example 8-18: Barcode**

The following example illustrates the description of a barcode in a *LayoutElementProduction* Process:

**TBD 2.x Example.**

```
<LayoutElementProductionParams Class="Parameter" ID="BarcodeParams"
    Status="Available">
    <LayoutElementPart>
        <BarcodeProductionParams>
            <IdentificationField Encoding="Barcode" EncodingDetails="EAN_13"
                Purpose="Label" PurposeDetails="ProductIdentification"
                Value="0123456789128"/>
            <BarcodeReproParams Height="73.50" Magnification="1.0">
                <BarcodeCompParams CompensationProcess="Printing"
                    CompensationValue="10.0"/>
            </BarcodeReproParams>
        </BarcodeProductionParams>
    </LayoutElementPart>
</LayoutElementProductionParams>
```

## 8.73 IDPrintingParams

Deprecated in JDF 1.1

See Section P.6.10, “IDPrintingParams” on page 1345 for details of this deprecated Resource.

## 8.74 ImageCompressionParams

Prior to JDF 1.2 the filtering in ImageCompressionParams was based on the terminology in PostScript and PDF. Many image compression and decompression filters require additional information in the form of a filter parameter dictionary, and additional filter parameters have been added to meet this need.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	<b>ContentList Content/ContentData, FormatConversionParams, LayoutElement, PageList, PageList/PageData RunList</b>
<b>Example Partition:</b>	<b>"DocIndex", "RunIndex", "RunTags", "DocTags", "PageTags", "SetTags", "SheetName", "Side", "SignatureName"</b>
<b>Input of Processes:</b>	<b>ImageReplacement, PDLCreation, PSToPDFConversion</b>
<b>Output of Processes:</b>	—

**Table 8-129: ImageCompressionParams Resource**

Name	Data Type	Description
ImageCompression *	element	Specifies how images are to be compressed. <b>The elements are applied in sequential order.</b>

### 8.74.1 Element: ImageCompression

**Table 8-130: ImageCompression Element (Sheet 1 of 4)**

Name	Data Type	Description
<b>AntiAliasImages ?= "false"</b>	boolean	If "true", anti-aliasing is permitted on images. If "false", anti-aliasing is not permitted. Anti-aliasing increases the number of bits per component in downsampled images to preserve some of the information that is otherwise lost by downsampling. Anti-aliasing is only performed if the image is actually downsampled and if <b>@ImageDepth</b> has a value greater than the number of bits per color component in the input image.
<b>AutoFilterImages ?= "true"</b> <u>Modified in JDF 1.2</u>	boolean	SHALL NOT be specified unless <b>@EncodeImages</b> is "true". This Attribute is not used if <b>@ImageType = "Monochrome"</b> . If "true", the filter defined by <b>@ImageAutoFilterStrategy</b> is applied to photos and the <b>"FlateEncode"</b> filter is applied to screen shots. If "false", the <b>@ImageFilter</b> compression method is applied to all images.
<b>ConvertImagesToIndexed ?</b>	boolean	If "true", the application converts images that use fewer than 257 colors to an indexed color space for compactness. This Attribute is used only when <b>@ImageType = "Color"</b> .
<b>DCTQuality ?= "0"</b>	double	A value between 0 and 1 that indicates "how much" the Process is to compress images when using a <b>"DCTEncode"</b> filter. 0.0 means "do as loss-less compression as possible." 1.0 means "do the maximum compression possible."

**Table 8-130: ImageCompression Element (Sheet 2 of 4)**

Name	Data Type	Description
<i>DownsampleImages</i> ?= "false" <a href="#">Modified in JDF 1.1A</a>	boolean	If "true", sampled color images are downsampled using the resolution specified by @ImageResolution. If "false", downsampling is not carried out and the image resolution in the PDF file is the same as that in the source file.
<i>EncodeColorImages</i> ? <a href="#">Deprecated in JDF 1.1</a>	boolean	If "true", color images are encoded using the compression filter specified by the value of the @ImageFilter key. If "false", no compression filters are applied to color sampled images.
<i>EncodeImages</i> ?= "false" <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.1A</a>	boolean	If "true", images are encoded using the compression filter specified by the value of the @ImageFilter key. If "false", no compression filters are applied to sampled images.
<i>ImageAutoFilterStrategy</i> ? <a href="#">New in JDF 1.2</a>	NMTOKEN	Selects what image compression strategy to employ if passing through an image that is not already compressed. <b>Values include:</b> <i>JPEG</i> – Lossy JPEG compression for low-frequency images and lossless Flate compression for high-frequency images. <i>JPEG2000</i> – Lossy JPEG2000 compression for low-frequency images and lossless JPEG2000 compression for high-frequency images.
<i>ImageDepth</i> ?	integer	Specifies the number of bits per component in the downsampled image when @DownsampleImages = "true". If not specified, the downsampled image has the same number of bits per sample as the original image.
<i>ImageDownsampleThreshold</i> ?= "2.0"	double	Sets the image downsample threshold for images. This is the ratio of image resolution to output resolution above which downsampling can be performed. The following short examples provide a hypothetical configuration: To use @ImageDownsampleThreshold, set the following Attributes to the values indicated: @ImageResolution = 72 @ImageDownsampleThreshold = 1.5 The input image would not be downsampled unless it has a resolution greater than (72 * 1.5) = 108 dpi
<i>ImageDownsampleType</i> ?	enumeration	Downsampling algorithm for images. <b>Allowed values are:</b> <i>Average</i> – The program averages groups of samples to get the new downsampled value. <i>Bicubic</i> – The program uses bicubic interpolation on a group of samples to get a new downsampled value. <i>Subsample</i> – The program picks the middle sample from a group of samples to get the new downsampled value.

**Table 8-130: ImageCompression Element (Sheet 3 of 4)**

Name	Data Type	Description
<i>ImageFilter</i> ? <a href="#">Modified in JDF 1.3</a>	NMOKEN	<p>Specifies the compression filter to be used for images. Ignored if <i>@AutoFilterImages</i> = "true" or if <i>@EncodeImages</i> = "false".</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>CCITTFaxEncode</i> – Used to select CCITT Group 3 or 4 facsimile encoding. Used only if <i>@ImageType</i> = "Monochrome".</li> <li><i>DCTEncode</i> – Used to select JPEG compression.</li> <li><i>FlateEncode</i> – Used to select ZIP compression.</li> <li><i>JBIG2Encode</i> – Used to select JBIG2 encoding. Used only if <i>@ImageType</i> = "Monochrome". <a href="#">New in JDF 1.3</a></li> <li><i>JPEG2000</i> – Used to select JPEG2000/Wavelet compression. <a href="#">New in JDF 1.2</a></li> <li><i>LZWEncode</i> – LZW Compression.</li> <li><i>PackBits</i> – A simple byte-oriented run length scheme.</li> </ul> <p><b>Modification note:</b> starting with JDF 1.1, the data type changes from enumeration to NMOKEN in order to allow for extensions.</p>
<i>ImageResolution</i> ?	double	Specifies the minimum resolution for downsampled color images in dots per inch. This value is used only when <i>@DownsampleImages</i> = "true". The application downsamples only images that are above that resolution to that actual resolution.
<i>ImageType</i> <a href="#">Modified in JDF 1.5</a>	enumerations	<p>Specifies the kind of images that are to be manipulated.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>All</i> – image compression is applied to all image types. <a href="#">New in JDF 1.5</a></li> <li><i>Color</i></li> <li><i>Grayscale</i></li> <li><i>Monochrome</i></li> </ul>
<i>JPXQuality</i> ? <a href="#">New in JDF 1.2</a>	integer	Specifies the image quality. Valid values are greater than or equal to one (1) and less than or equal to 100. One (1) means lowest quality (highest compression), 99 means visually lossless compression, and 100 means numerically lossless compression.
<i>CCITTFaxParams</i> ? <a href="#">New in JDF 1.2</a>	element	The equivalent of the PostScript <i>Rows</i> and <i>BlackIs1</i> parameters, which are implicit in the raster data to be compressed.
<i>DCTParams</i> ? <a href="#">New in JDF 1.2</a>	element	Provides the equivalents of the PostScript <i>Columns</i> , <i>Rows</i> and <i>Colors</i> Attributes, which are assumed to be implicit in the raster data to be compressed.
<i>FlateParams</i> ? <a href="#">New in JDF 1.2</a>	element	The equivalent of the PostScript <i>Columns</i> , <i>BitsPerComponent</i> and <i>Colors</i> parameters, which are implicit in the raster data to be compressed.
<i>JBIG2Params</i> ? <a href="#">New in JDF 1.3</a>	element	Provides the JBIG2 compression parameters.

**Table 8-130: ImageCompression Element (Sheet 4 of 4)**

Name	Data Type	Description
JPEG2000Params ? <a href="#">New in JDF 1.3</a>	element	Provides the JPEG2000 compression parameters.
LZWParams ? <a href="#">New in JDF 1.2</a>	element	The equivalent of the PostScript <i>Columns</i> , <i>BitsPerComponent</i> and <i>Colors</i> parameters, which are implicit in the raster data to be compressed

**8.74.2 Element: CCITTFaxParams**[New in JDF 1.2](#)**Table 8-131: CCITTFaxParams Element**

Name	Data Type	Description
EncodedByteAlign ?	boolean	A flag indicating whether the CCITTFaxEncode filter inserts an extra 0 bits before each encoded line so that the line begins on a byte boundary.
EndOfBlock ?	boolean	A flag indicating whether the CCITTFaxEncode filter appends an end-of-block pattern to the encoded data
EndOfLine ?	boolean	A flag indicating whether the CCITTFaxEncode filter prefixes an end-of-line bit pattern to each line of encoded data.
K ?= "0"	integer	An integer that selects the encoding scheme to be used. < 0 – Pure two-dimensional encoding (Group 4, TIFF Compression = 4) = 0 – Pure one-dimensional encoding (Group 3, 1-D, TIFF Compression = 2) > 0 – Mixed one- and two-dimensional encoding (Group 3, 2-D, TIFF Compression = 3), in which a line encoded one-dimensionally can be followed by at most K – 1 lines encoded two-dimensionally
Uncompressed ?= "false"	boolean	A flag to indicate whether the file generated can use uncompressed encoding when advantageous.

**8.74.3 Element: DCTParams**[New in JDF 1.2](#)**Table 8-132: DCTParams Element (Sheet 1 of 2)**

Name	Data Type	Description
ColorTransform ?= "Automatic"	enumeration	<p>Color transformation algorithm.</p> <p><b>Allowed values are:</b></p> <p><i>None</i> – Colors are not to be transformed.</p> <p><i>YUV</i> – RGB raster values are to be transformed to YUV before encoding and from YUV to RGB after decoding. If four channels are present, transform CMYK values to YUVK before encoding and from YUVK to CMYK after decoding.</p> <p><i>Automatic</i> – "YUV" for 3-channel raster data, "None" otherwise.</p> <p><b>Note:</b> YUV is equivalent to YCbCr in TIFF terminology.</p>
HSamples ?	IntegerList	A sequence of horizontal sampling factors—one entry per color channel in the raster data. If not specified, the implied default is "1" for every channel.

**Table 8-132: DCTParams Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>HuffTable</i> ?	DoubleList	Huffman tables for DC and AC components. If present, there SHALL be at least one HuffTable element for each color channel.
<i>QFactor</i> ?= "1.0"	double	A scale factor applied to the elements of @QuantTable.
<i>QuantTable</i> ?	DoubleList	Quantization tables. If present, there SHALL be one @QuantTable entry for each color channel.
<i>SourceCSs</i> <a href="#">Deprecated in JDF 1.6</a>	enumerations	Identifies which of the incoming color spaces will be operated on. <b>Allowed values are from:</b> Table 8-133, “SourceCSs Attribute Values” on page 686. <b>Note:</b> JDF 1.1 defined that CalRGB be treated as RGB, CalGray as Gray, and ICC-Based color spaces as one of Gray, RGB or CMYK depending on the number of channels. <b>Note:</b> In JDF 1.2, the data type was erroneously specified as enumeration, not enumerations.
<i>VSamples</i> ?	IntegerList	A sequence of vertical sampling factors—one entry per color channel in the raster data. If not specified, the implied default is "1" for every channel.

When the **DCTParams** Element is a Subelement of **ImageCompressionParams** used in a **Rendering** Process to generate TIFF files, YUV is equivalent to YCbCr in TIFF terminology. The HSamples and VSamples values are used to set YCbCrSubSampling or CIELabSubSampling. This means that they are only relevant for data supplied as Lab, or data where @ColorTransform is "YUV"; that the first element SHALL be 1 in each case; that the fourth element SHALL be 1 where CMYK data is to be compressed; and that the second and third elements SHALL equal each other.

#### — Attribute: SourceCSs

**Table 8-133: SourceCSs Attribute Values (Sheet 1 of 2)**

Value	Description
<i>Calibrated</i>	Operates on CalGray and CalRGB color spaces. <a href="#">New in JDF 1.2</a>
<i>CIEBased</i>	Operates on CIE-Based color spaces (CIEBasedA, CIEBasedABC, CIEBasedDEF, CIE-BasedDEFG).
<i>CMYK</i>	Operates on characterized and uncharacterized DeviceCMYK.
<i>DeviceN</i>	Identifies the source color encoding as a DeviceN color space. The specific DeviceN color space to operate on is defined in the DeviceNSpace Resource. If this value is specified then <b>DeviceNSpace</b> <b>DeviceNSpace</b> and <b>ColorPool</b> SHALL also be present.
<i>DevIndep</i>	Operates on Device independent color spaces (equivalent to Calibrated or CIE-Based or ICC-Based or Lab or YUV).
<i>Gray</i>	Operates on characterized and uncharacterized DeviceGray.
<i>ICCBased</i>	Operates on color spaces defined using ICC profiles. ICC-Based includes EPS, TIFF or PICT files with embedded ICC profiles. See [ICC.1].
<i>Lab</i>	Operates on Lab.
<i>RGB</i>	Operates on characterized and uncharacterized DeviceRGB

**Table 8-133: SourceCSs Attribute Values (Sheet 2 of 2)**

<b>Value</b>	<b>Description</b>
<i>Separation</i>	Operates on Separation color spaces (spot colors). The specific separation(s) to operate on are defined in the <a href="#">SeparationSpec Resource(s) @SeparationSpecSeparations Attribute</a> . If no <a href="#">SeparationSpec Resource(s) @Separations Attribute</a> is defined, the operation will operate on all the separation color spaces in the input <a href="#">RunList</a> .
<i>YUV</i>	Operates on YUV (Also known as YCbCr). See [CCIR601-2].

**8.74.4 Element: FlateParams**[New in JDF 1.2](#)**Table 8-134: FlateParams Element**

<b>Name</b>	<b>Data Type</b>	<b>Description</b>
<i>Effort</i> ?	integer	A code controlling the amount of memory used and the execution speed for Flate compression. Allowed values range from 0 to 9. A value of 0 compresses rapidly but not tightly, using little auxiliary memory. A value of 9 compresses slowly but as tightly as possible, using a large amount of auxiliary memory.
<i>Predictor</i> ?= "1"	integer	<p>A code that selects the predictor function:</p> <p><b>Note:</b> On 1X PNG predictors, these values select the specific PNG predictor function(s) to be used, as indicated above. When decoding the predictor function is explicitly encoded in the incoming data.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li>1 – No predictor (normal encoding or decoding).</li> <li>2 – TIFF Predictor 2.</li> <li>10 – PNG predictor, None function.</li> <li>11 – PNG predictor, Sub function.</li> <li>12 – PNG predictor, Up function.</li> <li>13 – PNG predictor, Average function.</li> <li>14 – PNG predictor, Path function.</li> <li>15 – PNG predictor in which the encoding filter automatically chooses the optimum function separately for each row.</li> </ul>

**8.74.5 Element: JBIG2Params**[New in JDF 1.3](#)**Table 8-135: JBIG2Params Element**

<b>Name</b>	<b>Data Type</b>	<b>Description</b>
<i>JBIG2Lossless</i> ?	boolean	If "true" requires JBIG2 compressed images to retain the exact representation of the original image without loss.

### 8.74.6 Element: JPEG2000Params

[New in JDF 1.3](#)

**Table 8-136: JPEG2000Params Element**

Name	Data Type	Description
<i>CodeBlockSize</i> ?	integer	The nominal code block width and height. SHALL be a power of 2.
<i>LayerRates</i> ?	DoubleList	Compression bit ratio for each layer. If specified, there SHALL be the same number of doubles in this list as <i>@LayersPerTile</i> in ascending order. Small values correspond to maximum compression and 1.0 corresponds to no compression (lossless). If available, <i>@LayerRates</i> SHOULD be supplied.
<i>LayersPerTile</i> ?= "1"	integer	Specifies the number of quality layers per tile at the same resolution.
<i>NumResolutions</i> ?	integer	The number of resolution levels encoded in the file.
<i>ProgressionOrder</i> ?	enumeration	Per tile progression order. <b>Allowed values are:</b> <i>LRC</i> P – layer-resolution-component-position progressive (i.e., rate scalable). <i>RLCP</i> – Resolution-layer-component-position progressive (i.e., resolution scalable). <i>RPCL</i> – Resolution-position-component-layer progressive. <i>PCRL</i> – Position-component-resolution-layer progressive. <i>CPRL</i> – Component-position-resolution-layer progressive.
<i>TileSize</i> ?	XYPair	The width and height of each encoding tile. If not specified the image is considered to be a single tile.

### 8.74.7 Element: LZWParams

[New in JDF 1.2](#)

**Table 8-137: LZWParams Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>EarlyChange</i> ?= "1"	integer	A code indicating when to increase the code word length. The TIFF specification can be interpreted to imply that code word length increases are postponed as long as possible. However, some existing implementations of LZW increase the code word length one code word earlier than necessary. The PostScript language supports both interpretations. If <i>@EarlyChange</i> is "0", code word length increases are postponed as long as possible. If it is "1", they occur one code word early. <b>Note:</b> The default SHOULD NOT be used when this <b>LZWParams</b> Element is in <b>ImageCompressionParams</b> used as an Input Resource to a <b>FormatConversion</b> Process that is creating TIFF files.

**Table 8-137: LZWParams Element (Sheet 2 of 2)**

Name	Data Type	Description
Predictor ?= "1"	integer	<p>A code that selects the predictor function:</p> <ul style="list-style-type: none"> <li>1 – No predictor (normal encoding or decoding).</li> <li>2 – TIFF Predictor 2.</li> <li>10 – PNG predictor, None function.</li> <li>11 – PNG predictor, Sub function.</li> <li>12 – PNG predictor, Up function.</li> <li>13 – PNG predictor, Average function.</li> <li>14 – PNG predictor, Path function.</li> <li>15 – PNG predictor in which the encoding filter automatically chooses the optimum function separately for each row.</li> </ul> <p><b>Note:</b> On 1X PNG predictors, these values select the specific PNG predictor function(s) to be used, as indicated above. When decoding, the predictor function is explicitly encoded in the incoming data.</p>

## 8.75 ImageEnhancementParams

[New in JDF 1.5](#)

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Example Partition:	D
Input of Processes:	<a href="#">ImageEnhancement</a>
Output of Processes:	—

**Table 8-138: ImageEnhancementParams Resource**

Name	Data Type	Description
ImageEnhancementOp *	element	Individual enhancement operations. The XML order of <b>ImageEnhancementOp</b> Elements is significant. When multiple elements apply to the same object, they are applied in that XML order.

### 8.75.1 Element: ImageEnhancementOp

[New in JDF 1.5](#)

**Table 8-139: ImageEnhancementOp Element (Sheet 1 of 2)**

Name	Data Type	Description
ObjectTags ?	NMTOKENS	<p>Tags associated with individual objects that this <b>ImageEnhancementOp</b> SHALL be applied to. Each tag specified in <b>@ObjectTags</b> is logically anded with the object type(s) specified by <b>@SourceObjects</b>, enabling first qualification by object type (such as image), and then tags associated with those objects.</p> <p>The values of <b>@ObjectTags</b> depends on the PDL that the color correction is applied to.</p> <p><b>@ObjectTags</b> SHALL apply only to objects whose tag pool includes all the tags in the value of <b>@ObjectTags</b>.</p>

**Table 8-139: ImageEnhancementOp Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Operation</i>	NMTOKEN	<p>Individual enhancement operation name.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Sharpening</i> – Image Sharpening</li> <li><i>Blurring</i> – Image Blurring</li> <li><i>RedEyeRemoval</i></li> <li><i>BestGuess</i> – Best guess automated improvements based on image analysis</li> </ul>
<i>OperationDetails?</i>	string	Additional details of the <i>@Operation</i> . The values are implementation specific.
<i>SourceObjects?</i>	enumerations	<p>Identifies which class(es) of incoming graphical objects will be operated on.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>All</i></li> <li><i>ImagePhotographic</i> – Contone images.</li> <li><i>ImageScreenShot</i> – Images largely comprised of rasterized vector art.</li> <li><i>LineArt</i> – Vector objects other than text.</li> <li><i>SmoothShades</i> – Gradients and blends.</li> <li><i>Text</i></li> </ul>

## 8.76 ImageReplacementParams

This Resource specifies parameters to control image replacement within production workflows.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Example Partition:	"DocIndex", "RunIndex", "RunTags", "DocTags", "PageTags", "SetTags", "SheetName", "Side", "SignatureName"
Input of Processes:	<i>ImageReplacement</i>
Output of Processes:	—

**Table 8-140: ImageReplacementParams Resource (Sheet 1 of 3)**

Name	Data Type	Description
<i>IgnoreExtensions?</i>	NMTOKENS	<p>Identifies a set of filename extensions that will be trimmed during searches for high-resolution images. These extensions are what will be stripped from the end of an image name to find a base name. The leading dot “.” is included. The values are examples:</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>.lay</i></li> <li><i>.e</i></li> <li><i>.samp</i></li> </ul>

**Table 8-140: ImageReplacementParams Resource (Sheet 2 of 3)**

Name	Data Type	Description
<i>ImagePreScanStrategy</i> ? <a href="#">New in JDF 1.2</a>	NMTOKEN	<p>Specifies the image pre-scanning strategy to be used on the input document data before starting the <b>RIPing RIPing</b> Process.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>NoPreScan</i> – Do not pre-scan the document looking for references to images.</li> <li><i>PreScan</i> – Pre-scan the document looking for references to images and making sure the data are accessible now so that the RIP will not encounter a fault later.</li> <li><i>PreScanAndGather</i> – Pre-scan the document looking for references to images, and copy the data to a temporary place so that the RIP will be able to access the data with a predictable and small well-bounded delay later.</li> </ul>
<i>ImageReplacementStrategy</i>	enumeration	<p>Identifies how externally referenced images will be handled within the associated Process.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Omit</i> – Complete Process maintaining only references to external data.</li> <li><i>Proxy</i> – Complete Process using available proxy images.</li> <li><i>Replace</i> – Replace external references with image data during processing.</li> <li><i>AttemptReplacement</i> – Attempt to replace external references with image data during processing. If replacement fails, complete the Process using available proxy images.</li> </ul>
<i>MaxResolution</i> ? <a href="#">Deprecated in JDF 1.1</a>	double	Reduces the resolution of images with a resolution higher than <i>@MaxResolution</i> . Replaced with a link to <b>ImageCompressionParams</b> in the Process.
<i>MaxSearchRecursion</i> ?	integer	Identifies how many levels of recursion in the search path will be traversed while trying to locate images. A value of 0 indicates that no recursion is desired.
<i>MinResolution</i> ?	double	Specifies the minimum resolution that an image SHALL have in order to be embedded. If not specified, images of any resolution can be embedded.
<i>ResolutionReductionStrategy</i> ? <a href="#">Deprecated in JDF 1.1</a>	enumeration	<p>Identifies the mechanism used for reducing the image resolution.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Downsample</i></li> <li><i>Subsample</i></li> <li><i>Bicubic</i></li> </ul> <p><b>Deprecation note:</b> starting with JDF 1.1, use a link to <b>ImageCompressionParams</b> in the Process.</p>
<b>FileSpec</b> ( <i>SearchPath</i> ) + <b>SearchPathRefs</b> <a href="#">New in JDF 1.1</a>	refelementI-DREFS	Specification of the paths to search when trying to locate the referenced data. The <b>FileSpec</b> replaces the <b>SearchPath</b> text element.

**Table 8-140: ImageReplacementParams Resource (Sheet 3 of 3)**

Name	Data Type	Description
SearchPath * <a href="#">Deprecated in JDF 1.1</a>	text element	String that identifies the paths to search when trying to locate the referenced data.

## 8.77 ImageSetterParams

This Resource specifies the settings for the imagesetter. A number of settings are OEM-specific, while others are so widely used they MAY be supported between vendors. Both filmsetter settings and platesetter settings are described with this Resource.

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

PreviewGenerationParams

**Intent Pairing:**

**ProofingIntentContentCheckIntent**

**Example Partition:**

—

**Input of Processes:**

*ImageSetting*

**Output of Processes:**

—

**Table 8-141: ImageSetterParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>AdvanceDistance</i> ?	double	Additional media advancement beyond the media dimensions on a Web-Fed Device.
<i>BurnOutArea</i> ? <a href="#">New in JDF 1.1</a>	XYPair	Size of the burnout area. The area defined by <i>@BurnOutArea</i> is exposed, regardless of the size of the image. If not specified or "0 0", only the area defined by the image is exposed.
<i>CenterAcross</i> ?	enumeration	Specifies the axis around which a Device is to center an image if the Device is capable of doing so.  <b>Allowed values are:</b> <i>None</i> – Do not center. <i>FeedDirection</i> – Image is centered around the feed-direction axis. <i>MediaWidth</i> – Image is centered around the media-width axis. <i>Both</i> – Image is centered around both axes.
<i>CutMedia</i> ?	boolean	Indicates whether or not to cut the media (Web-Fed).
<i>ManualFeed</i> ? <a href="#">New in JDF 1.2</a>	boolean	Indicates whether the media will be fed manually.
<i>MirrorAround</i> ?= " <a href="#">None</a> "	enumeration	This Attribute specifies the axis around which a Device SHALL mirror an image if the Device is capable of doing so.  <b>Allowed values are:</b> <i>None</i> – Do not mirror the image. <i>FeedDirection</i> – Image is mirrored around the feed-direction axis. <i>MediaWidth</i> – Image is mirrored around the media-width axis. <i>Both</i> – Image is mirrored around both possible axes.

**Table 8-141: ImageSetterParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>NonPrintableMarginBottom</i> ? <a href="#">New in JDF 1.3</a>	double	The width in points of the bottom margin measured inward from the edge of the <b>Media</b> with respect to the idealized Process coordinate system of the <b>ImageSetting</b> Process. The <b>Media</b> origin is unaffected by <i>@NonPrintableMarginBottom</i> . These margins are independent of the PDL content.
<i>NonPrintableMarginLeft</i> ? <a href="#">New in JDF 1.3</a>	double	Same as <i>@NonPrintableMarginBottom</i> except for the left margin.
<i>NonPrintableMarginRight</i> ? <a href="#">New in JDF 1.3</a>	double	Same as <i>@NonPrintableMarginBottom</i> except for the right margin.
<i>NonPrintableMarginTop</i> ? <a href="#">New in JDF 1.3</a>	double	Same as <i>@NonPrintableMarginBottom</i> except for the top margin.
<i>Polarity</i> ?= "Positive"	enumeration	Some Devices can invert the image (in hardware). <b>Allowed values are:</b> Positive Negative
<i>Punch</i> ? <a href="#">Deprecated in JDF 1.3</a>	boolean	If "true", indicates that the Device SHALL create registration punch holes. Use a Combined Process with a <b>Bending</b> Process to specify punching in JDF 1.3 and beyond.
<i>PunchType</i> ? <a href="#">Deprecated in JDF 1.3</a>	string	Name of the registration punch scheme (e.g., <i>Bacher</i> ). Use a Combined Process a <b>Bending</b> Process to specify punching in JDF 1.3 and beyond.
<i>Resolution</i> ?	XYPair	Resolution of the output. If not specified, the default is taken from the resolution of the input ByteMap.
<i>RollCut</i> ?	double	Length of media to be cut off of a Roll, in points.
<i>Sides</i> ?= "OneSidedFront" <a href="#">New in JDF 1.2</a>	enumeration	Indicates whether the content layout is to be imaged on one or both sides of the media. <i>@Sides</i> SHALL NOT be used unless <b>ImageSetterParams</b> describes output to a proofer. <b>Allowed values are from:</b> Table 8-142, "Sides Attribute Values" on page 694.
<i>SourceWorkStyle</i> ? <a href="#">New in JDF 1.2</a>	WorkStyle	When proofing in a "RIP once, output many" (ROOM) workflow, <i>@SourceWorkStyle</i> specifies the direction in which the bytemaps have been prepared for press. The Device is to use this information to calculate a transformation that results in a proof that is identical to the press Sheet
<i>TransferCurve</i> ?	Transfer-Function	Area coverage correction of the Device.
<i>FitPolicy</i> ? <a href="#">New in JDF 1.2</a>	element	Describes the hardware image fitting algorithms. Allows printing even if the size of the imageable area of the media does not match the requirements of the data.

**— Attribute: [Sides](#)****Table 8-142: Sides Attribute Values**

<b>Value</b>	<b>Description</b>
<i>OneSidedBackFlipX</i>	Page content is imaged on the back side of media so that the corresponding page cells back up to a blank front cell when flipping around the X axis. Equivalent to " <i>WorkAndTumble</i> " with a blank front side.
<i>OneSidedBackFlipY</i>	Page content is imaged on the back side of media so that the corresponding page cells back up to a blank front cell when flipping around the Y axis. Equivalent to " <i>WorkAndTurn</i> " with a blank front side.
<i>OneSidedFront</i>	Page content is imaged on the front side of media. This is the only value that is valid for filmsetting and platesetting. The default.
<i>TwoSidedFlipX</i>	Page content is imaged on both the front and back sides of media Sheets so that the corresponding page cells back up to each other when flipping around the X axis. Equivalent to " <i>WorkAndTumble</i> ".
<i>TwoSidedFlipY</i>	Page content is imaged on both the front and back sides of media Sheets so that the corresponding page cells back up to each other when flipping around the Y axis. Equivalent to " <i>WorkAndTurn</i> ".

## 8.78 Ink

Ink describes the ink, primer, toner or varnish that is applied to a substrate when printing or varnishing. Whereas **Color** describes the visual properties of a colorant, Ink describes the physical material that is applied to the substrate. The default unit of measurement for **Ink** is *@Unit* = "g" (gram).

**Resource Properties****Resource Class:****Consumable****Resource referenced by:****—**  
*"FountainNumber", "Separation", "SheetName", "Side",  
 "SignatureName", "WebName"***Example Partition:****ConventionalPrinting, DigitalPrinting, Varnishing****Input of Processes:****—****Output of Processes:****—****Table 8-143: Ink Resource (Sheet 1 of 3)**

<b>Name</b>	<b>Data Type</b>	<b>Description</b>
<i>ColorName</i> ? <a href="#">Deprecated in JDF 1.4</a>	string	<p>Link to a definition of the color specifics. The value of <i>@ColorName</i> color SHOULD match the <i>@Name</i> Attribute of a <b>Color</b> defined in a <b>ColorPool</b> Resource that is linked to the Process that is using the <b>Ink</b> Resource. Instead of linking the <b>ColorPool</b> Resource directly, it MAY be referenced by another Resource that is linked to the Process.</p> <p><b>Note:</b> A <i>@ColorName</i> Attribute is used differently in other Resources where it refers to a <i>@NamedColor</i> as defined in Section A.3.3.3, "NamedColor" on page 1125.</p> <p><b>Deprecation note:</b> starting with JDF 1.4, use <i>@Separation</i> Partition Key.</p>

Table 8-143: Ink Resource (Sheet 2 of 3)

Name	Data Type	Description
<i>Family</i> ?	NMTOKEN	<p>Ink family.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Ink</i> - any ink that is used as a colorant.</li> <li><i>Primer</i> - any ink that is used as a primer.</li> <li><i>Varnish</i> – liquid that is similar to ink</li> <li><i>Toner</i> – liquid that is similar to ink</li> </ul>
<i>InkName</i> ?	string	The fully qualified ink name including the ink @ <i>Family</i> name. For instance, " <i>PANTONE 138 C</i> " is a member of the PANTONE family.
<i>InkType</i> ?	NMTOKENS	<p>@<i>InkType</i> SHALL list specific ink type and qualities. e.g. @Ink-Type="Gloss Relief Varnish"</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Aqueous</i> – attribute of the ink</li> <li><i>Dull</i> – attribute of the ink</li> <li><i>Gloss</i> – attribute of the ink</li> <li><i>HKS</i> – ink</li> <li><i>ISO</i> – ink [ISO2846-1:1997] (used by SWOP)</li> <li><i>InkJet</i> – ink</li> <li><i>Latex</i> – liquid that is similar to ink</li> <li><i>Metallic</i> – attribute of the ink</li> <li><i>PANTONE</i> – ink</li> <li><i>Protective</i> – attribute of the ink</li> <li><i>Relief</i> – attribute of the ink</li> <li><i>Silicon</i> – liquid that is similar to ink</li> <li><i>Satin</i> – attribute of the ink</li> <li><i>Toyo</i> – ink</li> <li><i>Toner</i> – liquid that is similar to ink</li> <li><i>UV</i> – attribute of the ink</li> <li><i>Varnish</i> – liquid that is similar to ink</li> </ul>

**Table 8-143: Ink Resource (Sheet 3 of 3)**

Name	Data Type	Description
<i>SpecialInk</i> ? <a href="#">Modified in JDF 1.5</a>	NMTOKENS	<p>Specific ink Attributes.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Aqueous</i></li> <li><i>DullVarnish</i></li> <li><i>GlossVarnish</i></li> <li><i>Latex</i> <a href="#">New in JDF 1.5</a></li> <li><i>Protective</i></li> <li><i>ReliefVarnish</i></li> <li><i>SatinVarnish</i></li> <li><i>Silicone</i></li> <li><i>UV</i></li> <li><i>Metallic</i></li> </ul> <p><b>Modification note:</b> starting with JDF 1.4, the data type was expanded from NMTOKEN to NMTOKENS.</p>
<i>SpecificYield</i> ?	double	Weight per area at total coverage in g/m <sup>2</sup> .

## 8.79 InkZoneCalculationParams

This Resource specifies the parameters for the *InkZoneCalculation* Process.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Example Partition:</b>	<a href="#">"TileID", "WebName"</a>
<b>Input of Processes:</b>	<i>InkZoneCalculation</i>
<b>Output of Processes:</b>	—

**Table 8-144: InkZoneCalculationParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>FountainPositions</i> ?	DoubleList	Even number of positions. Each pair specifies the begin and end of the ink slides belonging to a certain fountain. The positions are in coordinates of the printable width along the cylinder axis. The first pair is associated to the first fountain position (corresponds to the Partition <i>@FountainNumber = "0"</i> ), the second to the second position ( <i>@FountainNumber = "1"</i> ), etc.
<i>PrintableArea</i> ?	rectangle	<p>Position and size of the printable area of the print cylinder in the coordinates of the <b>Preview</b> Resource.</p> <p>The Partition <i>@TileID</i> SHALL be used for each plate together with this Attribute in case of multiple plates per cylinder. Multiple plates per cylinder MAY be used in Web Printing.</p> <p>The default case is to specify a rectangle that encompasses the complete image to be printed.</p>
<i>ZoneHeight</i> ?	double	The width of one zone in the feed direction of the printing Machine being used.
<i>Zones</i> ? <a href="#">Modified in JDF 1.2</a>	integer	The number of ink zones of the press.

**Table 8-144: InkZoneCalculationParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
ZonesY ?	integer	Number of ink zones in feed direction of the press.
ZoneWidth ? <small>Modified in JDF 1.2</small>	double	The width of one zone of the printing Machine being used. Typically, the width of a zone is the width of an ink slide.
Device ? <small>New in JDF 1.2</small>	refelement	Device provides a reference to the press that the <b>InkZoneProfile</b> is defined for and is used to gather information about ink zone geometry.

## 8.80 InkZoneProfile

This Resource specifies ink zone settings that are specific to the geometry of the printing Device being used. **InkZoneProfile** Elements are independent of the Device details.

### Resource Properties

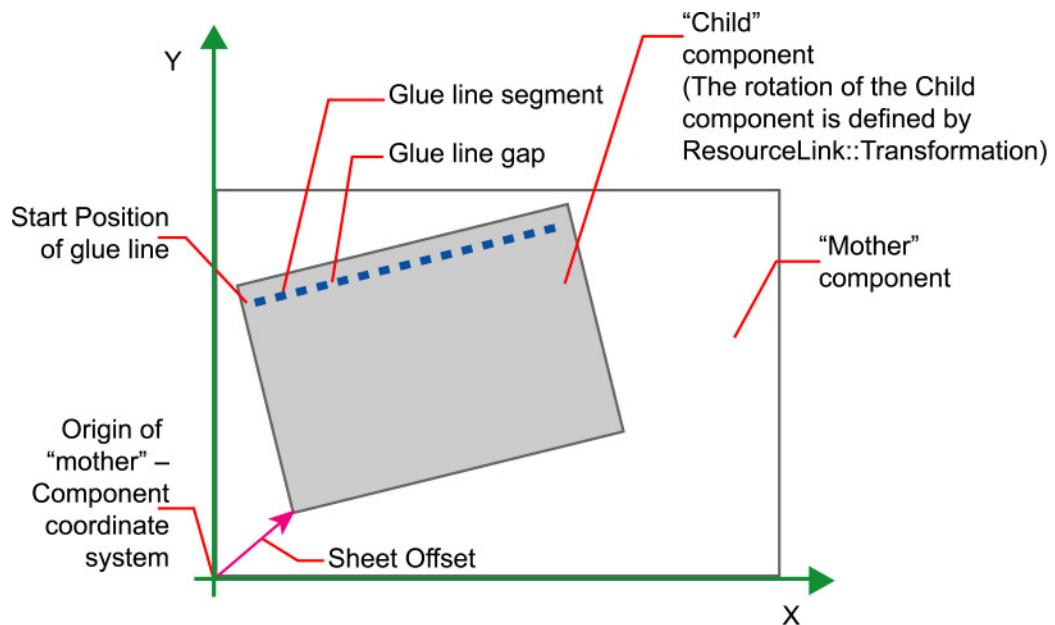
Resource Class:	Parameter
Resource referenced by:	—
Example Partition:	"FountainNumber", "Separation", "SheetName", "Side", "SignatureName", "WebName"
Input of Processes:	<i>ConventionalPrinting</i>
Output of Processes:	<i>InkZoneCalculation</i>

**Table 8-145: InkZoneProfile Resource**

Name	Data Type	Description
ZoneHeight ?	double	The width of one zone in the feed direction of the printing Machine being used.
ZoneSettingsX	DoubleList	Each entry of the @ZoneSettingsX Attribute is the value of one ink zone. The first entry is the first zone, and the number of entries equals the number of zones of the printing Device being used. Allowed values are in the range [0..1] where 0 is no ink and 1 is 100% coverage.
ZoneSettingsY ?	DoubleList	Each entry of the @ZoneSettingsY Attribute is the value of one ink zone in Y Direction. The first entry is the first zone, and the number of entries equals the number of zones of the printing Device being used. Allowed values are in the range [0..1] where 0 is no ink and 1 is 100% coverage.
ZoneWidth	double	The width of one zone of the printing Machine being used. Typically, the width of a zone is the width of an ink slide.

## 8.81 InsertingParams

This Resource specifies the parameters for the **Inserting** Process. Figure 7.13 shows the various components involved in an inserting Process, and how they interact.

**Figure 8-38: Parameters and coordinate system used for Inserting**

The process coordinate system is defined as follows: The Y-axis is aligned with the binding edge and increases from the registered edge to the edge opposite the registered edge. The X-axis, meanwhile, is aligned with the registered edge. It increases from the binding edge to the edge opposite the binding edge, which is the product front edge.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	InsertingIntent
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	Inserting
<b>Output of Processes:</b>	—

**Table 8-146: InsertingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<a href="#">FinishedPage ?</a> <a href="#">New in JDF 1.2</a>	integer	Finished Page number of the mother <b>Component</b> on which the child <b>Component</b> has to be placed. @ <i>FinishedPage</i> SHALL NOT be specified unless @ <i>InsertLocation</i> = "FinishedPage". Corresponds to @ <i>Folio</i> on <b>InsertingIntent</b> .

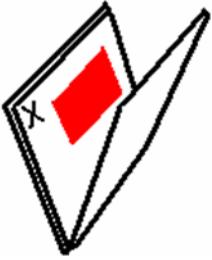
**Table 8-146: InsertingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<a href="#"><i>InsertLocation</i></a> <a href="#">Modified in JDF 1.2</a>	enumeration	<p>Where to place the “child” Sheet.</p> <p><b>Allowed values are:</b></p> <p><i>Back</i>  <i>FinishedPage</i> – Place the child exactly onto the page specified in <a href="#">@FinishedPage</a>. <a href="#">New in JDF 1.2</a></p> <p><i>Front</i>  <i>Overfold</i> – Place onto the overfold. Replaces “<i>OverfoldLeft</i>” and “<i>OverfoldRight</i>”. <a href="#">New in JDF 1.2</a></p> <p><i>OverfoldLeft</i> – <a href="#">Deprecated in JDF 1.2</a></p> <p><i>OverfoldRight</i> – <a href="#">Deprecated in JDF 1.2</a></p> <p><b>Modification note:</b> starting with JDF 1.2, this Attribute is renamed from <a href="#">@Location</a> due to a name clash with the <a href="#">@Location</a> Partition Key.</p>
<a href="#">Method</a> ?= <a href="#">"BlowIn"</a>	enumeration	<p>Inserting method.</p> <p><b>Allowed values are:</b></p> <p><i>BindIn</i> – Apply glue to fasten the insert.</p> <p><i>BlowIn</i> – Loose insert.</p>
<a href="#">SheetOffset</a> ? <a href="#">Deprecated in JDF 1.1</a>	XYPair	Offset between the Sheet to be inserted and the “mother” Sheet. <a href="#">@SheetOffset</a> is implied by the Transformation matrix in <a href="#">ResourceLink/@Transformation</a> of the child’s <a href="#">ComponentLink</a> .
<a href="#">GlueLine</a> * <a href="#">Glue</a> *	element	Array of all <a href="#">GlueLine</a> <a href="#">Glue</a> Elements. The coordinate system is defined by the mother <a href="#">Component</a> .

**Location of Inserts**[New in JDF 1.2](#)

The following graphics depict the various values of [InsertingParams/@InsertLocation](#):

**Table 8-147: Location of Inserts**

Front	Back	Overfold	Finished Page
			

Child on *Front* of mother component — is used for fixed inserts (e.g., gluing of inserts and so forth on Signatures).

Child on *Back* of mother component — is used for fixed inserts (e.g., gluing of inserts on Signatures).

The mother component is opened at the overfold and the child is placed in the center of the of the mother. *Overfold* is used for loose inserts (e.g., inserts into newspapers).

Child on “*FinishedPage*” X of mother component — can be used for loose and fixed inserts.

## 8.82 InterpretedPDLDData

Represents the results of the **Interpreting** or **RasterReading** Process. The details of this Resource are not specified, as it is assumed to be implementation dependent.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	<b>RunList</b>
Example Partition:	—
Input of Processes:	—
Output of Processes:	—

## 8.83 InterpretingParams

The **InterpretingParams** Resource contains the parameters needed to interpret PDL pages. The Resource itself is a generic Resource that contains Attributes that are relevant to all PDLS. PDL-specific instances of **InterpretingParams** Resources MAY be included as Subelements of this generic Resource. This specification defines one additional PDL-specific Resource instance: PDFInterpretingParams.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Intent Pairing:	<b>ProofingIntentContentCheckIntent</b>
Example Partition:	"DocIndex", "RunIndex", "RunTags", "DocTags", "PageTags", "SetTags", "SheetName", "Side", "SignatureName"
Input of Processes:	<i>Interpreting</i>
Output of Processes:	—

Table 8-148: InterpretingParams Resource (Sheet 1 of 3)

Name	Data Type	Description
<i>Center</i> ?= "false"	boolean	Indicates whether or not the finished page image is to be centered within the imageable area of the media. The @ <i>Center</i> is ignored if FitPolicy/@SizePolicy = "ClipToMaxPage" and clipping is specified.
<i>FilmRef</i> ?	IDREF	Reference to film <b>Media</b> . This <b>Resource</b> provides a description of the physical media which will be marked. The physical characteristics of the media MAY affect decisions made during <b>Interpreting</b> .
<i>FitToPage</i> ? <i>Deprecated in JDF 1.1</i>	boolean	Specifies whether the finished page contents is to be scaled to fit the media. In JDF 1.1 and beyond, use <b>FitPolicy</b> .
<i>MirrorAround</i> ?= "None"	enumeration	This Attribute specifies the axis around which a RIP is to mirror an image. Note that this is mirroring in the RIP and not in the hardware of the output Device.  <b>Allowed values are:</b> <i>None</i> – The default. <i>FeedDirection</i> – Image is mirrored around the feed-direction axis. <i>MediaWidth</i> – Image is mirrored around the media-width axis. <i>Both</i> – Image is mirrored around both possible axes.

**Table 8-148: InterpretingParams Resource (Sheet 2 of 3)**

Name	Data Type	Description
<i>PaperRef?</i>	IDREF	Reference to final paper <b>Media</b> . This <b>Resource</b> provides a description of the physical media which will be marked. The physical characteristics of the media MAY affect decisions made during <b>Interpreting</b> .
<i>PlateRef?</i>	IDREF	Reference to plate <b>Media</b> . This <b>Resource</b> provides a description of the physical media which will be marked. The physical characteristics of the media MAY affect decisions made during <b>Interpreting</b> .
<i>Polarity ?= "Positive"</i>	enumeration	The image SHALL be RIPed in the specified polarity. Note that this is a polarity change in the RIP and not a polarity change in the hardware of the output Device. <b>Allowed values are:</b> <i>Positive</i> <i>Negative</i>
<i>Poster?</i> <a href="#">Deprecated in JDF 1.5</a>	XYPair	Specifies whether the page contents is to be expanded such that each page covers X by Y pieces of media. <b>Deprecation note:</b> starting with JDF 1.5, use <b>Tiling</b> instead of @Poster and @PosterOverlap.
<i>PosterOverlap?</i> <a href="#">Deprecated in JDF 1.5</a>	XYPair	This pair of real numbers identifies the amounts of overlap in points for the poster tiles across the horizontal and vertical axes, respectively. <b>Deprecation note:</b> starting with JDF 1.5, use <b>Tiling</b> instead of @Poster and @PosterOverlap.
<i>PrintQuality ?= "Normal"</i> <a href="#">New in JDF 1.1</a>	enumeration	Generic switch for setting the quality of an otherwise inaccessible Device. <b>Allowed values are:</b> <i>High</i> – Highest quality available on the printer. <i>Normal</i> – The default quality provided by the printer. <i>Draft</i> – Lowest quality available on the printer.
<i>ProofPaperRef?</i>	IDREF	Reference to paper <b>Media</b> used for proofing. This <b>Resource</b> provides a description of the physical media which will be marked. The physical characteristics of the media MAY affect decisions made during <b>Interpreting</b> .
<i>Scaling?</i>	XYPair	A pair of positive real values that indicates the scaling factor for the page contents. Values between 0 and 1 specify that the contents are to be reduced, while values greater than 1 specify that the contents are to be expanded. This Attribute is ignored if @FitToPage = "true". Any scaling defined in FitPolicy SHALL be applied after the scaling defined by this Attribute.

**Table 8-148: InterpretingParams Resource (Sheet 3 of 3)**

Name	Data Type	Description
<i>ScalingOrigin</i> ?  <a href="#">New in JDF 1.1</a>	XYPair	A pair of real values that identifies the point in the unscaled PDL page that remains at the same position after scaling. This point is defined in the coordinate system of the PDL page.  For example, The <i>@ScalingOrigin</i> of a PDL page with dimensions "300 400" scaled from the PDL page center would be "150 200", regardless of the value of <i>@Scaling</i> .  <b>Modification note:</b> starting with JDF 1.4, 1) the default value MAY be set to an implementation defined value; the default value is no longer specified as "0 0" in this document; 2) the phrase "PDL page" replaces "Page"; 3) this attribute specifies the point which is not shifted when scaling is applied and doesn't specify a new Origin (i.e., lower left of the page).
<i>FitPolicy</i> ?  <a href="#">New in JDF 1.1</a>	element	Allows printing even if the size of the imageable area of the media does not match the requirements of the data. This replaces the deprecated <i>@FitToPage</i> Attribute. <b>This FitPolicy Resource SHALL be ignored in a Combined Process with <i>LayoutPreparation</i>.</b>
<i>InterpretingDetails</i> ?  <a href="#">New in JDF 1.5</a>	element	Container for interpreter-specific details.
<i>Media</i> *  <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.2</a>	refelement	This Resource provides a description of the physical media which will be marked. The physical characteristics of the media MAY affect decisions made during <i>Interpreting</i> . The cardinality was changed to "*" in JDF 1.2 in order support description of multiple media types (e.g., Film, Plate and Paper). If multiple <b>Media</b> are specified, <b>Media/@MediaType</b> defines the type of <b>Media</b> . If multiple <b>Media</b> with <b>Media/@MediaType = "Paper"</b> are specified in a proofing environment, the first <b>Media</b> is the proofer paper and the second <b>Media</b> is the final Device paper.
<i>ObjectResolution</i> *	element	Indicates the resolution at which the PDL contents will be interpreted in DPI. These Elements MAY be different from the <i>ObjectResolution</i> Elements provided in the Resource.
<i>PDFInterpretingParams</i> ?  <a href="#">New in JDF 1.1</a>	element	Details of interpreting for PDF. <b>Note that this is a Subelement in JDF 1.1 and beyond, and not an instance as in JDF 1.0.</b>
<i>PDLResourceAlias</i> ?	element	

### 8.83.1 Element: *InterpretingDetails*

[New in JDF 1.5](#)

*InterpretingDetails* contains PDL-specific instructions for an interpreter.

**Table 8-149: InterpretingDetails Element**

Name	Data Type	Description
<i>MinLineWidth</i> ?	double	If present, this attribute specifies the minimum width in points for PDL line objects. If a line is defined with a width smaller than this value it SHALL be adjusted to a line width equal to this value.  <b>Note:</b> This attribute is useful for managing the consistency of thin lines across different digital printing systems that have varying imaging resolutions.

**8.83.2 Element: PDFInterpretingParams**[New in JDF 1.1](#)**Table 8-150: PDFInterpretingParams Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>EmitPDFBG</i> ?= "true"	boolean	Indicates whether BlackGeneration functions are to be emitted.
<i>EmitPDFHalftones</i> ?= "true"	boolean	Indicates whether Halftones are to be emitted.
<i>EmitPDFTransfers</i> ?= "true"	boolean	Indicates whether Transfer functions are to be emitted
<i>EmitPDFUCR</i> ?= "true"	boolean	Indicates whether UnderColorRemoval functions are to be emitted.
<i>HonorPDFOverprint</i> ?= "true"	boolean	Indicates whether or not overprint settings in the file will be honored. If "true", the setting for overprint will be honored. If "false", it is expected that the Device does not directly support overprint and that the PDF is preprocessed to simulate the effect of the overprint settings
<i>ICCCColorAsDeviceColor</i> ?= "false"	boolean	Indicates whether colors specified by ICC color spaces are to be treated as Device colorants.
<i>OCGDefault</i> ?= "FromPDF" <a href="#">New in JDF 1.3</a>	enumeration	Specifies whether optional Content Groups (OCGs or layers) in the PDF being interpreted and not explicitly listed in subsidiary <i>OCGControl</i> Subelements, are to be included in the <b>InterpretedPDLData RunList</b> produced by the <b>Interpreting</b> Process.  <b>Allowed values are:</b> <i>Exclude</i> – All layers not explicitly listed are to be excluded. <i>FromPDF</i> – The guidelines in the PDF reference are to be used to determine whether to include each layer that is not explicitly listed. <i>Include</i> – All layers not explicitly listed are to be included.

**Table 8-150: PDFInterpretingParams Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>OCGIntent ?</i> <a href="#">New in JDF 1.3</a>	NMTOKEN	If @OCGDefault = "FromPDF", then the The value of @OCGIntent sets the intent for which OCGs are to be selected. <b>Values include:</b> <i>Design</i> – as described in [PDF1.6]. <i>View</i> – as described in [PDF1.6].
<i>OCGProcess ?</i> <a href="#">New in JDF 1.3</a>	enumeration	If @OCGDefault = "FromPDF", then the The value of @OCGProcess sets the purpose for which the <b>Interpreting</b> Process is being performed. This, in turn, sets which value from a relevant optional content usage dictionary is to be used to determine whether each OCG is included in the <b>InterpretedPDLData RunList</b> . <b>Allowed values are:</b> <i>Export</i> – PDF ExportState in the Export subdictionary. <i>Print</i> – PDF PrintState in the Print subdictionary <i>View</i> – PDF ViewState in the View subdictionary.
<i>OCGZoom ?= "1.0"</i> <a href="#">New in JDF 1.3</a>	double	If @OCGDefault = "FromPDF", then the The value of @OCGZoom sets the magnification to be assumed in comparisons with the Zoom dictionary in a relevant optional content usage dictionary to determine whether each OCG is included in the <b>InterpretedPDLData RunList</b> . A @OCGZoom value of 1.0 is assumed to be a magnification of 100%.
<i>PrintPDFAnnotations ?= "false"</i> <a href="#">Modified in JDF 1.3</a>	boolean	Indicates whether the contents of annotations on PDF pages SHALL be included in the output. This only refers to annotations that are set to print in the PDF file excluding trap annotations. Trap annotations are controlled with @PrintTrapAnnotations.
<i>PrintTrapAnnotations ?</i> <a href="#">New in JDF 1.3</a>	boolean	Indicates whether the contents of trap annotations on PDF pages SHALL be included in the output.
<i>TransparencyRenderingQuality ?</i>	double	Values are 0 to 1. A value of 0 represents the lowest allowable quality; 1 represents the highest desired quality.
<i>OCGControl *</i> <i>OCGControl *</i> <a href="#">New in JDF 1.3</a>	element	<b>OCGControl</b> provides a list of the OCGs (layers) that are to be explicitly included or excluded in the <b>InterpretedPDLData RunList</b> . Any OCGs not listed in an <b>OCGControl</b> Element SHALL follow the rules set by @OCGDefault the referenced PDF.
<i>ReferenceXObjParams ?</i> <a href="#">New in JDF 1.4</a>	element	Describes how the interpreter should handle PDF Reference XObjects

**8.83.3 Element: **OCGControl****[New in JDF 1.3](#)

**Table 8-151: OCGControl Element**

Name	Data Type	Description
<i>IncludeOCG ?= "true"</i>	boolean	Defines whether the optional content group(s) identified by <i>@OCGName</i> are to be included in the <b>InterpretedPDLData RunList</b> . If "true", then the layer SHALL be included. If "false", it SHALL NOT.  Note that the contents stream of excluded OCGs SHALL still be interpreted so that changes to CTM, etc., are acted on. The objects drawn in excluded OCGs SHALL NOT be rendered.
<i>OCGName</i>	string	The name of the optional content group(s) that SHALL be included or excluded. Note that the <i>@Name</i> Attribute of an optional content group entry is encoded as a PDF text string, and <i>@OCGName</i> is encoded with the Unicode variant identified in the <b>JDF XJDF</b> file header; names SHALL be re-encoded as necessary for comparison. Using a value for <i>@OCGName</i> that does not match any OCG in the referenced PDF file is an error (subject to <i>@SettingsPolicy</i> ), independent of the value of <i>@IncludeOCG</i> .

**8.83.4 Element: ReferenceXObjParams**[New in JDF 1.4](#)**Table 8-152: ReferenceXObjParams Element**

Name	Data Type	Description
<i>Mode</i>	NMTOKEN	Specifies how to handle a Reference XObject's reference.  <b>Values include:</b> <i>Ignore</i> – the reference is ignored, and no content is imaged for that Reference XObject. If proxy content is supplied with the Reference XObject, it is imaged. <i>ResolveAlways</i> – an attempt is made to resolve the reference, and image the graphics described by that reference. <i>ResolveIfPDFX5</i> – an attempt is made to resolve the reference ONLY if the PDF file is a valid PDF/X-5 file, AND the referenced file passes the criteria stated in section 8.4 of ISO 15930-8 (PDF/X-5).
<i>FileSpec (SearchPath)*</i>	refelement	An ordered list of <b>FileSpec</b> elements that specify search paths to search when an XObject provides a relative file specification for its target file. If not specified, then the directory that contains the PDF file being interpreted will SHALL be searched, and SHALL NOT be searched recursively.

**8.83.5 Element: PDLResourceAlias**

This Parameter provides a mechanism for referencing Resources that occur in files, or that are expected to be provided by Devices. Prepress and printing Processes have traditionally used the word "Resource" to refer to reusable data structures that are needed to perform Processes. Examples of such Resources include fonts, halftones and functions. The formats of these Resources are defined within PDLs, and instances of these Resources can occur within PDL files or can be provided by Devices.

XJDF does not provide a syntax for defining such Resources directly within a Job. Instead, Resources continue to occur within PDL files and continue to be provided by Devices. However, since it is necessary to be able to refer to these Resources from XJDF Jobs, the **PDLResourceAlias** element is provided to fulfill this need.

**Table 8-153: PDLResourceAlias Element**

Name	Data Type	Description
<b>FileSpec</b> ?	refelelement	Location of the file containing the PDL Resource. If <b>FileSpec</b> is absent, the Device is expected to provide the Resource defined by this <b>PDLResourceAlias</b> element.
<b>ResourceType</b>	string	The type of PDL Resource that is referenced. The semantic of this Attribute is defined by the PDL.
<b>SourceName</b> ?	string	The name of the Resource in the file referenced by the <b>FileSpec</b> or by the Device.
<b>FileSpec</b> ?	refelelement	Location of the file containing the PDL Resource. If <b>FileSpec</b> is absent, the Device is expected to provide the Resource defined by this <b>PDLResourceAlias</b> Resource.

## 8.83.6 More about PDFInterpretingParams

### 8.83.6.1 PDF Optional Content Groups

The order of **OCGControl** Elements has no effect; the Z-order of graphic elements that make up each optional content group (the term layer is misleading in this regard) within the PDF file defines the drawing order of those graphic elements.

Any preferences recorded in OCGs within the PDF file as to whether that OCG are to be displayed or not will be ignored if that OCG is referenced from an **OCGControl** Element, or if **@OCGDefault** is either "*Include*" or "*Exclude*"; PDF preferences are only applied when **@OCGDefault** = "*FromPDF*".

If **@OCGDefault** = "*FromPDF*", the state of all OCGs explicitly referenced from **OCGControl** Elements SHALL be set before determining the state of any remaining OCGs.

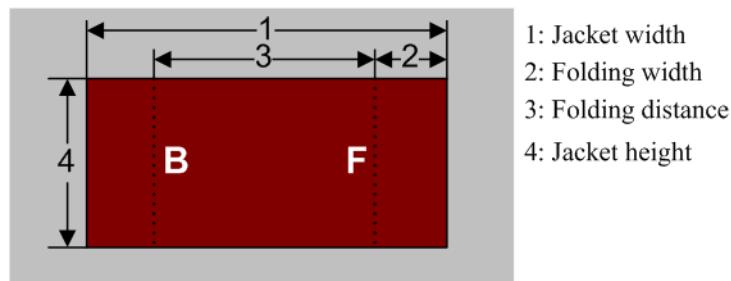
All controls for OCGs in **JDF XJDF** address OCGs directly, and not optional Content Member Dictionaries (OCMDs do not have unique names).

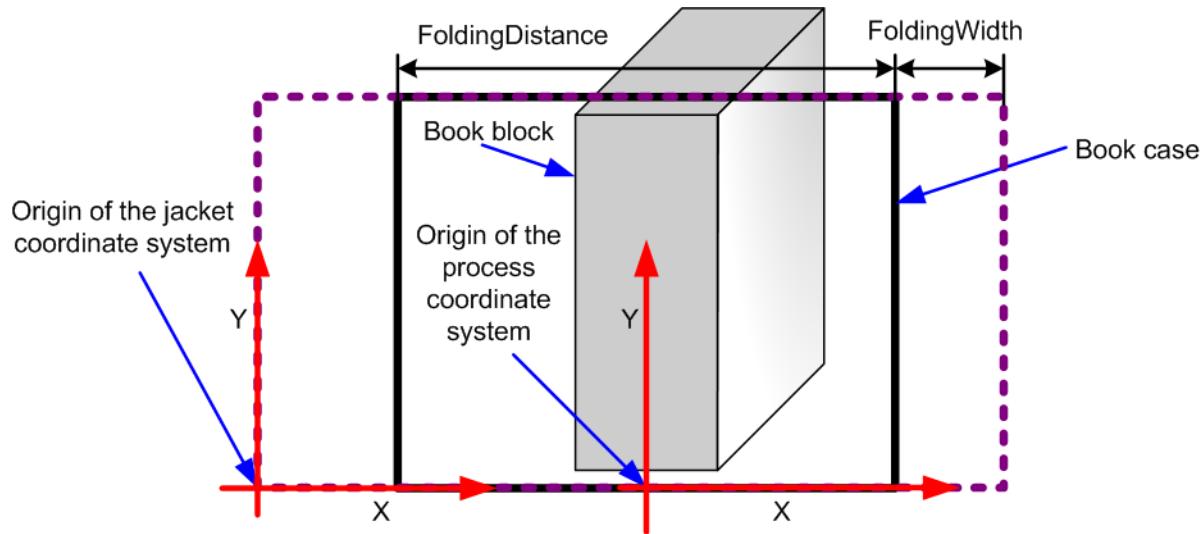
NOTE: [PDF1.6] does not state that all OCGs SHALL have unique names. It is therefore possible for a single PDF file to contain multiple OCGs with the same name. When **OCGControl**/**@OCGName** refers to multiple OCGs in a file, they will all be explicitly included or excluded together.

## 8.84 JacketingParams

[New in JDF 1.1](#)

Description of the setup of the jacketing machinery. Jacket height and width (1 and 4 in the Figure 8-39) are specified within the **Component** that describes the jacket.

**Figure 8-39: Setup of the Jacketing Machinery**

**Figure 8-40: Parameters and coordinate system for jacketing****Resource Properties****Resource Class:**

Parameter

**Resource referenced by:**

—

**Intent Pairing:**

BindingIntent

**Example Partition:**

—

**Input of Processes:**

Jacketing

**Output of Processes:**

—

**Table 8-154: JacketingParams Resource**

Name	Data Type	Description
<i>FoldingDistance</i> ? <a href="#">New in JDF 1.4</a>	double	Distance from the fold at <i>@FoldingWidth</i> to the other fold. If not specified, it defaults to width of the Jacket minus two times <i>@FoldingWidth</i> (symmetrical folds).
<i>FoldingWidth</i>	double	Definition of the dimension of the folding width of the front cover fold (see <i>@FoldingWidth</i> in the picture above). All other measurements are implied by the dimensions of the book.

**8.85 LabelingParams**[New in JDF 1.1](#)**LabelingParams** defines the details of the **Labeling** Process.**Resource Properties****Resource Class:**

Parameter

**Resource referenced by:**

—

**Example Partition:**

—

**Input of Processes:**

Labeling

**Output of Processes:**

—

**Table 8-155: LabelingParams Resource**

Name	Data Type	Description
<i>Application</i> ?	NMOKEN	Application method of the label. <b>Values include:</b> <i>Glue</i> – Glued onto the component. <i>Loose</i> – Loosely laid onto the component. <i>SelfAdhesive</i> – Self adhesive label. <i>Staple</i> – Stapled onto the component.
<i>CTM</i> ? <i>Deprecated in JDF 1.6</i>	matrix	Position and orientation of the label lower-left-corner relative to the lower left corner of the component surface as defined by <i>@Position</i> . <b>Deprecation note:</b> Use <i>@Offset</i> and <i>ComponentLink(Label)@Orientation</i> .
<i>Offset</i> ?	XYPair	Position of the lower-left-corner of the label after applying the rotation defined in <i>ComponentLinkResource(Label)@Orientation</i> relative to the lower left corner of the component surface as defined by <i>@Position</i> .
<i>Position</i> ?	enumeration	Position of the label on the bundle. <b>Allowed values are:</b> <i>Back</i> <i>Bottom</i> <i>Front</i> <i>Left</i> <i>Right</i> <i>Top</i>
<i>FileSpec(AddressList)</i> ? <i>New in JDF 1.5</i>	refelement	A <b>FileSpec</b> Resource pointing to an address list. The format of the referenced mailing list is implementation dependent.

## 8.86 LaminatingParams

[New in JDF 1.1](#)

This Resource specifies the parameters needed for laminating.

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

—

**Intent Pairing:**

LaminatingIntent

**Example Partition:**

"SheetName", "Side"

**Input of Processes:**

Laminating

**Output of Processes:**

—

**Table 8-156: LaminatingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>AdhesiveType</i> ?	string	Type of adhesive used. Valid only when <i>@LaminatingMethod</i> = "DispersionGlue".

**Table 8-156: LaminatingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>GapList</i> ?	DoubleList	List of non-laminated gap positions in the X direction of the laminating tool in the coordinate system of the <b>Component</b> . The zero-based even entries define the absolute position of the start of a gap, and the odd entries define the end of a gap. If not specified, the complete area defined by <i>@LaminatingBox</i> is laminated.
<i>HardenerType</i> ?	string	Type of hardener used. Valid only when <i>@LaminatingMethod</i> = "DispersionGlue".
<i>LaminatingBox</i> ? <i>Modified in JDF 1.4</i>	rectangle	Area on the <b>Component</b> to be laminated. <b>Modification note:</b> starting with JDF 1.4, <i>@LaminatingBox</i> becomes optional to enable <b>Laminating</b> yes/no style definitions.
<i>LaminatingMethod</i> ?	enumeration	Laminating technology that is applied. <b>Allowed values are:</b> <i>CompoundFoil</i> <i>DispersionGlue</i> <i>Fusing</i> – <i>New in JDF 1.3</i> <i>Unknown</i> – <i>Deprecated in JDF 1.2</i>
<i>ModuleIndex</i> ? <i>ModuleID</i> ? <i>New in JDF 1.4</i>	integer NMOKEN	Index <b>Identifier</b> of the laminating Module in the Press. See <b>ConventionalPrintingParams</b> . In a Combined Process, all modules of the Device, including press modules, finishing modules and varnishing modules are counted to calculate <i>@ModuleIndex</i> .
<i>NipWidth</i> ? <i>New in JDF 1.3</i>	double	Width of the nip in points to be formed between the fusing rollers and the component in the <b>Laminating</b> Process.
<i>Temperature</i> ?	double	Temperature used in the <b>Laminating</b> Process, in ° Centigrade.

## 8.87 Layout

Represents the root of the layout structure. The **Layout** is used both for fixed-layout and for automated printing.

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

**LayoutIntent**, **Component**, **CylinderLayout**, **InsertSheet**

**Example Partition:**

"SignatureName", "WebName", "RibbonName", "SheetName",  
"Side", "PartVersion"

**Input of Processes:**

**ConventionalPrinting**, **CylinderLayoutPreparation**, **DigitalPrinting**,  
**Imposition**, **InkZoneCalculation**

**Output of Processes:**

**LayoutPreparation**, **Stripping**

**Table 8-157: Layout Resource (Sheet 1 of 7)**

Name	Data Type	Description
<i>Automated</i> ?	boolean	If "true", the <b>Imposition</b> Process is expected to perform automated imposition. <b>Layout/@Automated</b> SHALL only be specified in the root Partition of <b>Layout</b> . <b>Default value is:</b> "false" in the root Partition of <b>Layout</b>

Table 8-157: Layout Resource (Sheet 2 of 7)

Name	Data Type	Description
<i>BaseOrdReset</i> ?= "PagePool" <a href="#">New in JDF 1.4</a>	enumeration	<p>Policy about how the <i>@Ord</i> Attribute of an entry SHALL be calculated when extracting a page from a <b>RunList</b> and positioning it in the <b>Layout</b>.</p> <p><b>Allowed values are:</b></p> <p><i>PagePool</i> – The Base Ord is reset to point to the first page entry of the Page Pool at the beginning of each Page Pool processed by the Imposition Template.</p> <p><i>PagePoolList</i> – At the beginning of processing of the Imposition Template, the Base Ord is reset to point to the first page entry of the first Page Pool to be processed by the Imposition Template. This results in all Page Pools that will be processed by the Imposition Template to be treated as a Page Pool List.</p>
<i>FilmRef</i> ?	IDREF	Reference to film <b>Media</b> . This Resource provides a description of the physical media which will be marked.
<i>LockOrigins</i> ?= "false" <a href="#">New in JDF 1.3</a>	boolean	Determines the relationship of the coordinate systems for front and back surfaces. When "false", all contents for all surfaces are transformed into the first quadrant, in which the origin is at the lower left corner of the surface. When "true", contents for the front surface are imaged into the first quadrant (as above), but contents for the back surface are imaged into the second quadrant, in which the origin is at the lower right. This allows the front and back origins to be aligned even if the exact media size is unknown. <a href="#">The @LockOrigins was copied from the deprecated Sheet Resource.</a>
<i>MaxCollect</i> ? <a href="#">New in JDF 1.4</a>	integer	<p>Maximum number of Sheets that will be collected into a signature. <i>@MaxCollect</i> modifies the pagination when automated imposition is selected.</p> <p>Specifying <i>@MaxCollect</i> can effectively cause a Page Pool or Page Pool List to be broken into “sub” Page Pools. Each of these “sub” Page Pools provides the set of pages mapped onto a single Collect, and are processed sequentially out of the “parent” Page Pool (or Page Pool List). Thus each sub-Page Pool effectively restarts the ord counting within the <b>Imposition Template</b> (i.e., treat a sub-Page Pool as if a new Page Pool were being started with the Imposition Template).</p> <p>If not specified, all sheets SHALL be collected.</p>
<i>MaxDocOrd</i> = "1" <a href="#">New in JDF 1.1</a> <a href="#">Deprecated in JDF 1.4</a>	integer	<p>Zero-based maximum number of Instance Documents that are consumed from a <b>RunList</b> each time the <b>Layout</b> is executed, assuming the <b>Imposition</b> Process is automated.</p> <p><b>Deprecation note:</b> see <i>@MaxOrd</i>.</p>

Table 8-157: Layout Resource (Sheet 3 of 7)

Name	Data Type	Description
<a href="#"><i>MaxOrd ?</i></a> <a href="#"><i>Deprecated in JDF 1.4</i></a>	integer	Zero-based maximum number of placed objects that are consumed from a <b>RunList</b> each time the <b>Layout</b> is executed, assuming the <b>Imposition</b> Process is automated. If not specified, it SHALL be calculated from the <i>@Ord</i> values of the <b>ContentObject</b> Elements in the <b>Layout</b> . <b>Deprecation note:</b> <i>@MaxOrd</i> has no meaning if negative <i>@Ord</i> values exist in an automated <b>Layout</b> . The consumer SHALL calculate the implied 2 values for increasing and decreasing the explicit <i>@Ord</i> values in an automated <b>Layout</b> by evaluating the actual values of <b>ContentObject</b> / <i>@Ord</i> . Increment from Front = $1 + \max(\text{ContentObject}/\text{@Ord}_+)$ where " <i>@Ord</i> _" specifies positive values of <i>@Ord</i> ; Decrement from Back = $\max(\text{abs}((\text{ContentObject}/\text{@Ord})_-))$ where " <i>@Ord</i> _" specifies negative values of <i>@Ord</i> . See ref automated <b>Layout</b> for details.
<a href="#"><i>MaxSetOrd = "1"</i></a> <a href="#"><i>New in JDF 1.1</i></a> <a href="#"><i>Deprecated in JDF 1.4</i></a>	integer	Zero-based maximum number of Document Sets that are consumed from a <b>RunList</b> each time the <b>Layout</b> is executed, assuming the <b>Imposition</b> Process is automated. <b>Deprecation note:</b> see <i>@MaxOrd</i> .
<a href="#"><i>MinCollect ?</i></a> <a href="#"><i>New in JDF 1.4</i></a>	integer	Minimum number of Sheets that will be collected into a signature. <i>@MinCollect</i> modifies the pagination when automated imposition is selected.
<a href="#"><i>Name ?</i></a> <a href="#"><i>New in JDF 1.1</i></a> <a href="#"><i>Deprecated in JDF 1.4</i></a>	string	Unique name of the <b>Layout</b> . The <i>@Name</i> is used for external reference to a <b>Layout</b> . <b>Deprecation note:</b> starting with JDF 1.4, use <i>@DescriptiveName</i> .
<a href="#"><i>OrdsConsumed ?</i></a> <a href="#"><i>New in JDF 1.4</i></a>	IntegerRangeList	Range of <i>@Ord</i> values of the <b>RunList</b> ( <i>Document</i> ) that are consumed by this <b>Layout</b> section. SHALL NOT be specified unless <i>@Automated = "true"</i> .
<a href="#"><i>PaperRef ?</i></a>	IDREF	Reference to final paper <b>Media</b> . This Resource provides a description of the physical media which will be marked.
<a href="#"><i>PlateRef ?</i></a>	IDREF	Reference to plate <b>Media</b> . This Resource provides a description of the physical media which will be marked.
<a href="#"><i>ProofPaperRef ?</i></a>	IDREF	Reference to paper <b>Media</b> used for proofing. This Resource provides a description of the physical media which will be marked.

Table 8-157: Layout Resource (Sheet 4 of 7)

Name	Data Type	Description
<i>SheetCountReset</i> ? <a href="#">New in JDF 1.4</a>	enumeration	<p>Policy as to when the automated imposition variables <i>@SheetCount</i> and <i>@TotalSheetCount</i> are reset. See Section 6.4.18.2, “Variables for Automated Imposition” on page 366.</p> <p><b>Allowed values are:</b></p> <p><i>Continue</i> – <i>@SheetCount</i> continues to increment for each sheet generated by the current Imposition Template.</p> <p><i>PagePool</i> – <i>@SheetCount</i> is reset to zero upon start of processing of a new Page Pool and <i>@TotalSheetCount</i> is determined for that new Page Pool..</p> <p><i>PagePoolList</i> – <i>@SheetCount</i> is reset to zero upon start of processing of an Imposition Template, and <i>@TotalSheetCount</i> is recalculated. Note that the value of <i>@TotalSheetCount</i> may depend on the sheets generated from successive Imposition Templates (for example, if the current Imposition Template has <i>@SheetCountReset</i> = <i>"PagePoolList"</i>, and the subsequent Imposition Template has <i>@SheetCountReset</i> = <i>"Continue"</i>, <i>@TotalSheetCount</i> will include the sheets generated by both Imposition Templates).</p> <p><b>Note:</b> <i>@SheetCount</i> and <i>@TotalSheetCount</i> are always reset to zero at the beginning of processing of a set regardless of the value of <b>Layout</b>/<i>@SheetCountReset</i>.</p>
<i>SheetNameFormat</i> ? <a href="#">New in JDF 1.4</a>	string	<p>A formatting string used with <i>@SheetNameTemplate</i> to algorithmically construct <i>@SheetName</i>. <i>@SheetNameFormat</i> and <i>@SheetNameTemplate</i> are used to identify individual parts of the <b>Layout</b> in an automated environment.</p> <p><b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.</p>
<i>SheetNameTemplate</i> ? <a href="#">New in JDF 1.4</a>	string	<p>A list of values used with <i>@SheetNameFormat</i> to algorithmically construct <i>@SheetName</i>. <i>@SheetNameFormat</i> and <i>@SheetNameTemplate</i> are used to identify individual parts of the <b>Layout</b> in an automated environment.</p> <p><b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.</p>
<i>SourceWorkStyle</i> ? <a href="#">New in JDF 1.3</a>	WorkStyle	Indicates which <i>@WorkStyle</i> was used to create the <b>Layout</b> . This is only informative and can be useful when creating double sided proofs.

Table 8-157: Layout Resource (Sheet 5 of 7)

Name	Data Type	Description
<i>SurfaceContentsBox</i> ? <a href="#">New in JDF 1.3</a>	rectangle	<p>This box, specified in <b>Layout</b>-coordinate space, defines the area into which <b>MarkObject</b> or <b>ContentObject</b> Elements are distributed. The lower left corner of the rectangle specified by the value of this Attribute establishes the coordinate system into which the content is mapped and SHOULD have a value of "<i>0 0</i>".</p> <p><b>@SurfaceContentsBox</b> MAY imply clipping.</p> <p>This Attribute SHOULD be supplied in order to get predictable placement of content. If this Attribute is not supplied, a rectangle with the origin at "<i>0 0</i>" and an extent that MAY be dependent on the dimensions of one of the <b>Media</b> is implied.</p>
<i>TemplateType</i> ?= "Normal" <a href="#">New in JDF 1.4</a>	enumeration	<p>Specifies the type of automated <b>Imposition Template</b> being defined. If <b>@TemplateType</b> = "ConditionalSheets", then this <b>Imposition Template</b> SHALL only specify conditional sheet definitions (see <b>Layout/SheetCondition</b>). Typically, such an <b>Imposition Template</b> defines conditional sheets to be generated at the beginning and/or end of job and/or set. SHALL ONLY be specified if <b>Layout/@Automated</b> = "true".</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>ConditionalSheets</i> – the <b>Imposition Template</b> contains ONLY conditional sheet definitions</li> <li><i>Normal</i> – the <b>Imposition Template</b> contains at least one sheet definition that consumes pages from the <b>RunList</b> (Document), and may contain conditional sheet definitions. If this value is specified in a partition leaf, this leaf SHALL NOT contain conditional sheet definitions.</li> </ul>
<b>ContentObject</b> *	element	<b>ContentObject</b> elements specify content that SHALL be placed on the surface in rendering order. <b>MarkObject</b> and <b>ContentObject</b> elements MAY be provided in mixed order. All <b>ContentObject</b> elements SHALL be specified on partition leaves of the <b>Layout</b> that contain at least one <b>Part/@Surface</b> .
<b>InsertSheet</b> * <a href="#">Deprecated in JDF 1.4</a>	refelement	<p>Additional Sheets that are to be inserted before and/or after a document. Depending on which Partition level the <b>InsertSheet</b> is defined, it specifies how to complete the Sheet or surface in an automated printing environment.</p> <p><b>Deprecation note:</b> starting with JDF 1.4, use <b>Layout/PageCondition</b> for "FillSheet", "FillSurface", and "FillSignature" operations; use <b>Layout/SheetCondition</b> for an insert sheet.</p>
<b>LayerList</b> ? <a href="#">New in JDF 1.1</a>	element	List of <b>LayerDetails</b> Elements.

Table 8-157: Layout Resource (Sheet 6 of 7)

Name	Data Type	Description
LogicalStackParams ? <a href="#">New in JDF 1.4</a>	element	When specified, configures the imposition engine to place content onto one or more Logical Stacks distributed on a common set of sheets. <b>Layout/LogicalStackParams</b> SHALL only be specified in the root <b>Layout</b> element AND only when <b>Layout/@Automated = "true"</b> . All Logical Stacks defined by <b>LogicalStackParams</b> SHALL be used in all Imposition Templates. See Section 6.4.18.4.1, “Using Logical Stacks” on page 371.
MarkObject *	element	MarkObject elements specify production marks that SHALL be placed on the surface in rendering order. <b>MarkObject</b> and <b>ContentObject</b> elements MAY be provided in mixed order. All <b>MarkObject</b> Elements SHALL be specified on partition leaves of the <b>Layout</b> that contain at least one <b>Part/@Surface</b> .
Media * <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.3</a>	refelement	Describes the media to be used. If multiple <b>Media</b> are specified, <b>Media/@MediaType</b> species the type of <b>Media</b> , typically Paper, Plate or Film. Multiple <b>Media</b> with the same <b>Media/@MediaType</b> SHALL NOT be specified in one <b>Layout</b> . Note that at least one <b>Media</b> SHALL be specified in the Partitioned <b>Layout</b> tree in JDF 1.3 or above.
MediaSource ? <a href="#">Deprecated in JDF 1.1</a>	refelement	Describes the media to be used. Replaced by <b>Media</b> in JDF 1.1.
PageCondition * <a href="#">New in JDF 1.4</a>	element	The <b>PageCondition</b> Elements are used only with automated imposition. They define restrictions on which page content may be placed in a <b>Layout/ContentObject</b> and. If any <b>PageCondition</b> restricts placing a page into a <b>ContentObject</b> , the Page SHALL NOT be filled into that <b>ContentObject</b> .
PlacedObject * ContentObject * <a href="#">New in JDF 1.3</a>	element	Provides a list of the <b>PlacedObject ContentObject</b> (i.e., <b>ContentObject</b> and <b>MarkObject</b> ) Elements to be placed on to the surface. Contains the marks on the surface in rendering order. All <b>PlacedObject ContentObject</b> Elements SHALL be specified in the Partition leaves of the <b>Layout</b> that contain at least one <b>Part/@Surface</b> . See Section 8.87.19.1.2, “Position of PlacedObject Elements in Layout” on page 746. <b>Note:</b> <b>PlacedObject</b> is not a container but an Abstract type.

Table 8-157: Layout Resource (Sheet 7 of 7)

Name	Data Type	Description
Position *	element	The Position Element specifies how the <b>BinderySignature</b> is placed onto a Sheet. Multiple Position objects that reference the same <b>BinderySignature</b> specify multiple identical <b>BinderySignature</b> Elements with the same content. In case the <b>BinderySignature</b> is defined by Signature-Cells, then, by default, the front pages are placed on the front side of the Sheet and the back pages are placed on the back side of the Sheet. Using the <b>@Orientation</b> Attribute one can influence this default behavior. When the <b>BinderySignature</b> is defined by <b>@FoldCatalog</b> or Fold Elements, then, by default, the lay is placed on the left front side of the Sheet. Using the <b>@Orientation</b> Attribute one can influence this default behavior. Position SHALL NOT be specified at Partition levels lower than <b>@PartVersion</b> .
SheetCondition ? <a href="#">New in JDF 1.4</a>	element	Specifies the conditions under which the optional sheet defined by this <b>Layout</b> is produced. SHALL only be present when <b>Layout/@Automated</b> = "true", and SHALL be contained within a <b>Layout</b> branch partitioned by <b>@SheetName</b> .
Signature * <a href="#">Deprecated in JDF 1.3</a>	element	The Signature Element has been replaced by a <b>Layout</b> Partition, namely <b>Layout</b> [ <b>@SignatureName</b> ]. In JDF 1.3 and beyond, <b>Signature/@Name</b> has been replaced by the Partition Key <b>Layout</b> / <b>@SignatureName</b> .
<b>TransferCurvePool</b> ? <b>TransferCurveRefs</b> ? <a href="#">New in JDF 1.1</a>	refelementIDREFS	Describes the relationship of transfer curves and coordinate systems within the various Processes.

### 8.87.1 Element: ColorControlStrip

This Resource describes a color control strip. The type of the color control strip is given in the **@StripType** Attribute. The lower left corner of the control strip box is used as the origin of the coordinate system used for the definition of the measuring fields. It can be calculated using the following formula:

$$x_0 = x - \frac{w}{2} \cos(\varphi) + \frac{h}{2} \sin(\varphi)$$

$$y_0 = y - \frac{w}{2} \sin(\varphi) - \frac{h}{2} \cos(\varphi)$$

where

- x = X element of the **@Center** Attribute
- y = Y element of the **@Center** Attribute
- w = X element of the **@Size** Attribute
- h = Y element of the **@Size** Attribute
- j = Value of the **@Rotation** Attribute

**Table 8-158: ColorControlStrip Element**

Name	Data Type	Description
<i>Center</i> ? <a href="#">Modified in JDF 1.4</a>	XYPair	Position of the center of the color control strip in the coordinates of the <b>MarkObject</b> that contains this mark. <b>Modification note:</b> starting with JDF 1.4, <i>@Center</i> is optional.
<i>Rotation</i> ?	double	Rotation in degrees. Positive graduation figures indicate counter-clockwise rotation; negative figures indicate clockwise rotation.
<i>SeparationSpec</i> * <i>Separations</i> ? <a href="#">New in JDF 1.4</a>	elementNMTO-KENS	Ordered list of separations that comprise the <b>ColorControlStrip</b> . If neither <b>CIELABMeasuringField</b> nor <b>DensityMeasuringField</b> are specified, the geometry is implied by the value of <i>@StripType</i> .
<i>Size</i> ? <a href="#">Modified in JDF 1.4</a>	XYPair	Size, in points, of the color control strip. <b>Modification note:</b> starting with JDF 1.4, <i>@Size</i> is optional.
<i>StripType</i> ? <a href="#">Modified in JDF 1.5</a>	string	Type of color control strip. This Attribute MAY be used for specifying a predefined, company-specific color control strip. <b>Modification note:</b> starting with JDF 1.5, the data type of this attribute was changed from NMTOKEN to string.
<b>CIELABMeasuringField</b> * <a href="#">New in JDF 1.1</a>	element	Details of a CIELAB measuring field that is part of this <b>ColorControlStrip</b> .
<b>DensityMeasuringField</b> * <a href="#">New in JDF 1.1</a>	refelementele- ment	Details of a density measuring field that is part of this <b>ColorControlStrip</b> .
<i>SeparationSpec</i> * <i>Separations</i> ? <a href="#">New in JDF 1.4</a>	elementNMTO-KENS	Ordered list of separations that comprise the <b>ColorControlStrip</b> . If neither <b>CIELABMeasuringField</b> nor <b>DensityMeasuringField</b> are specified, the geometry is implied by the value of <i>@StripType</i> .

### 8.87.2 Element: **CIELABMeasuringField**

Information about a color measuring field. The color is specified as CIE-L\*a\*b\* value.

**Table 8-159: CIELABMeasuringField Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Center</i>	XYPair	Position of the center of the color measuring field in the coordinates of the <b>MarkObject</b> that contains this mark. If the measuring field is defined within a <b>ColorControlStrip</b> , <i>@Center</i> refers to the rectangle defined by <i>@Center</i> and <i>@Size</i> of the <b>ColorControlStrip</b> .
<i>CIELab</i>	LabColor	L*a*b* color specification.

**Table 8-159: CIELABMeasuringField Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>DensityStandard ?</i> <a href="#">Deprecated in JDF 1.1</a>	enumeration	<p>Density filter standard used during density measurements.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>ANSIA</i> – ANSI Status A</li> <li><i>ANSIE</i> – ANSI Status E</li> <li><i>ANSII</i> – ANSI Status I</li> <li><i>ANSIT</i> – ANSI Status T.</li> <li><i>DIN16536</i></li> <li><i>DIN16536NB</i></li> </ul> <p><b>Deprecation note:</b> starting with JDF 1.1, use <b>ColorMeasurementConditions/@DensityStandard</b>.</p>
<i>Diameter ?</i> <a href="#">Modified in JDF 1.1</a>	double	Diameter of the measuring field.
<i>Light</i> <a href="#">Deprecated in JDF 1.1</a>	NMOKEN	<p>Type of light.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>D50</i></li> <li><i>D65</i></li> </ul>
<i>Observer ?</i> <a href="#">Deprecated in JDF 1.1</a>	integer	Observer in degree (2 or 10). In JDF 1.1 and beyond, use <b>ColorMeasurementConditions/@Observer</b> .
<i>Percentages ?</i>	DoubleList	Percentage values for each separation. The number of array Elements SHALL match the number of separations.
<i>ScreenRuling ?</i>	DoubleList	Screen ruling values in lines per inch for each separation. The number of array Elements SHALL match the number of separations.
<i>ScreenShape ?</i>	string	Shape of screening dots.
<i>Setup ?</i> <a href="#">Deprecated in JDF 1.1</a>	string	<p>Description of measurement setup.</p> <p><b>Deprecation note:</b> starting with JDF 1.1, use details from <b>ColorMeasurementConditions</b></p>
<i>Tolerance ?</i> <a href="#">Modified in JDF 1.1</a>	double	Tolerance in ΔE.
<i>ColorMeasurementConditions ?</i> <a href="#">New in JDF 1.1</a>	refelement	Detailed description of the measurement conditions for color measurements.

### 8.87.3 Element: DensityMeasuringField

This [Resource](#) contains information about a density measuring field.

**Table 8-160: DensityMeasuringField Resource**

Name	Data Type	Description
<i>Center</i>	XYPair	Position of the center of the density measuring field in the coordinates of the <b>MarkObject</b> that contains this mark. If the measuring field is defined within a <b>ColorControlStrip</b> , <i>@Center</i> refers to the rectangle defined by <i>@Center</i> and <i>@Size</i> of the <b>ColorControlStrip</b> .
<i>Density</i> <a href="#">Modified in JDF 1.1A</a>	DoubleList	Density value for each process color measured with filter.  The data type was modified to NumberList in JDF 1.1A in order to accommodate density values >1.0. The sequence of colors is C M Y K, as in the data type CMYKColor.
<i>Diameter</i>	double	Diameter of measuring field.
<i>DotGain</i>	double	Percentage of dot gain.
<i>Percentage</i>	double	Film percentage or equivalent.
<i>Screen</i>	string	Description of the screen.
<i>Separation</i>	string	Reference to a Separation that this applies <b>DensityMeasuringField</b> to.  When <b>DensityMeasuringField</b> is used as an Element, it is a standard Attribute, otherwise when <b>DensityMeasuringField</b> is used as a Resource, <i>@Separation</i> SHALL be defined as a <i>@Separation</i> Partition Key.
<i>Setup ?</i>	string	Description of measurement setup.
<i>ToleranceBlack</i>	XYPair	Upper and lower black measurement limits (in density units).
<i>ToleranceCyan</i>	XYPair	Upper and lower cyan measurement limits (in density units).
<i>ToleranceDotGain</i>	XYPair	Upper and lower measurement limits (in%).
<i>ToleranceMagenta</i>	XYPair	Upper and lower magenta measurement limits (in density units).
<i>ToleranceYellow</i>	XYPair	Upper and lower yellow measurement limits (in density units).
<b>ColorMeasurementConditions ?</b> <a href="#">New in JDF 1.1</a>	refelement	Detailed description of the measurement conditions for color measurements.

#### 8.87.4 Element: **DeviceMark**

The **DeviceMark** Element specifies the formatting parameters for how text for a device mark should be marked. This text is provided by an associated **JobField** Element (see **Layout/MarkObject/JobField** or **LayoutElementProductionParams/JobField**).

Two methods for text layout are provided by **DeviceMark**. First, text can be placed within a bounding box defined by a containing **MarkObject** (see **MarkObject/@TrimSize** for defining the size of that bounding box). When this feature is selected, **DeviceMark/@Font**, **DeviceMark/@FontSize**, **DeviceMark/**

**@HorizontalFitPolicy** and **DeviceMark/@VerticalFitPolicy** MAY be used to specify how text SHALL be fit within that bounding box.

The second method allows the bounding box defined by the text itself to be positioned, rotated, and scaled (along with the text). This facility operates through specifying an anchor point on that bounding box, and having the **MarkObject/@CTM** operate relative to that anchor point. **DeviceMark** Attributes that affect this method are **DeviceMark/@Font** and **DeviceMark/@FontSize**.

See figures below for illustrations of marks generated by **DeviceMark**.

## Element Properties

Element referenced by: **Layout/MarkObject**

**Table 8-161: DeviceMark Element (Sheet 1 of 2)**

Name	Data Type	Description
<b>Anchor ?</b> <a href="#">New in JDF 1.4</a>	Anchor	Anchor point on or within the bounding box of the text marked by this <b>DeviceMark</b> that <b>MarkObject/@CTM</b> refers to. When <b>@Anchor</b> is specified, <b>MarkObject/@TrimSize</b> , <b>DeviceMark/@HorizontalFitPolicy</b> and <b>DeviceMark/@VerticalFitPolicy</b> are ignored. <b>Note:</b> the bounding box of this <b>DeviceMark</b> is defined by the extent of the text being marked.
<b>Font ?</b>	NMTOKEN	The name of the font that is to be used for the <b>DeviceMark</b> . <b>Values include:</b> <i>Courier</i> <i>Helvetica</i> <i>Helvetica-Condensed</i> <i>Times-Roman</i>
<b>FontSize ?</b> <a href="#">Modified in JDF 1.4</a>	double	The size of the font that is to be used for the <b>DeviceMark</b> , in points $\geq 0$ . <b>Modification note:</b> starting with JDF 1.4, the data type is no longer integer.
<b>HorizontalFitPolicy ?</b> <a href="#">New in JDF 1.4</a>	enumeration	<b>Allowed values are from:</b> <b>StripMark/@HorizontalFitPolicy</b> .
<b>MarkJustification ?</b> <a href="#">Deprecated in JDF 1.4</a>	enumeration	Description of the preferred <b>DeviceMark</b> justification. Interpreted in context of the <b>@MarkOrientation</b> . <b>Allowed values are:</b> <i>Center</i> <i>Left</i> <i>Right</i> <b>Deprecation note:</b> starting with JDF 1.4, use <b>DeviceMark/@Anchor</b> to specify the point in the bounding box defined by the text being marked relative to which <b>MarkObject/@CTM</b> is applied to.
<b>MarkOffset ?</b> <a href="#">Deprecated in JDF 1.4</a>	XYPair	Description of the preferred <b>DeviceMark</b> offset. Interpreted in context of the Device dependent default position in the coordinate system defined by <b>@MarkOrientation</b> . <b>Deprecation note:</b> starting with JDF 1.4, use the <b>MarkObject/@CTM</b> to appropriately place the mark.

**Table 8-161: DeviceMark Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>MarkOrientation ?</i> <a href="#">Deprecated in JDF 1.4</a>	enumeration	Description of the preferred DeviceMark orientation. <b>Allowed values are:</b> <i>Horizontal</i> <i>Vertical</i> <b>Deprecation note:</b> starting with JDF 1.4, use the <code>MarkObject/@CTM</code> to appropriately rotate the mark.
<i>MarkPosition ?</i> <a href="#">Deprecated in JDF 1.4</a>	enumeration	Description of the preferred DeviceMark position. <b>Allowed values are:</b> <i>Top</i> <i>Bottom</i> <i>Left</i> <i>Right</i> <b>Deprecation note:</b> starting with JDF 1.4, use <code>@Anchor</code> .
<i>VerticalFitPolicy ?</i> <a href="#">New in JDF 1.4</a>	enumeration	<b>Allowed values are from:</b> <code>StripMark/@VerticalFitPolicy</code>
<i>BarcodeReproParams ?</i> <a href="#">New in JDF 1.4</a>	element	Reproduction parameters for Barcodes specified in the parent <code>MarkObject/IdentificationField</code> .

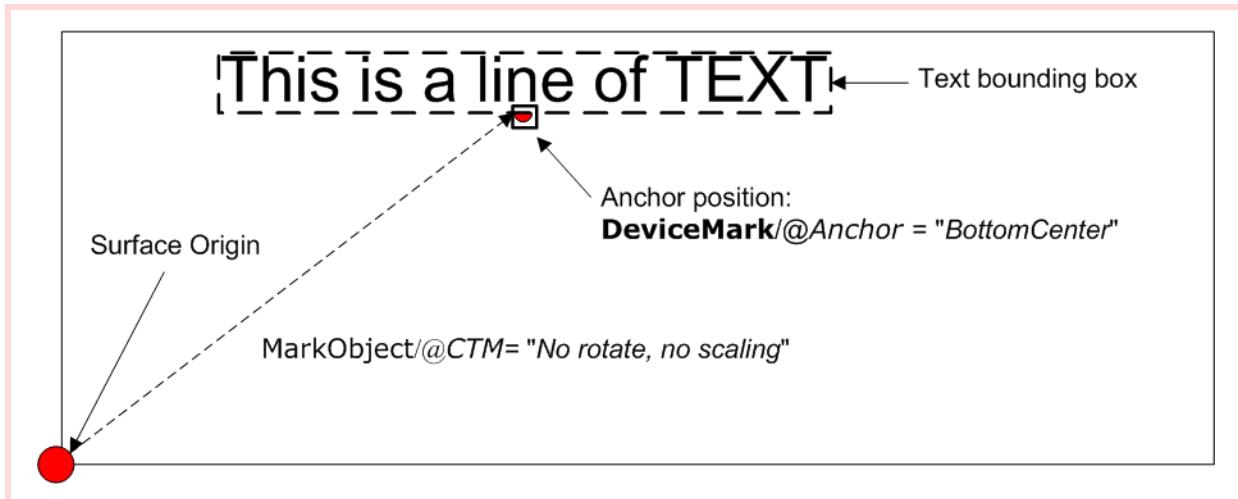
**Figure 8-41: Anchor with No Scaling and No Rotation**

Figure 8-42: Anchor with No Scaling and Rotation of 90° Clockwise

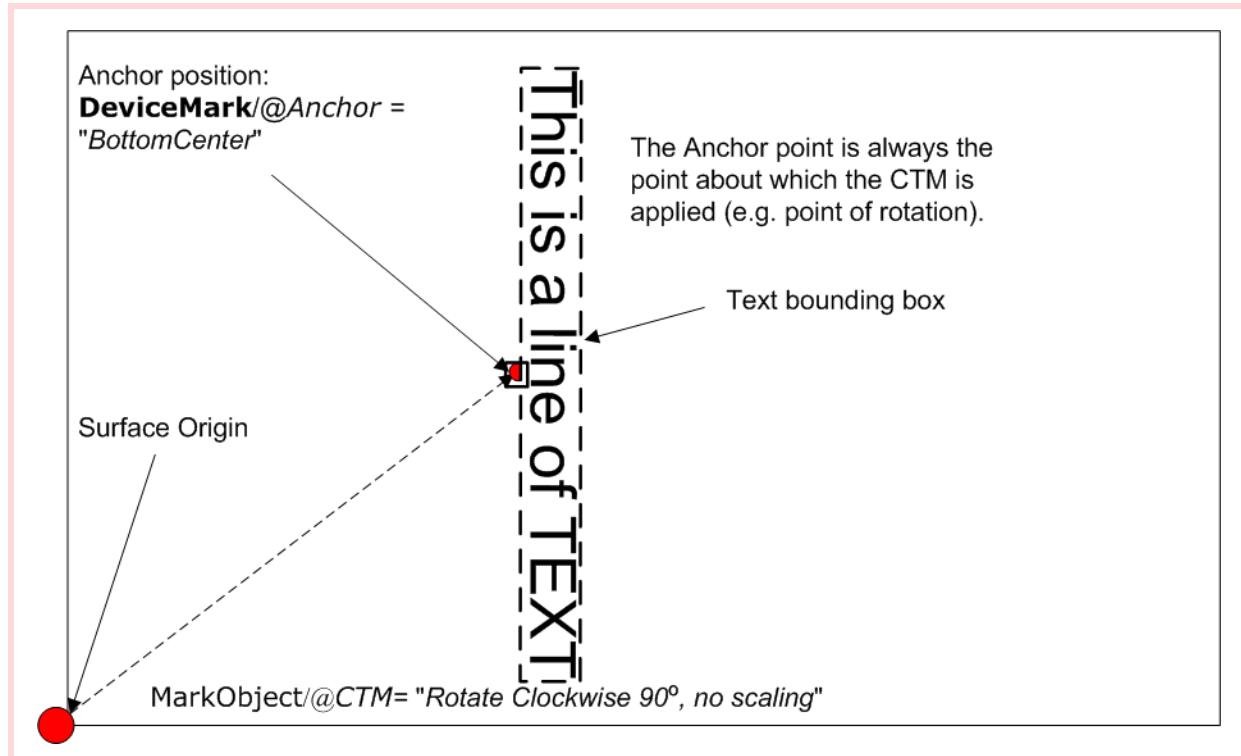
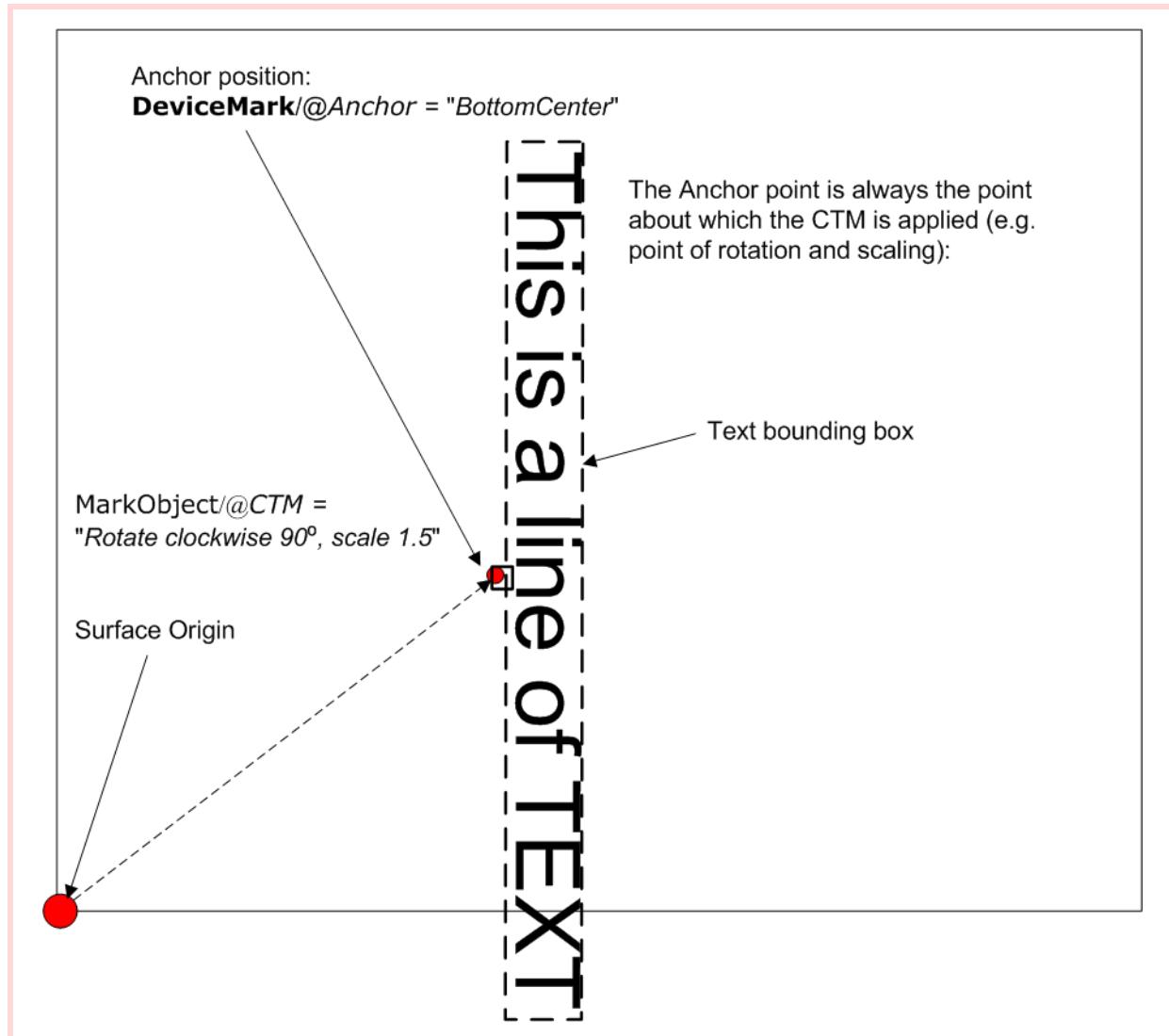


Figure 8-43: Anchor with 1.5 Scaling and Rotation of 90° Clockwise



### 8.87.5 Element: [LayerList](#)

[New in JDF 1.1](#)

This Element provides a container for an ordered list of LayerDetails Elements. The individual Elements are referenced by their zero-based index in the LayerList using the `@LayerIDs` Partition Key.

Table 8-162: LayerList Element

Name	Data Type	Description
LayerDetails *	element	Details of the individual layers.

### 8.87.6 Element: [LayerDetails](#)

[New in JDF 1.1](#)

This Element provides information about individual layers.

**Table 8-163: LayerDetails Element**

Name	Data Type	Description
<i>Name</i> ?	string	Unique name of the layer.

**8.87.7 Element: LogicalStackParams**[New in JDF 1.4](#)**Table 8-164: LogicalStackParams Element**

Name	Data Type	Description
<i>MaxStackDepth</i> ?	integer	Maximum number of imposed sheets to generate as an Imposed Sheet Set (the size of the Logical Stack). Implementations SHALL generate the minimum stack size to accommodate the available number of Logical Sheets if the total number of required sheets for the last stack is smaller than <i>@MaxStackDepth</i> .
<i>Restrictions</i> ?= "None"	enumeration	<p>Describes any restrictions set on the placement of a Recipient Set's Logical Sheets within or across Imposed Sheet Sets.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>None</i> – a recipient set's Logical Sheets may be placed across both Logical Stacks and Imposed Sheet Sets.</li> <li><i>WithinImposedSheetSet</i> – a Recipient Set's Logical Sheets SHALL be placed within a single Imposed Sheet Set</li> <li><i>WithinLogicalStack</i> – a Recipient Set's Logical Sheets SHALL be placed within a single Logical Stack.</li> </ul>
<i>Stack</i> +*	element	Describes parameters to control the sequencing of Logical Sheets onto individual Logical Stacks.

**8.87.8 Element: Stack**[New in JDF 1.4](#)**Table 8-165: Stack Element**

Name	Data Type	Description
<i>LogicalStackOrd</i>	integer	0-based Logical Stack identifier that specifies which Logical Stack is controlled by this Stack Element. The value of <i>Stack/@LogicalStackOrd</i> SHALL correspond to a <i>PlacedObject/ContentObject/@LogicalStackOrd</i> or <i>MarkObject/@LogicalStackOrd</i> value.
<i>LogicalStackSequence</i> ?= "SheetIndex"	enumeration	<p>Specifies how Logical Sheets SHALL be placed onto the Logical Stack.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>SheetIndex</i> – Logical Sheets are placed in the order of ascending <i>@SheetIndex</i>.</li> <li><i>DescendingSheetIndex</i> – Logical Sheets are placed in the order of descending <i>@SheetIndex</i>.</li> </ul>

### 8.87.9 Element: PageCondition

[New in JDF 1.4](#)

The PageCondition Element defines restrictions on when page content SHALL NOT be placed in a ContentObject of a **Layout**. Before placing page content from a **RunList** into a ContentObject the PageCondition/@*RestrictedContentObjects* Attribute SHALL be checked for the @*Ord* of the ContentObject. If the @*Ord* of the ContentObject is in the @*RestrictedContentObjects* Attribute Value, the alternate content, if any, SHALL be placed in the ContentObject. After skipping a restricted ContentObject, the **Imposition** Process SHALL then place the current page content into the location defined by the next ContentObject (after that specified by the @*RestrictedContentObject*). This corresponds to incrementing the effective @*Ord* value of the page in the **RunList** by 1, effectively incrementing the total number of pages of the **RunList**. If the next ContentObject is also restricted then the process is repeated. PageCondition Elements are processed in their XML order.

**Table 8-166: PageCondition Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Condition</i> ?	enumeration	<p>Specifies the conditions when the PageCondition applies. Condition SHALL NOT be specified if <b>PartPart</b> Elements are present.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>PagePoolStart</i> – the condition is true when the @<i>Ord</i> refers to the first page of a Page Pool in the <b>RunList</b>.</li> <li><i>PagePoolEnd</i> – after processing of the Page Pool is completed, the condition is true for all unused @<i>Ord</i> positions in the current Collect.</li> <li><i>PagePoolListStart</i> – the condition is true when the @<i>Ord</i> refers to the first page of an aggregated set of Page Pools in the <b>RunList</b>.</li> <li><i>PagePoolListEnd</i> – after processing of the Page Pool list is completed, the condition is true for all unused Ord positions in the current Collect.</li> </ul>
<i>RestrictedContentObjects</i>	IntegerList	List of @ <i>Ord</i> values of those ContentObject Elements into which page content that matches the conditions as specified in <b>PartPart</b> or PageCondition/@ <i>Condition</i> SHALL NOT be placed.
<b>RunList</b> ? <b>RunListRef</b> ?	refelementI-DREF	<p>Alternate page content that SHALL be placed into the ContentObject Elements that are specified in @<i>RestrictedContentObjects</i> when the PageCondition evaluates to "true". The first page of the referenced <b>RunList</b> SHALL be used.</p> <p><b>Note:</b> the behavior of providing alternate content using <b>RunList</b> is defined only if @<i>Condition</i> is specified.</p>
<b>Part</b> *	element	<p>Specifies the conditions when the PageCondition applies. Multiple <b>PartPart</b> Elements specify alternate page conditions (ORing of them).</p> <p><b>PartPart</b> Elements SHALL NOT be specified if @<i>Condition</i> is present.</p>

**Table 8-166: PageCondition Element (Sheet 2 of 2)**

Name	Data Type	Description
<b>RunList ?RunListRef ?</b>	refelementI-DREF	Alternate page content that SHALL be placed into the ContentObject Elements that are specified in <i>@RestrictedContentObjects</i> when the PageCondition evaluates to "true". The first page of the referenced RunList SHALL be used.  <b>Note:</b> the behavior of providing alternate content using RunList is defined only if <i>@Condition</i> is specified.

**Example 8-19: PageCondition**New in JDF 1.4**TBD 2.x Example.**

```

<Layout Class="Parameter" ID="L000004" Status="Available"
        PartIDKeys="SheetName Side" BaseOrdReset="PagePoolList">
  <PageCondition RestrictedContentObjects="1 -1">
    <!--
      This example assumes that the pages of a sequence of documents of the
      RunList are to be treated as an aggregate page pool, and the pages are
      to be saddle stitch imposed onto a continuous sequence of sheets. Some
      documents of the sequence represent a start of a new chapter where their
      DocTag is set to the value 'Chapter'. These chapter starts force the
      first page of each chapter to be placed on the right side finished page.
    -->
    <Part DocTags="Chapter" DocRunIndex="0"/>
  </PageCondition>
  <Layout SheetName="Mysheet">
    <Layout Side="Front">
      <ContentObject CTM="1 0 0 1 0 0" Ord="-1"/>    <!-- Outside left -->
      <ContentObject CTM="1 0 0 1 595 0" Ord="0" /> <!-- outside right -->
    </Layout>
    <Layout Side="Back">
      <ContentObject CTM="1 0 0 1 0 0" Ord="1"/>    <!-- inside left-->
      <ContentObject CTM="1 0 0 1 595 0" Ord="-2"/> <!-- inside right-->
    </Layout>
  </Layout>
</Layout>

```

### 8.87.10 Element: SheetCondition

[New in JDF 1.4](#)

**Table 8-167: SheetCondition Element**

Name	Data Type	Description
<i>Condition ?</i>	enumerations	<p>When present, defines an optional sheet by specifying each condition (equivalent to a logical or) under which the optional sheet is produced.</p> <p><b>Values include:</b></p> <p><i>Begin</i> – At beginning of imposition processing (all sets in case of multiple Recipient Sets)</p> <p><i>End</i> – At the end of imposition processing.</p> <p><i>BeginSet</i> – At beginning of processing of an individual Recipient Set.</p> <p><i>EndSet</i> – At end of processing of an individual Recipient Set.</p> <p><i>PagePoolBegin</i> – At beginning of processing of a Page Pool.</p> <p><i>PagePoolEnd</i> – At the end of processing of a Page Pool.</p> <p><i>PagePoolListBegin</i> – At beginning of processing of a Page Pool List</p> <p><i>PagePoolListEnd</i> – At end of processing of a Page Pool List</p> <p><i>LogicalStackBegin</i> – adds a Logical Sheet to the beginning of each Logical Stack generated as part of an Imposed Sheet Set.</p> <p><i>LogicalStackEnd</i> – adds a Logical Sheet to the end of each Logical Stack generated as part of an Imposed Sheet Set.</p> <p><i>LogicalStackSetBegin</i> – At beginning of generation of a set of Logical Stacks. Note that <i>@LogicalStackOrd</i> SHALL be used to indicate the Logical Stack on which the conditional sheet is placed.</p> <p><i>LogicalStackSetEnd</i> – At end of generation of a set of Logical Stacks. Note that <i>@LogicalStackOrd</i> SHALL be used to indicate the Logical Stack on which the conditional sheet is placed.</p> <p><i>ImposedSheetSetBegin</i> – At beginning of generation of an Imposed Sheet Set. Note that this generates a separator sheet not counted as part of the Imposed Sheet Set. Any <b>MarkObject</b> Elements specifying <i>@LogicalStackOrd</i> are ignored.</p> <p><i>ImposedSheetSetEnd</i> – At end of generation of an Imposed Sheet Set. Note that this generates a separator sheet not counted as part of the Imposed Sheet Set. Any <b>MarkObject</b> Elements specifying <i>@LogicalStackOrd</i> are ignored.</p>
<b>RunList ?RunListRef ?</b>	<b>refelementI-DREF</b>	Supplies content for any <b>ContentObject</b> Elements specified within the optional sheet definition. All <b>ContentObject</b> Elements in the optional sheet definition SHALL reference content supplied by this <b>RunList</b> .

### 8.87.11 PlacedObject

**MarkObject** elements and **ContentObject** Elements describe the placement of content onto a sheet surface.

### 8.87.12 Element: PlacedObject

The marks that are to be placed on the designated surface of a **Layout** come in two varieties: **ContentObject** or **MarkObject** Elements. All inherit characteristics from the Abstract PlacedObject which is described below.

#### 8.87.12.1 Element: Abstract PlacedObject

Table 8-168: Abstract PlacedObject Element (Sheet 1 of 4)

Name	Data Type	Description
<i>Anchor</i> ? <a href="#">New in JDF 1.4</a>	Anchor	Specifies the anchor point of the PlacedObject that remains in place on the surface when the value of <i>@TrimSize</i> changes. <i>@Anchor</i> is specified in the coordinate system of the PlacedObject prior to application of the <i>@CTM</i> . <b>Note:</b> the <i>@Anchor</i> Attribute is metadata used to identify to an Imposition generation utility a fixed anchor point reference to an abstract content page. This may occur when a JDF <b>Layout</b> Resource is used as a template for that utility. This attribute has no effect on processing when a <b>Layout</b> Resource is input to the <b>Imposition</b> Process.
<i>AssemblyIDs</i> ? <a href="#">New in JDF 1.5</a>	NMTOKENS	Identification of the <b>Assembly</b> Elements if <b>Stripping</b> describes an imposition scheme for multiple <b>Assembly</b> Elements. <i>@AssemblyIDs</i> MAY contain multiple NMTOKENS, when the <b>Assembly</b> Resource specifies an intermediate product that contains multiple final assemblies or when multiple <b>BinderySignature</b> elements are bound into one <b>Assembly</b> .
<i>ClipBox</i> ?	rectangle	Clipping rectangle in the coordinates of the <i>@SurfaceContentsBox</i> . <i>@ClipBox</i> SHALL NOT be present if PlacedObject/ <i>@ClipBoxFormat</i> is supplied.
<i>ClipBoxFormat</i> ? <a href="#">New in JDF 1.4</a>	string	A formatting string used with <i>@ClipBoxTemplate</i> to algorithmically construct <i>@ClipBox</i> . <i>@ClipBoxFormat</i> SHALL ONLY be present if PlacedObject/ <i>@ClipBox</i> is not supplied and <b>Layout</b> / <i>@Automated</i> = "true". <b>Allowed values are from:</b> Appendix I, "Generating strings with Format and Template" on page 1171.
<i>ClipBoxTemplate</i> ? <a href="#">New in JDF 1.4</a>	string	A list of values used with <i>@ClipBoxFormat</i> to algorithmically construct <i>@ClipBox</i> . <i>@ClipBoxTemplate</i> SHALL ONLY be present if PlacedObject/ <i>@ClipBox</i> is not supplied and <b>Layout</b> / <i>@Automated</i> = "true". <b>Allowed values are from:</b> Appendix I, "Generating strings with Format and Template" on page 1171.

**Table 8-168: Abstract PlacedObject Element (Sheet 2 of 4)**

Name	Data Type	Description
<i>ClipPath?</i> <a href="#">New in JDF 1.3</a>	PDFPath	Clip path for the <i>PlacedObject</i> in the coordinates of the <i>@SurfaceContentsBox</i> (lower left of <i>@SurfaceContentsBox</i> is used as reference zero point, same as for <i>@ClipBox</i> ). The actual clip region is the intersection of <i>@ClipBox</i> and <i>@ClipPath</i> or the intersection of <i>@ClipBox</i> and <i>@SourceClipPath</i> . Thus both clip paths are applied sequentially and the resulting clip region is smaller than each individual clip Box or Path. <i>@ClipPath</i> and <i>@SourceClipPath</i> SHALL NOT be specified in the same <i>PlacedObject</i> . <i>@ClipPath</i> SHOULD be specified when both <i>@ClipPath</i> and <i>@SourceClipPath</i> are known because <i>@ClipPath</i> provides a more stable coordinate system (not sensitive to shifts caused by editing the page).
<i>CompensationCTMFormat?</i> <a href="#">New in JDF 1.4</a>	string	A formatting string used with <i>@CompensationCTMTemplate</i> to algorithmically construct a compensation CTM that SHALL be concatenated to CTM. <i>@CompensationCTMFormat</i> MAY be present if <i>Layout/@Automated = "true"</i> . <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.
<i>CompensationCTMTemplate</i> ? <a href="#">New in JDF 1.4</a>	string	A list of values used with <i>@CompensationCTMFormat</i> to algorithmically construct a compensation CTM that SHALL be concatenated to CTM. <i>@CompensationCTMTemplate</i> MAY be present if <i>Layout/@Automated = "true"</i> . <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.
<i>CTM</i>	matrix	The coordinate transformation matrix (CTM — a Postscript term) of the object in the <i>@SurfaceContentsBox</i> . For details, see Figure 2-10, “Equation for Surface Coordinate System Transformations,” on page 41. The origin of the source coordinate system is the lower left (expressed in the source coordinate system) of the object and the origin of the destination coordinate system is lower left of the <i>@SurfaceContentsBox</i> . For details, see Section 2.5.1.1, “Source Coordinate Systems” on page 37. <b>Note:</b> <i>@CTM</i> SHALL be recalculated if the object is replaced afterwards with a new object with different dimensions.
<i>HalfTonePhaseOrigin = "0 0"</i>	XYPair	Location of the origin for screening of this <i>ContentObject</i> . Specified in the coordinate systems of <i>@SurfaceContentsBox</i> .

**Table 8-168: Abstract PlacedObject Element (Sheet 3 of 4)**

Name	Data Type	Description
<i>LayerID</i> ? <a href="#">New in JDF 1.1</a>	integer	If a <b>Layout</b> supports layering (e.g., for versioning), <i>@LayerID</i> specifies the index of the <b>Layout/LayoutList/</b> <b>LayerDetails</b> Element in <b>Layout/LayoutList</b> that a ContentObject belongs to (e.g., the language layer version). The details of the layers are specified in the <b>Layout/</b> <b>LayoutList/</b> <b>LayerDetails</b> Element.
<i>LogicalStackOrd</i> ? <a href="#">New in JDF 1.4</a>	integer	0-based Logical Stack identifier that this <b>PlacedObject</b> belongs to. <i>@LogicalStackOrd</i> SHALL match the <i>@LogicalStackOrd</i> of an entry in <b>Layout/</b> <b>LogicalStackParams/Stack</b> .
<i>OrdID</i> ? <a href="#">New in JDF 1.1</a>	integer	If a <b>Layout</b> supports layering (e.g., for versioning), elements that belong to the same final page SHOULD have a matching <i>@OrdID</i> .
<i>SourceClipPath</i> ? <a href="#">Modified in JDF 1.3</a>	PDFPath	Clip path for the <b>PlacedObject</b> in the source coordinate system. <i>@SourceClipPath</i> is applied to the referenced source object in addition to any clipping that is internal to the object. Internal transformation of the source object (Rotation key in PDF, Orientation Tag in TIFF etc.) SHALL be applied prior to applying <i>@SourceClipPath</i> . <i>@ClipPath</i> and <i>@SourceClipPath</i> SHALL NOT be specified in the same <b>PlacedObject</b> . See Section 2.5.1.1, “Source Coordinate Systems” for definitions of source coordinate systems.
<i>TrimClipPath</i> ? <a href="#">New in JDF 1.4</a>	PDFPath	The die cutting path for the <b>PlacedObject</b> in the coordinates of the <i>@SurfaceContentsBox</i> (lower left of <i>@SurfaceContentsBox</i> is used as reference zero point, same as for <i>@ClipBox</i> ). That path can be used for proofing purpose. <b>Note:</b> the <i>@TrimClipPath</i> Attribute may be used by an Imposition generation utility when a JDF <b>Layout</b> Resource is used as a template for that utility. This Attribute has no effect on processing when a <b>Layout</b> resource is input to the <b>Imposition</b> Process.
<i>TrimCTM</i> ? <a href="#">New in JDF 1.1</a>	matrix	The transformation matrix of the trim box to be applied to the object’s referenced content in the coordinate system of <i>@SurfaceContentsBox</i> . Note that imposition programs that execute the <b>Layout</b> SHALL recalculate the <i>@CTM</i> in case the referenced content is replaced with new referenced content having different dimensions, otherwise the position of the content inside the trim box will shift. This recalculation is based on <i>@Anchor</i> , <i>@TrimCTM</i> , <i>@TrimSize</i> and trim box. <b>Note:</b> the <i>@TrimCTM</i> Attribute may be used by an Imposition generation utility when a JDF <b>Layout</b> Resource is used as a template for that utility. This Attribute has no effect on processing when a <b>Layout</b> Resource is input to the <b>Imposition</b> Process.

**Table 8-168: Abstract PlacedObject Element (Sheet 4 of 4)**

Name	Data Type	Description
<i>TrimSize</i> ? <a href="#">New in JDF 1.2</a> <a href="#">Modified in JDF 1.4</a>	XYPair	<p>The size of the object's trim box as viewed in the object source coordinates (@@<i>TrimCTM</i> scaling and rotation NOT applied). <a href="#">Modified in JDF 1.4</a></p> <p>@<i>TrimSize</i> is needed when replacing the object by a new object with a different dimension.</p> <p>When a <b>Layout</b> resource is input to the <b>Imposition</b> Process, @<i>TrimSize</i> specifies the bounding box to be used for text layout when processing a <b>MarkObject/DeviceMark</b> or for scaling and rotation when processing <b>PlacedObject/FitPolicy</b>.</p> <p><b>Note:</b> Recalculation of <b>PlacedObject/@CTM</b> is only necessary when the <b>Stripping</b> Process or application needs to replace some pages from the provided <b>RunList</b> (using the <b>Layout</b> as a kind of imposition "template"). To ensure correct placement of a new page in the <b>Layout</b>, <b>PlacedObject/@CTM</b> recalculations SHOULD always be done according to <b>PlacedObject/@TrimCTM</b> and <b>PlacedObject/@TrimSize</b>. Together, these two Attributes represent the trimming information of the imposition software page, which is not always the same as the original <b>RunList</b> page trimming information (= <b>LayoutElement/@SourceTrimBox</b> when real trim box of the object is known).</p> <p>Usage of both <b>PlacedObject</b> Elements <b>@TrimCTM</b> and <b>@TrimSize</b> Attributes will allow page replacements on any type of imposition <b>Layout</b>.</p>
<i>Type</i> ? <a href="#">Deprecated in JDF 1.1</a>	enumeration	<p>Describes the kind of <b>PlacedObject</b>.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Content</i></li> <li><i>Mark</i></li> </ul>
<i>FitPolicy</i> ? <a href="#">New in JDF 1.4</a>	element	<p>SHALL NOT be present when <b>Layout/@Automated = "false"</b>. Specifies automated fit policy for the page cell described by the <b>PlacedObject</b>. When present, <b>PlacedObject/@TrimSize</b> SHALL also be present in the <b>PlacedObject</b>, and represents the cell size for this <b>PlacedObject</b>.</p>

### 8.87.13 Element: ContentObject

**ContentObject** Elements describe containers for page content on a surface. They are filled from the content **RunList** of the **Imposition** Process. For print applications where page count varies from Instance Document to Instance Document, imposition templates can automatically assign pages to the correct surface and **PlacedObject/ContentObject** position.

**Table 8-169: ContentObject Element (Sheet 1 of 5)**

Name	Data Type	Description
<i>Anchor</i> ?	Anchor	Specifies the anchor point of the <b>PlacedObject ContentObject</b> that remains in place on the surface when the value of <b>@TrimSize</b> changes. <b>@Anchor</b> is specified in the coordinate system of the <b>PlacedObject ContentObject</b> prior to application of the <b>@CTM</b> . <b>Note:</b> the <b>@Anchor</b> Attribute is metadata used to identify to an Imposition generation utility a fixed anchor point reference to an abstract content page. This may occur when a <b>JDF</b> or <b>XJDF Layout</b> Resource is used as a template for that utility. This attribute has no effect on processing when a <b>Layout</b> Resource is input to the <b>Imposition</b> Process.
<i>AssemblyIDs</i> ? <i>BinderySignatureIDs</i> ? <sub>New in JDF 1.5</sub>	NMTOKENS	Identification of the <b>Assembly</b> Elements if <b>Stripping</b> describes an imposition scheme for multiple <b>Assembly</b> Elements. <b>@AssemblyIDs</b> <b>@BinderySignatureIDs</b> MAY contain multiple NMTOKENS, when the <b>Assembly</b> Resource specifies an intermediate product that contains multiple final assemblies or when multiple <b>BinderySignature</b> elements are bound into one <b>Assembly</b> . If specified, <b>@BinderySignatureIDs</b> SHALL list the <b>BinderySignature</b> / <b>@BinderySignatureID</b> of all BinderySignatures that contain pages that are referenced by this <b>ContentObject</b> .
<i>ClipBox</i> ?	rectangle	Clipping rectangle in the coordinates of the <b>@SurfaceContentsBox</b> . <b>@ClipBox</b> SHALL NOT be present if <b>PlacedObject ContentObject</b> / <b>@ClipBoxFormat</b> is supplied.
<i>ClipBoxFormat</i> ?	string	A formatting string used with <b>@ClipBoxTemplate</b> to algorithmically construct <b>@ClipBox</b> . <b>@ClipBoxFormat</b> SHALL ONLY be present if <b>PlacedObject ContentObject</b> / <b>@ClipBox</b> is not supplied and <b>Layout/ @Automated = "true"</b> . <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.
<i>ClipBoxTemplate</i> ?	string	A list of values used with <b>@ClipBoxFormat</b> to algorithmically construct <b>@ClipBox</b> . <b>@ClipBoxTemplate</b> SHALL ONLY be present if <b>PlacedObject ContentObject</b> / <b>@ClipBox</b> is not supplied and <b>Layout/ @Automated = "true"</b> . <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.

**Table 8-169: ContentObject Element (Sheet 2 of 5)**

Name	Data Type	Description
<i>ClipPath?</i>	PDFPath	Clip path for the <a href="#">PlacedObject ContentObject</a> in the coordinates of the <a href="#">@SurfaceContentsBox</a> (lower left of <a href="#">@SurfaceContentsBox</a> is used as reference zero point, same as for <a href="#">@ClipBox</a> ). The actual clip region is the intersection of <a href="#">@ClipBox</a> and <a href="#">@ClipPath</a> or the intersection of <a href="#">@ClipBox</a> and <a href="#">@SourceClipPath</a> . Thus both clip paths are applied sequentially and the resulting clip region is smaller than each individual clip Box or Path. <a href="#">@ClipPath</a> and <a href="#">@SourceClipPath</a> SHALL NOT be specified in the same <a href="#">PlacedObject ContentObject</a> . <a href="#">@ClipPath</a> SHOULD be specified when both <a href="#">@ClipPath</a> and <a href="#">@SourceClipPath</a> are known because <a href="#">@ClipPath</a> provides a more stable coordinate system (not sensitive to shifts caused by editing the page).
<i>CompensationCTMFormat ?</i>	string	A formatting string used with <a href="#">@CompensationCTMTemplate</a> to algorithmically construct a compensation CTM that SHALL be concatenated to CTM. <a href="#">@CompensationCTMFormat</a> MAY be present if <a href="#">Layout/@Automated = "true"</a> . <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.
<i>CompensationCTMTemplate ?</i>	string	A list of values used with <a href="#">@CompensationCTMFormat</a> to algorithmically construct a compensation CTM that SHALL be concatenated to CTM. <a href="#">@CompensationCTMTemplate</a> MAY be present if <a href="#">Layout/@Automated = "true"</a> . <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.
<i>CTM</i>	matrix	The coordinate transformation matrix (CTM — a Postscript term) of the object in the <a href="#">@SurfaceContentsBox</a> . For details, see Figure 2-10, “Equation for Surface Coordinate System Transformations,” on page 41. The origin of the source coordinate system is the lower left (expressed in the source coordinate system) of the object and the origin of the destination coordinate system is lower left of the <a href="#">@SurfaceContentsBox</a> . For details, see Section 2.5.1.1, “Source Coordinate Systems” on page 37. <b>Note:</b> <a href="#">@CTM</a> SHALL be recalculated if the object is replaced afterwards with a new object with different dimensions.
<i>DocOrd ?</i> <a href="#">New in JDF 1.1</a>	integer	Reference to an index of an Instance Document in the content <a href="#">RunList</a> . This references an Instance Document with an index module. <a href="#">Layout/@MaxDocOrd</a> equals <a href="#">@DocOrd</a> in an automated layout scenario. The index can either be known explicitly from a variable <a href="#">RunList</a> or implicitly from the index within an indexable content definition language (e.g., PPML).

**Table 8-169: ContentObject Element (Sheet 3 of 5)**

Name	Data Type	Description
<i>HalfTonePhaseOrigin</i> ?  <a href="#">New in JDF 1.5</a>	XYPair	Location of the origin for screening of this ContentObject. Specified in the coordinate systems of <i>@SurfaceContentsBox</i> .
<i>ID</i> ?  <a href="#">New in JDF 1.5</a>	ID	Identifier for referencing this ContentObject from <i>MarkObject/@ContentRef</i> .
<i>LogicalStackOrd</i> ?	integer	0-based Logical Stack identifier that this <i>PlacedObject ContentObject</i> belongs to. <i>@LogicalStackOrd</i> SHALL match the <i>@LogicalStackOrd</i> of an entry in <i>Layout/LogicalStackParams/Stack</i> .
<i>Ord</i> ?  <a href="#">Modified in JDF 1.4</a>	integer	A zero-based reference to an index in the content <b>RunList</b> . The index is incremented for every page of the <b>RunList</b> with <i>@IsPage = "true"</i> . The <i>@Ord</i> value of the first page of a <b>RunList</b> has the value <i>"0"</i> . If <i>Layout/@Automated = "true"</i> , <i>@Ord</i> MAY be a negative integer in a <i>ContentObject</i> . In this case, the explicit <i>@Ord</i> for each iteration of the automated <b>Layout</b> is calculated by subtracting the appropriate number of <i>@Ord</i> values from the back of the document. For details on automated <b>Layout</b> , see Section 6.4.18, “ <i>Imposition</i> ” on page 362.
<i>OrdExpression</i> ?	string	Function to calculate an <i>@Ord</i> value dynamically, using a value of <i>s</i> for Signature number and <i>n</i> for total number of pages in the Instance Document. The <i>@Ord</i> or <i>@DocOrd</i> and <i>@OrdExpression</i> are mutually exclusive in one <i>PlacedObject ContentObject</i> .  <b>Value format is from:</b> Section 8.87.19.5, “ <i>Using Expressions in the OrdExpression Attribute</i> ” on page 749.
<i>SetOrd</i> ?  <a href="#">New in JDF 1.1</a>	integer	A non-negative, zero-based reference to an index of a Document Set in the content <b>RunList</b> . This references an Instance Document with an index module. <b>Layout/@MaxSetOrd = @SetOrd</b> in an automated layout scenario. The index can either be known explicitly from a variable <b>RunList</b> or implicitly from the index within an indexable content definition language (e.g., PPML).
<i>SourceClipPath</i> ?	PDFPath	Clip path for the <i>PlacedObject ContentObject</i> in the source coordinate system. <i>@SourceClipPath</i> is applied to the referenced source object in addition to any clipping that is internal to the object. Internal transformation of the source object (Rotation key in PDF, Orientation Tag in TIFF etc.) SHALL be applied prior to applying <i>@SourceClipPath</i> . <i>@ClipPath</i> and <i>@SourceClipPath</i> SHALL NOT be specified in the same <i>PlacedObject ContentObject</i> . See Section 2.5.1.1, “ <i>Source Coordinate Systems</i> ” for definitions of source coordinate systems.

**Table 8-169: ContentObject Element (Sheet 4 of 5)**

Name	Data Type	Description
<i>TrimClipPath</i> ?	PDFPath	<p>The die cutting path for the <b>PlacedObject ContentObject</b> in the coordinates of the <b>@SurfaceContentsBox</b> (lower left of <b>@SurfaceContentsBox</b> is used as reference zero point, same as for <b>@ClipBox</b>). That path can be used for proofing purpose.</p> <p><b>Note:</b> the <b>@TrimClipPath</b> Attribute may be used by an Imposition generation utility when an XJDF <b>Layout</b> Resource is used as a template for that utility. This Attribute has no effect on processing when a <b>Layout</b> Resource is input to the <b>Imposition</b> Process.</p>
<i>TrimCTM</i> ?	matrix	<p>The transformation matrix of the trim box to be applied to the object's referenced content in the coordinate system of <b>@SurfaceContentsBox</b>. Note that imposition programs that execute the <b>Layout</b> SHALL recalculate the <b>@CTM</b> in case the referenced content is replaced with new referenced content having different dimensions, otherwise the position of the content inside the trim box will shift. This recalculation is based on <b>@Anchor</b>, <b>@TrimCTM</b>, <b>@TrimSize</b> and trim box.</p> <p><b>Note:</b> the <b>@TrimCTM</b> Attribute may be used by an Imposition generation utility when an XJDF <b>Layout</b> Resource is used as a template for that utility. This Attribute has no effect on processing when a <b>Layout</b> Resource is input to the <b>Imposition</b> Process.</p>

**Table 8-169: ContentObject Element (Sheet 5 of 5)**

Name	Data Type	Description
<i>TrimSize</i> ?	XYPair	<p>The size of the object's trim box as viewed in the object source coordinates ((@<i>TrimCTM</i> scaling and rotation NOT applied)).</p> <p>@<i>TrimSize</i> is needed when replacing the object by a new object with a different dimension.</p> <p>When a <b>Layout</b> Resource is input to the <b>Imposition</b> Process, @<i>TrimSize</i> specifies the bounding box to be used for text layout when processing a <b>MarkObject/DeviceMark</b> or for scaling and rotation when processing <b>PlacedObject ContentObject/FitPolicy</b>.</p> <p><b>Note:</b> Recalculation of <b>PlacedObject ContentObject/@CTM</b> is only necessary when the <b>Stripping</b> Process or application needs to replace some pages from the provided <b>RunList</b> (using the <b>Layout</b> as a kind of imposition "template"). To ensure correct placement of a new page in the <b>Layout</b>, <b>PlacedObject ContentObject/@CTM</b> recalculations SHOULD always be done according to <b>PlacedObject ContentObject/@TrimCTM</b> and <b>PlacedObject ContentObject/@TrimSize</b>. Together, these two Attributes represent the trimming information of the imposition software page, which is not always the same as the original <b>RunList</b> page trimming information (= <b>LayoutElementRunList/@SourceTrimBox</b> when real trim box of the object is known).</p> <p>Usage of both <b>PlacedObject ContentObject</b> Elements @<i>TrimCTM</i> and @<i>TrimSize</i> Attributes will allow page replacements on any type of imposition <b>Layout</b>.</p>
<b>FitPolicy</b> ?	element	SHALL NOT be present when <b>Layout/@Automated = "false"</b> . Specifies automated fit policy for the page cell described by the <b>ContentObject</b> . When present, <b>ContentObject/@TrimSize</b> SHALL also be present and represent the cell size for this <b>ContentObject</b> .

#### 8.87.14 Element: **MarkObject**

**MarkObject** Elements describe containers for **page production** marks on a surface. The PDL for the marks **SHOULD MAY** exist prior to imposing. In this case The Marks and **SHOULD** be filled from the **RunList (Marks)** of the **Imposition** Process. **Marks MAY** instead be specified in a manner that allows the imposition engine to generate the marks on the fly. An individual **MarkObject** represents the content data of the Marks. The content data in individual **MarkObject** Elements **MAY** contain multiple logical marks.

Table 8-170: **MarkObject** Element (Sheet 1 of 6)

Name	Data Type	Description
<i>Anchor</i> ?	Anchor	<p>Specifies the anchor point of the <b>PlacedObject</b> <b>MarkObject</b> that remains in place on the surface when the value of <b>@TrimSize</b> changes. <b>@Anchor</b> is specified in the coordinate system of the <b>PlacedObject</b> <b>MarkObject</b> prior to application of the <b>@CTM</b>.</p> <p><b>Note:</b> the <b>@Anchor</b> Attribute is metadata used to identify to an Imposition generation utility a fixed anchor point reference to an abstract content page. This may occur when an XJDF <b>Layout</b> Resource is used as a template for that utility. This attribute has no effect on processing when a <b>Layout</b> Resource is input to the <b>Imposition</b> Process.</p>
<i>AssemblyIDs</i> ? <i>BinderySignatureIDs</i> ? <u>New in JDF 1.5</u>	NMTOKENS	<p>Identification of the <b>Assembly</b> Elements if <b>Stripping</b> describes an imposition scheme for multiple <b>Assembly</b> Elements. <b>@AssemblyIDs</b> <b>@BinderySignatureIDs</b> MAY contain multiple NMTOKENS, when the <b>Assembly</b> Resource specifies an intermediate product that contains multiple final assemblies or when multiple <b>BinderySignature</b> elements are bound into one <b>Assembly</b>. If specified, <b>@BinderySignatureIDs</b> SHALL list the <b>BinderySignature</b>/<b>@BinderySignatureID</b> of all <b>BinderySignatures</b> that contain pages that are referenced by this <b>MarkObject</b>.</p>
<i>ClipBox</i> ?	rectangle	<p>Clipping rectangle in the coordinates of the <b>@SurfaceContentsBox</b>. <b>@ClipBox</b> SHALL NOT be present if <b>PlacedObject</b> <b>MarkObject</b>/<b>@ClipBoxFormat</b> is supplied.</p>
<i>ClipBoxFormat</i> ?	string	<p>A formatting string used with <b>@ClipBoxTemplate</b> to algorithmically construct <b>@ClipBox</b>. <b>@ClipBoxFormat</b> SHALL ONLY be present if <b>PlacedObject</b> <b>MarkObject</b>/<b>@ClipBox</b> is not supplied and <b>Layout/@Automated = "true"</b>.</p> <p><b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.</p>
<i>ClipBoxTemplate</i> ?	string	<p>A list of values used with <b>@ClipBoxFormat</b> to algorithmically construct <b>@ClipBox</b>. <b>@ClipBoxTemplate</b> SHALL ONLY be present if <b>PlacedObject</b> <b>MarkObject</b>/<b>@ClipBox</b> is not supplied and <b>Layout/@Automated = "true"</b>.</p> <p><b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.</p>

**Table 8-170: MarkObject Element (Sheet 2 of 6)**

Name	Data Type	Description
<i>ClipPath?</i>	PDFPath	Clip path for the <i>PlacedObject</i> <i>MarkObject</i> in the coordinates of the <i>@SurfaceContentsBox</i> (lower left of <i>@SurfaceContentsBox</i> is used as reference zero point, same as for <i>@ClipBox</i> ). The actual clip region is the intersection of <i>@ClipBox</i> and <i>@ClipPath</i> or the intersection of <i>@ClipBox</i> and <i>@SourceClipPath</i> . Thus both clip paths are applied sequentially and the resulting clip region is smaller than each individual clip Box or Path. <i>@ClipPath</i> and <i>@SourceClipPath</i> SHALL NOT be specified in the same <i>PlacedObject</i> <i>MarkObject</i> . <i>@ClipPath</i> SHOULD be specified when both <i>@ClipPath</i> and <i>@SourceClipPath</i> are known because <i>@ClipPath</i> provides a more stable coordinate system (not sensitive to shifts caused by editing the page).
<i>CompensationCTMFormat?</i>	string	A formatting string used with <i>@CompensationCTMTemplate</i> to algorithmically construct a compensation CTM that SHALL be concatenated to CTM. <i>@CompensationCTMFormat</i> MAY be present if <i>Layout/@Automated</i> = "true". <b>Allowed values are from:</b> Appendix I, "Generating strings with Format and Template" on page 1171.
<i>CompensationCTMTemplate?</i>	string	A list of values used with <i>@CompensationCTMFormat</i> to algorithmically construct a compensation CTM that SHALL be concatenated to CTM. <i>@CompensationCTMTemplate</i> MAY be present if <i>Layout/@Automated</i> = "true". <b>Allowed values are from:</b> Appendix I, "Generating strings with Format and Template" on page 1171.
<i>ContentRef?</i> <u>New in JDF 1.4</u>	IDREF	<i>@ContentRef</i> refers to the <i>ContentObject</i> that this <i>MarkObject</i> is related to. <i>@ContentRef</i> is used to define the object that metadata for generating dynamic marks MAY be extracted from.
<i>CTM?</i>	matrix	The coordinate transformation matrix (CTM — a Postscript term) of the object in the <i>@SurfaceContentsBox</i> . For details, see Figure 2-10, "Equation for Surface Coordinate System Transformations," on page 41. The origin of the source coordinate system is the lower left (expressed in the source coordinate system) of the object and the origin of the destination coordinate system is lower left of the <i>@SurfaceContentsBox</i> . For details, see Section 2.5.1.1, "Source Coordinate Systems" on page 37. <b>Note:</b> <i>@CTM</i> SHALL be recalculated if the object is replaced afterwards with a new object with different dimensions.
<i>HalfTonePhaseOrigin?</i>	XYPair	Location of the origin for screening of this <i>ContentObject</i> . Specified in the coordinate systems of <i>@SurfaceContentsBox</i> .

**Table 8-170: MarkObject Element (Sheet 3 of 6)**

Name	Data Type	Description
<i>LayoutElementPageNum</i> ? <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.3</a> <a href="#">Deprecated in JDF 1.4</a>	integer	Page number to use from the PDL file described by <b>LayoutElement</b> . <b>Modification note:</b> starting with JDF 1.3, the default value of "0" is removed. <b>Deprecation note:</b> starting with JDF 1.4, PDL for Marks SHOULD be referenced via <b>RunList</b> ( <b>Marks</b> ).
<i>LogicalStackOrd</i> ?	integer	0-based Logical Stack identifier that this <b>PlacedObject MarkObject</b> belongs to. <b>@LogicalStackOrd</b> SHALL match the <b>@LogicalStackOrd</b> of an entry in <b>Layout/LogicalStackParams/Stack</b> .
<i>Ord</i> ? <a href="#">Modified in JDF 1.4</a>	integer	A non-negative reference to an index in the <b>RunList</b> ( <b>Marks</b> ). The index is incremented for every page of the <b>RunList</b> with <b>@IsPage = "true"</b> . The first page of a <b>RunList</b> has the value 0. <b>Modification note:</b> starting with JDF 1.4, at most one of <b>@Ord</b> or <b>DeviceMark</b> SHALL be specified. For JDF 1.3 only, at most one of <b>LayoutElement</b> , <b>@Ord</b> or <b>JobField</b> SHALL be specified.
<i>SourceClipPath</i> ?	PDFPath	Clip path for the <b>PlacedObject MarkObject</b> in the source coordinate system. <b>@SourceClipPath</b> is applied to the referenced source object in addition to any clipping that is internal to the object. Internal transformation of the source object (Rotation key in PDF, Orientation Tag in TIFF etc.) SHALL be applied prior to applying <b>@SourceClipPath</b> . <b>@ClipPath</b> and <b>@SourceClipPath</b> SHALL NOT be specified in the same <b>PlacedObject MarkObject</b> . See Section 2.5.1.1, "Source Coordinate Systems" for definitions of source coordinate systems.
<i>TrimClipPath</i> ?	PDFPath	The die cutting path for the <b>PlacedObject MarkObject</b> in the coordinates of the <b>@SurfaceContentsBox</b> (lower left of <b>@SurfaceContentsBox</b> is used as reference zero point, same as for <b>@ClipBox</b> ). That path can be used for proofing purpose. <b>Note:</b> the <b>@TrimClipPath</b> Attribute may be used by an Imposition generation utility when an XJDF <b>Layout</b> Resource is used as a template for that utility. This Attribute has no effect on processing when a <b>Layout</b> Resource is input to the <b>Imposition</b> Process.

**Table 8-170: MarkObject Element (Sheet 4 of 6)**

Name	Data Type	Description
<i>TrimCTM</i> ?	matrix	<p>The transformation matrix of the trim box to be applied to the object's referenced content in the coordinate system of <i>@SurfaceContentsBox</i>. Note that imposition programs that execute the <b>Layout</b> SHALL recalculate the <i>@CTM</i> in case the referenced content is replaced with new referenced content having different dimensions, otherwise the position of the content inside the trim box will shift. This recalculation is based on <i>@Anchor</i>, <i>@TrimCTM</i>, <i>@TrimSize</i> and trim box.</p> <p><b>Note:</b> the <i>@TrimCTM</i> Attribute may be used by an Imposition generation utility when an XJDF <b>Layout</b> Resource is used as a template for that utility. This Attribute has no effect on processing when a <b>Layout</b> Resource is input to the <b>Imposition</b> Process.</p>
<i>TrimSize</i> ?	XYPair	<p>The size of the object's trim box as viewed in the object source coordinates ((@<i>TrimCTM</i> scaling and rotation NOT applied)).</p> <p><i>@TrimSize</i> is needed when replacing the object by a new object with a different dimension.</p> <p>When a <b>Layout</b> Resource is input to the <b>Imposition</b> Process, <i>@TrimSize</i> specifies the bounding box to be used for text layout when processing a <b>MarkObject/DeviceMark</b> or for scaling and rotation when processing <b>PlacedObject MarkObject/FitPolicy</b>.</p> <p><b>Note:</b> Recalculation of <b>PlacedObject MarkObject/</b><i>@CTM</i> is only necessary when the <b>Stripping</b> Process or application needs to replace some pages from the provided <b>RunList</b> (using the <b>Layout</b> as a kind of imposition "template"). To ensure correct placement of a new page in the <b>Layout</b>, <b>PlacedObject MarkObject/</b><i>@CTM</i> recalculations SHOULD always be done according to <b>PlacedObject MarkObject/</b><i>@TrimCTM</i> and <b>PlacedObject MarkObject/</b><i>@TrimSize</i>. Together, these two Attributes represent the trimming information of the imposition software page, which is not always the same as the original <b>RunList</b> page trimming information (= <b>LayoutElementRunList/</b><i>@SourceTrimBox</i> when real trim box of the object is known).</p> <p>Usage of both <b>PlacedObject PlacedObject</b> Elements <i>@TrimCTM</i> and <i>@TrimSize</i> Attributes will allow page replacements on any type of imposition <b>Layout</b>.</p>
CIELABMeasuringField *	element	Specific information about this kind of mark object. See below for information regarding dynamically generated marks.
<b>ColorControlStrip</b> * <u>Modified in JDF 1.1</u>	refelementelement	Specific information about this kind of mark object. See below for information regarding dynamically generated marks.

Table 8-170: MarkObject Element (Sheet 5 of 6)

Name	Data Type	Description
<a href="#">CutMark *</a> <a href="#">CutMark *Modified in JDF 1.1</a>	refelementelement	Specific information about this kind of mark object. See below for information regarding dynamically generated marks.
<a href="#">DensityMeasuringField *</a> <a href="#">Modified in JDF 1.1</a>	refelementelement	Specific information about this kind of mark object. See below for information regarding dynamically generated marks.
<a href="#">DeviceMark ?</a> <a href="#">DeviceMark ?New in JDF 1.4</a>	element	<b>DeviceMark</b> <a href="#">DeviceMark</a> specifies all formatting options for generating dynamic Marks marks that are generated on the fly. <b>JobField/DeviceMark</b> specifies the formatting parameters of the JobField and all other dynamically generated marks are positioned with @CTM. <b>Constraint:</b> at most one of @Ord or <a href="#">DeviceMark</a> <a href="#">DeviceMark</a> SHALL be specified. <b>Creation note:</b> starting with JDF 1.4, DeviceMark is back after being deprecated in JDF 1.3.
<a href="#">DynamicField *</a>	element	Definition of text replacement for a this <a href="#">MarkObject</a> . <a href="#">MarkObject/DynamicField</a> specifies text replacement within an existing PDL mark.
<a href="#">FillMark *</a> <a href="#">New in JDF 1.5</a>	element	Specifies marks that define a fill layer, e.g., for backlit displays.
<a href="#">FitPolicy ?</a>	element	SHALL NOT be present when <a href="#">Layout/@Automated = "false"</a> . Specifies automated fit policy for the page cell described by the <a href="#">PlacedObject</a> <a href="#">MarkObject</a> . When present, <a href="#">PlacedObject</a> <a href="#">MarkObject</a> @TrimSize SHALL also be present in the <a href="#">PlacedObject</a> <a href="#">MarkObject</a> , and represents the cell size for this <a href="#">PlacedObject</a> <a href="#">MarkObject</a> .
<a href="#">IdentificationField *</a>	refelementelement	Specific information about this kind of mark object. See below for information regarding dynamically generated marks.
<a href="#">JobField ?</a> <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.4</a>	element	JobField specifies the metadata of a given dynamic slug line. <b>Modification note:</b> starting with JDF 1.4, the maximum number of JobField Elements per <a href="#">MarkObject</a> is limited to 1; previously, there was no limit. For JDF 1.3 only, at most one of <a href="#">LayoutElement</a> , @Ord or JobField SHOULD be specified.
<a href="#">LayoutElement ?</a> <a href="#">Deprecated in JDF 1.4</a>	refelement	PDL description of the mark. The <a href="#">LayoutElement</a> and @Ord are mutually exclusive within one <a href="#">MarkObject</a> . <b>Modification note:</b> for JDF 1.3 only, at most one of <a href="#">LayoutElement</a> , @Ord or JobField SHALL be specified. <b>Deprecation note:</b> starting with JDF 1.4, PDL for Marks SHALL be referenced via <a href="#">RunList(Marks)</a> .

**Table 8-170: MarkObject Element (Sheet 6 of 6)**

Name	Data Type	Description
<a href="#">MarkActivation *</a> <a href="#">New in JDF 1.4</a>	element	Rules about when to apply the mark in an automated <b>Layout</b> . If no <b>MarkActivation</b> is specified, the <b>MarkObject</b> is unconditionally active. If multiple <b>MarkActivation</b> Elements are specified, all conditions SHALL be met for the mark to be active. <b>MarkActivation</b> SHALL NOT be specified unless <b>Layout/@Automated = "true"</b> .
<a href="#">RefAnchor ?</a> <a href="#">New in JDF 1.4</a>	element	Details of the coordinate system that this mark is placed relative to. This MAY be either the sheet coordinate system or the coordinate system of a referenced <b>PlacedObject</b> <b>MarkObject</b> . If the anchor point in the referenced object ( <b>PlacedObject</b> <b>MarkObject</b> or Sheet surface) is modified (e.g., due to a change in <b>@TrimSize</b> ), the CTM of the placed object of this <b>DeviceMark</b> <b>DeviceMark</b> SHALL be modified accordingly. <b>Note:</b> <b>RefAnchor</b> does NOT modify the origin of the CTM of this <b>PlacedObject</b> <b>MarkObject</b> . It is only used to recalculate relative shifts.
<a href="#">RegisterMark *</a> <a href="#">Modified in JDF 1.1</a>	refelementelement	Specific information about this kind of mark object. See below for information regarding dynamically generated marks.
<a href="#">ScavengerArea *</a> <a href="#">New in JDF 1.1</a>	refelementelement	Specific information about this kind of mark object. See below for information regarding dynamically generated marks.

### 8.87.15 Element: CutMark

This element provides the means to position cut marks on the Sheet. After printing, these marks can be used to adapt the theoretical block positions (as specified in **CutBlock**) to the real position of the corresponding blocks on the printed Sheet.

**Table 8-171: CutMark Resource (Sheet 1 of 2)**

Name	Data Type	Description
<b>MarkType</b>	enumeration	Cut mark type. <b>Allowed values are:</b> <i>CrossCutMark</i> <i>TopVerticalCutMark</i> <i>BottomVerticalCutMark</i> <i>LeftHorizontalCutMark</i> <i>RightHorizontalCutMark</i> <i>LowerLeftCutMark</i> <i>UpperLeftCutMark</i> <i>LowerRightCutMark</i> <i>UpperRightCutMark</i>

**Table 8-171: CutMark Resource (Sheet 2 of 2)**

Name	Data Type	Description
Position	XYPair	Position of the logical center of the cut mark in the coordinates of the <b>MarkObject</b> that contains this mark. Note that the logical center of the cut mark does not always directly specify the center of the visible cut mark symbol.

**Table 8-172: Cut mark types as specified by CutMark/@MarkType**

Symbol	MarkType Value	Position of Symbol
	"CrossCutMark"	Centered at logical position
	"TopVerticalCutMark"	Slightly above logical position
	"BottomVerticalCutMark"	Slightly below logical position
	"LeftHorizontalCutMark"	Slightly to the left of logical position
	"RightHorizontalCutMark"	Slightly to the right of logical position
	"LowerLeftCutMark"	Corner at logical position
	"UpperLeftCutMark"	Corner at logical position
	"LowerRightCutMark"	Corner at logical position
	"UpperRightCutMark"	Corner at logical position

**8.87.16 Element: FillMark**[New in JDF 1.5](#)**Table 8-173: FillMark Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>KnockoutBleed</i> ?	double	Bleed in points that the fill should grow into (positive values) the knock-out area. <b>Note:</b> this attribute implies the same bleed for all separations.

**Table 8-173: FillMark Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>KnockoutRefs</i> ?	IDREFS	Reference to the <b>PlacedObject</b> Elements that SHALL not be filled by this <b>FillMark</b> . The knockout boundaries are implied by the value of <i>@KnockoutSource</i> .
<i>KnockoutSource</i>	enumeration	<p>Definition of the source of the knockout from the referenced <b>PlacedObject</b> Elements.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>ClipPath</i> – Use the Clip Path as defined by the referenced <b>PlacedObject</b> <i>@ClipPath</i>.</li> <li><i>SourceClipPath</i> – Use the Clip Path as defined by the referenced <b>PlacedObject</b> <i>@SourceClipPath</i>.</li> <li><i>TrimClipPath</i> – Use the Clip Path as defined by the referenced <b>PlacedObject</b> <i>@TrimClipPath</i>.</li> <li><i>TrimBox</i> – Use the Clip Path as defined by the referenced <b>PlacedObject</b> <i>@TrimCTM</i> and <b>PlacedObject</b> <i>@TrimSize</i>.</li> </ul>
<i>MarkColor</i> *	element	Definition of the separations used to fill the mark.

### 8.87.17 Element: **MarkActivation**

[New in JDF 1.4](#)

**MarkActivation** specifies condition when to apply the mark in an automated **Layout**.

**Table 8-174: MarkActivation Element**

Name	Data Type	Description
<i>Context</i>	NMTOKEN	<p>The context in which the iteration is counted.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>CollectSheetIndex</i> – a parameter maintained by the imposition engine to count sheets (e.g., in the context of a signature). Its value starts at 0 and is incremented by one for each sheet. If <b>Layout/@MaxCollect</b> is specified, its maximum value is one less than <b>Layout/@MaxCollect</b>. Otherwise, it continues to increment per sheet until completion of the page-pool/page-pool-list processing through the Imposition Template. See Section 6.4.18, “Imposition” on page 362.</li> <li><i>DocIndex</i> – a Partition Key.</li> <li><i>SetDocIndex</i> – a Partition Key.</li> <li><i>SetIndex</i> – a Partition Key.</li> <li><i>SheetIndex</i> – a Partition Key.</li> <li><i>SubDocIndex0, ...</i> – a parameter maintained by the imposition engine. See Section 6.4.18, “Imposition” on page 362.</li> </ul>
<i>Index</i>	<b>IntegerRangeList</b> <b>IntegerRange</b>	The enclosing <b>MarkObject</b> is active and its specified Mark SHALL be imaged if the value of the variable specified by <i>@Context</i> is equal to one of the values of this Attribute. <b>Negative values in this list specify indexes that are counted from the back.</b> For instance, if <i>@Context = "SetDocIndex"</i> and <i>@Index = "-1"</i> , the mark is active on the last Document of every Set.

### 8.87.17.1 Dynamic Marks

`JobField` and `@Ord` are mutually exclusive within one `MarkObject`.

The Elements marked as Dynamic marks in the table above can be used for three purposes:

- If `@Ord` is specified, the PDL of the mark is provided by the `RunList` (`Marks`) and the dynamic mark Subelements provide metadata about the mark to a press Controller or bindery equipment. This is the usual behavior of existing imposition engines. A single `MarkObject` SHALL NOT contain multiple mark Subelements that are represented by the same PDL, for instance there MAY be only one `Marks` layer for an entire surface.
- If `@Ord` is not present, but `JobField` is present, an Imposition Device SHOULD dynamically generate the mark based on information in `JobField`.
- If none of `@Ord` and `JobField` are present, a mark SHOULD be dynamically drawn based on the information within the Subelement. The marks are positioned relative to the `@CTM` of the `MarkObject`. A single `MarkObject` SHOULD NOT contain multiple dynamic mark Subelements. Note that the **JDF XJDF** specification of dynamic marks other than `JobField` are in flux and that the behavior described here might change in future versions of **JDF XJDF**.

### 8.87.18 Element: DynamicField

`DynamicField` provides a description of dynamic text replacements for a `MarkObject` Element. This element is to be used for production purposes such as defining bar codes for variable data printing. `DynamicField` elements are not intended as placeholders for actual content such as addresses. Rather, they are marks with dynamic data such as time stamps and database information. Dynamic objects are `MarkObject` elements with that MAY have additional **OPTIONAL** `DynamicField` elements that define text replacement.

**Table 8-175: DynamicField Element (Sheet 1 of 2)**

Name	Data Type	Description
<code>Format</code>	string	Format string in C printf format that defines the replacement. <b>Values are may contain variables from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.
<code>InputField?</code> <i>Deprecated in JDF 1.1</i>	string	String that SHALL be replaced by the <code>DynamicInput</code> Element in the Contents <code>RunList</code> referenced by <code>@Ord</code> or <code>@OrdExpression</code> .
<code>Ord?</code> <i>Deprecated in JDF 1.4</i>	integer	Reference to an index in the Contents <code>RunList</code> that contains <code>DynamicInput</code> Elements. <b>Constraint:</b> at most one of <code>@Ord</code> or <code>@OrdExpression</code> SHALL be specified. <b>Deprecation note:</b> starting with JDF 1.4, <code>@Ord</code> SHALL be specified in the parent <code>MarkObject</code> Element.
<code>OrdExpression?</code> <i>Deprecated in JDF 1.4</i>	string	Expression to calculate the reference to an index in the Contents <code>RunList</code> that contains <code>DynamicInput</code> fields. <b>Values include those from:</b> <code>ContentObject/@OrdExpression</code> <b>Constraint:</b> at most one of <code>@Ord</code> or <code>@OrdExpression</code> SHALL be specified.
<code>ReplaceField?</code>	string	String that SHALL be replaced by the instantiated text expression as defined by the <code>@Format</code> and <code>@Template</code> Attributes in the file referenced by <code>MarkObject/@Ord</code> , <code>MarkObject/@OrdExpression</code> or <code>MarkObject/LayoutElement</code> . If <code>@ReplaceField</code> is not specified, the Device that processes the <code>DynamicField</code> SHALL format the <code>DynamicField</code> .

**Table 8-175: DynamicField Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Template</i>	string	<p>Template Comma separated list of variables to define a sequence of variables consumed by <i>@Format</i>.</p> <p><b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.</p> <p><b>Deprecation note:</b> starting with JDF 1.4, <b>RunList/DynamicInput/@Name</b> (mentioned here in JDF 1.3) no longer defines further variables because <b>DynamicInput</b> has been deprecated.</p>
<u>DeviceMark ?</u> <u>New in JDF 1.1</u> <u>Deprecated in JDF 1.4</u>	element	DeviceMark defines the formatting parameters for the mark. If not specified, the DeviceMark settings defined in <b>LayoutPreparationParams</b> or in the <b>Layout</b> tree are assumed.

### Example 8-20: Layout: DynamicField Element

In this example, the text “xxx” in the file MyReplace.pdf would be replaced by the sentence “Replacement Text for Joe and John go in here at 14:00 on Mar-31-2000”. MyReplace.pdf is placed at the position defined by the *@CTM* of the **MarkObject** and Variable.pdf is placed at the position defined by the *@CTM* of the **ContentObject**.

TBD 2.x Example.

```
<RunList Class="Parameter" ID="L3" PartIDKeys="Run" Status="Available">
  <MetadataMap DataType="string" Name="i1" ValueFormat="%s"
    ValueTemplate="s1">
    <!--This expression maps the value of /Dokument/Rezipient/@Name to a
        variable "s1"-->
    <Expr Name="s1" Path="/Dokument/Rezipient/@Name"/>
  </MetadataMap>
  <LayoutElement ElementType="Graphic">
    <FileSpec URL="File:///Variable.pdf"/>
  </LayoutElement>
</RunList>
<Layout Class="Parameter" ID="Link0003" Status="Available">
  <!--The MarkObject in the Layout hierarchy: -->
  <ContentObject CTM="1 0 0 1 0 0" Ord="0"/>
  <MarkObject CTM="1 0 0 1 10 10">
    <LayoutElement ElementType="Graphic">
      <FileSpec URL="File:///MyReplace.pdf"/>
    </LayoutElement>
    <DynamicField
      Format="Replacement Text for %s goes in here at %s on %s"
      Ord="0" ReplaceField="__xxx__" Template="i1,Time,Date"/>
    <DynamicField Format="More Replacement Text for %s go in here"
      Ord="0" ReplaceField="__yyy__" Template="SignatureName"/>
  </MarkObject>
</Layout>
```

### 8.87.19 More about Layout

#### 8.87.19.1 Migrating from a Pre-JDF 1.3 Layout to a Partitioned Layout

New in JDF 1.3

The **Layout** Resource was significantly modified in JDF 1.3. This section describes how a pre-JDF 1.3 **Layout** can be transformed into a JDF 1.3 **Layout** and what restrictions MAY be applied to a JDF 1.3 **Layout** so that it can be easily transformed into a pre-JDF 1.3 **Layout** or a PJTF Layout.

**Note:** this section is not applicable when **Layout/@Automated = "true"** for any Partitions.

#### 8.87.19.1.1 Partition Key restrictions:

If "SignatureName", "SheetName" or "Side" are specified in @PartIDKeys, the order SHALL be specified as "SignatureName SheetName Side".

Only a **Layout** with exactly @PartIDKeys = "SignatureName SheetName Side" can be translated into a JDF 1.2 **Layout** or a PJTF. Thus, it is highly RECOMMENDED to use exactly this Partitioning of the **Layout** in JDF 1.3 whenever possible. Any other Partitioning will make consumption by existing products very unlikely.

If **MarkObject** and **ContentObject** are placed onto a **Layout**, at least **Resource/Part** element SHALL exist and **Resource/Part/@Side** SHALL be specified.

All **MarkObject** and **ContentObject** Elements that are intended to be imaged on one Surface SHALL be specified in one partition.

#### 8.87.19.1.2 Position of PlacedObject Elements in Layout

In order to avoid ambiguities in the layering order, **MarkObject** Elements and **ContentObject** Elements SHALL only be specified in the leaves of Partitioned Resources.

#### Example 8-21: Invalid **MarkObject**

The following INVALID example is correct according to Section 3.15.5.1, “Subelements in Partitioned Resources” on page 120. If standard Partitioning inheritance were permitted for **MarkObject** Elements and **ContentObject** Elements it would be unclear whether the **ContentObject** in Sheet01 is layered over or under <MarkObject Ord="1">>:

```
<Layout Class="Parameter" ID="L3" Status="Available"
       PartIDKeys="SignatureName SheetName Side">
    <!-- INVALID, this PlacedObject is not in a leaf partition and not used -->
    <!-- since it is overwritten by <MarkObject Ord="1"> -->
    <MarkObject Ord="0" CTM="0.0 1.0 -1.0 0.0 176.69 23.62" >
        <RegisterMark Center="0.0 0.0" MarkType="Cross" MarkUsage="PaperPath" />
    </MarkObject>
    <Layout SignatureName="Sig00">
        <!-- INVALID, this PlacedObject is not in a leaf partition -->
        <MarkObject Ord="1" CTM="0.0 1.0 -1.0 0.0 176.69 23.62" >
            <RegisterMark Center="0.0 0.0" MarkType="Cross"
                           MarkUsage="PaperPath" />
        </MarkObject>
        <Layout SheetName="Sheet00">
            <Layout Side="Front">
                <MarkObject Ord="2" CTM="0.0 1.0 -1.0 0.0 176.69 23.62" >
                    <RegisterMark Center="0.0 0.0" MarkType="Arc"
                                   MarkUsage="PaperPath" />
                </MarkObject>
                <ContentObject CTM="0.0 1.0 -1.0 0.0 176.69 23.62" Ord="0" />
            </Layout>
        </Layout>
        <Layout SheetName="Sheet01">
            <Layout Side="Front">
                <!-- Not clear whether this is layered over or under
                    <MarkObject Ord="0">
                -->
                <ContentObject CTM="0.0 1.0 -1.0 0.0 176.69 23.62" Ord="0" />
            </Layout>
        </Layout>
    </Layout>
</Layout>
```

### Example 8-22: **MarkObject**

This VALID example is contains the same PlacedObject Elements as the previous example but they are correctly specified in the leaves of the Partitioned **Layout**.

```
<Layout Class="Parameter" ID="L3" Status="Available"
    PartIDKeys="SignatureName SheetName Side">
    <Layout SignatureName="Sig00">
        <Layout SheetName="Sheet00">
            <Layout Side="Front">
                <MarkObject Ord="2" CTM="0.0 1.0 -1.0 0.0 176.69 23.62" >
                    <RegisterMark Center="0.0 0.0" MarkType="Arc"
                        MarkUsage="PaperPath"/>
                </MarkObject>
                <ContentObject CTM="0.0 1.0 -1.0 0.0 176.69 23.62" Ord="0" />
            </Layout>
        </Layout>
        <Layout SheetName="Sheet01">
            <Layout Side="Front">
                <MarkObject Ord="1" CTM="0.0 1.0 -1.0 0.0 176.69 23.62" >
                    <RegisterMark Center="0.0 0.0" MarkType="Cross"
                        MarkUsage="PaperPath" />
                </MarkObject>
                <ContentObject CTM="0.0 1.0 -1.0 0.0 176.69 23.62" Ord="0" />
            </Layout>
        </Layout>
    </Layout>
</Layout>
```

#### 8.87.19.2 CTM Definitions

[New in JDF 1.2](#)

The following are explanations of the terms used in this section and beyond:

- **Dimensions of object** – The width and height of either the box defined to include all drawings for this file format, or the artificial box that includes these drawings for file formats that have no clearly defined box for this.
- **Trim box of the Signature page** – A rectangle that indicates where the trim box of object is to be positioned. This is the equivalent to the area the user is intended to see in the final product. Positioning the trim box of the object inside the trim box of the Signature page is implementation-specific (usually it is centered).
- **Trim box of the object** – A rectangle that is PDL-specific that indicates the area of the object that indicates the intended trimming area.

#### 8.87.19.3 Finding the Trim Box of an Object

The **LayoutElementRunList/@SourceTrimBox** always takes precedence over boxes defined inside the file. Make sure that **LayoutElementRunList/@SourceTrimBox** is updated after replacing Elements. The following is a list of names used for the real trim box in various file formats:

- PostScript (PS) – **PageSize**
- Encapsulated PostScript (EPS) – **CropBox**
- Portable Document Format (PDF) – **TrimBox**
- Raster files – entire area

If this information is not available, alternative sources for trim box information can include (but these boxes might not be correct in all cases):

- EPS – HiResBoundingBox then BoundingBox
- PDF – CropBox then MediaBox

#### 8.87.19.4 Using Ord to Reference Elements in RunList Resources

[New in JDF 1.1A](#)

The `@Ord` Attribute in ContentObject or MarkObject Elements represents a reference to a *logical* element in a **RunList**. The index is incremented for every page of the **RunList** with `@IsPage = "true"`. The reference is not changed by repartitioning the **RunList**. The content and marks **RunList** are referenced independently. The following examples illustrate the usage of `@Ord`.

##### Example 8-23: RunList: Simple Multi-File Unseparated RunList

This example specifies all pages contained in File1.pdf and File2.pdf. File 1 has 6 pages, file 2 has an unknown number of pages.

TBD 2.x Example.

```
<RunList Class="Parameter" ID="L3" PartIDKeys="Run" Status="Available">
  <RunList NPage="6" Pages="0 ~ 5" Run="1">
    <LayoutElement>
      <FileSpec URL="File:///File1.pdf"/>
    </LayoutElement>
  </RunList>
  <RunList Pages="0 ~ -1" Run="2">
    <LayoutElement>
      <FileSpec URL="File:///File2.pdf"/>
    </LayoutElement>
  </RunList>
</RunList>
```

Table 8-176: Example (1) of Ord Attribute in PlacedObject Elements

Ord	File	Page	Ord	File	Page
0	File1	0	1	File1	1
2	File1	2	3	File1	3
4	File1	4	5	File1	5
6	File2	0	7	File2	1
8	File2	2	(n)	File2	(n - 6)

##### Example 8-24: RunList: Simple Multi-File Separated RunList

This example specifies two pages contained in Presep.pdf and following that, pages 1, 3 and 5 of each preseparated file.

TBD 2.x Example.

```
<RunList Class="Parameter" ID="Link0003" PartIDKeys="Run Separation"
  Status="Available">
  <RunList NPage="2" Run="1" SkipPage="3">
    <LayoutElement>
      <FileSpec URL="File:///Presep.pdf"/>
    </LayoutElement>
    <RunList FirstPage="0" IsPage="false" Separation="Cyan"/>
    <RunList FirstPage="1" IsPage="false" Separation="Magenta"/>
    <RunList FirstPage="2" IsPage="false" Separation="Yellow"/>
    <RunList FirstPage="3" IsPage="false" Separation="Black"/>
  </RunList>
  <RunList IsPage="true" Pages="1 3 5" Run="2">
```

```

<RunList IsPage="false" Separation="Cyan">
  <LayoutElement>
    <FileSpec URL="File:///Cyan2.pdf"/>
  </LayoutElement>
</RunList>
<RunList IsPage="false" Separation="Magenta">
  <LayoutElement>
    <FileSpec URL="File:///Magenta2.pdf"/>
  </LayoutElement>
</RunList>
<RunList IsPage="false" Separation="Yellow">
  <LayoutElement>
    <FileSpec URL="File:///Yellow2.pdf"/>
  </LayoutElement>
</RunList>
<RunList IsPage="false" Separation="Black">
  <LayoutElement>
    <FileSpec URL="File:///Black2.pdf"/>
  </LayoutElement>
</RunList>
</RunList>
</RunList>

```

**Table 8-177: Example (2) of Ord Attribute in PlacedObject Elements**

Ord	File	Page	Separation	Ord	File	Page	Separation
0	PreSep	0	Cyan	0	Presep	1	Magenta
0	PreSep	2	Yellow	0	Presep	3	Black
1	PreSep	4	Cyan	1	Presep	5	Magenta
1	PreSep	6	Yellow	1	Presep	7	Black
2	Cyan2	1	Cyan	2	Magenta2	1	Magenta
2	Yellow2	1	Yellow	2	Black2	1	Black
3	Cyan2	3	Cyan	3	Magenta2	3	Magenta
3	Yellow2	3	Yellow	3	Black2	3	Black
4	Cyan2	5	Cyan	4	Magenta2	5	Magenta
4	Yellow2	5	Yellow	4	Black2	5	Black

### 8.87.19.5 Using Expressions in the OrdExpression Attribute

Expressions can use the operators  $+$ ,  $-$ ,  $*$ ,  $/$ ,  $\%$  and parentheses, operating on integers and two variables:  $s$  for Signature number (starting at 0) and  $n$  for number of pages to be imposed in one document. Signature number denotes the number of times that a complete set of placed objects has been filled with content from the run list. The operators have the same meaning as in the C programming language. Expressions are evaluated with normal “C” operator precedence. Multiplication SHALL be expressed by explicitly including the  $*$  operator (i.e., use “ $2*s$ ”, not “ $2 s$ ”). Remainders are discarded.

### Example 8-25: OrdExpression

Saddle stitched booklet for variable page length documents.

The following describes the OrdExpressions for a booklet with varying page lengths. The example page assignments are for a book of 13-16 pages.

**TBD 2.x Example.**

Front:

```

OrdExpression = 2*s      0   2   4   6
OrdExpression = 4*((n+3)/4) (s*2)-11513119
Back:
OrdExpression = 2*s+1   1   3   5   7
OrdExpression = 4*((n+3)/4) (s*2)-21412108

```

### Example 8-26: DocOrd Usage

Two-sided business cards 4/Sheet

The following describes the Ord + DocOrd usage for a 4-up step + repeat business card

#### TBD 2.x Example.

```

MaxDocOrd = 4
Front:
Ord = 0 DocOrd = 0
Ord = 0 DocOrd = 1
Ord = 0 DocOrd = 2
Ord = 0 DocOrd = 3
Back:
Ord = 1 DocOrd = 0
Ord = 1 DocOrd = 1
Ord = 1 DocOrd = 2
Ord = 1 DocOrd = 3

```

### 8.87.20 Element: Signature

Deprecated in JDF 1.3

The table defining the deprecated **Signature** Subelement has been moved to Section P.6.11.1, “Signature” on page 1356. All Attributes that were defined in **Signature** have been moved into **Layout**.

## 8.88 LayoutElement

This Resource is needed for **LayoutElementProduction**. It describes some text, an image, one or more pages or anything else that is used in the production of the layout of a product.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	<b>LayoutElement/Dependencies, LayoutElementProductionParams/</b> <b>LayoutElementPart, RunList</b>
Example Partition:	" <i>PageNumber</i> "
Input of Processes:	<b>LayoutElementProduction, ShapeDefProduction</b>
Output of Processes:	<b>LayoutElementProduction</b>

Table 8-178: LayoutElement Resource (Sheet 1 of 4)

Name	Data Type	Description
<u>ClipPath ?</u> <u>Modified in JDF 1.2</u>	PDFPath	Path that describes the outline of the <b>LayoutElement</b> in the coordinate space of the <b>LayoutElement</b> of <i>@ElementType = "Page"</i> that results from the <b>LayoutElementProduction</b> Process. The default case is that there is no clip path. <i>@ClipPath</i> , <i>@SourceClipBox</i> , <b>PlacedObject</b> <b>PlacedObject/</b> <i>@SourceClipPath</i> and <b>PlacedObject</b> <b>PlacedObject/</b> <i>@ClipBox</i> if supplied, SHALL be concatenated.

**Table 8-178: LayoutElement Resource (Sheet 2 of 4)**

Name	Data Type	Description
<i>ContentDataRefs</i> ? <a href="#">New in JDF 1.4</a>	IDREFS	IDs of ContentData Elements in the referenced <b>ContentList</b> . ContentData Elements provide Meta-data related to the product to be published. @ <i>ContentDataRefs</i> SHALL NOT be specified if no <b>ContentList</b> is specified.
<i>ElementType</i> ? <a href="#">Modified in JDF 1.3</a>	enumeration	Describes the content type for this <b>LayoutElement</b> . <b>Allowed values are from:</b> Table 8-179, “ElementType Attribute Values” on page 753.
<i>HasBleeds</i> ? <a href="#">Modified in JDF 1.2</a>	boolean	If “true”, the file has bleeds. If not specified, the set of values of <b>PageList/PageData/@HasBleeds</b> selected by @ <i>PageListIndex</i> is applied.
<i>IgnorePDLCopies</i> ?= “false” <a href="#">New in JDF 1.1</a>	boolean	If “true”, any PDL defined copy count SHALL be ignored.
<i>IgnorePDLImposition</i> ?= “true” <a href="#">New in JDF 1.1</a>	boolean	If “true”, any PDL defined imposition definition SHALL be ignored. Examples are PDF with embedded PJTF or PPML with a PRINT_LAYOUT. If @ <i>IgnorePDLImposition</i> = “false” and JDF also defines imposition, the imposed Sheets of the PDL are treated as pages in the context of JDF imposition. The front and back surfaces of the PDL and JDF imposition SHOULD be matched. Note that it is strongly discouraged to specify imposition both in the PDL and JDF, and that this might result in undesired behavior.
<i>IsBlank</i> ? <a href="#">New in JDF 1.2</a>	boolean	If “true”, the <b>LayoutElement</b> has no content marks and is blank. If not specified, the set of values of <b>PageList/PageData/@IsBlank</b> selected by @ <i>PageListIndex</i> is applied. Note that in JDF 1.2 the description erroneously stated that @ <i>IsBlank</i> = “false” specifies a blank page.
<i>IsPrintable</i> ? <a href="#">Modified in JDF 1.2</a>	boolean	If “true”, the file is a PDL file and can be printed. Possible files types include PCL, PDF or PostScript files. Application files such as MS Word have @ <i>IsPrintable</i> = “false”. If not specified, the set of values of <b>PageList/PageData/@IsPrintable</b> selected by @ <i>PageListIndex</i> is applied.
<i>IsTrapped</i> ? <a href="#">Modified in JDF 1.2</a>	boolean	If “true”, the file has been trapped. If not specified, the set of values of <b>PageList/PageData/@IsTrapped</b> selected by @ <i>PageListIndex</i> is applied.
<i>PageListIndex</i> ? <a href="#">New in JDF 1.2</a>	IntegerRangeList	List of the indices of the <b>PageData</b> Elements of the <b>PageList</b> specified in this <b>LayoutElement</b> . Note that this list MAY be overridden by the <b>RunList</b> that contains this <b>LayoutElement</b> and refers to a subset of this <b>LayoutElement</b> . <b>PageList</b> SHALL be specified if @ <i>PageListIndex</i> is specified.

**Table 8-178: LayoutElement Resource (Sheet 3 of 4)**

Name	Data Type	Description
<i>SetLevel</i> ? <a href="#">New in JDF 1.4</a>	XPath	Specifies the mapping for the structure of a document of type MultiSet to the structure processed by the PDL Processor. If specified, the XPath expression selects a node set from the Structured PDL's hierarchy. Each node of that node set is processed by the PDL processor as a JDF set. If not specified, the nodes that are processed as a set by the PDL processor SHALL be defined by the PDL. If the PDL does not define which nodes represent sets, then which nodes represent sets is undefined.  <b>Note:</b> An example of a PDL that can define which nodes represent sets is ISO 16612-2 (PDF/VT), where the DPartRoot/@RecordLevel can provide that mapping.
<i>SourceBleedBox</i> ? <a href="#">Modified in JDF 1.2</a>	rectangle	A rectangle that describes the bleed area of the element to be included. This rectangle is expressed in the source coordinate system of the object. If not specified, the set of values of <b>PageList/PageData/@SourceBleedBox</b> selected by <b>@PageListIndex</b> is applied.
<i>SourceClipBox</i> ? <a href="#">Modified in JDF 1.2</a>	rectangle	A rectangle that defines the region of the element to be included. This rectangle is expressed in the source coordinate system of the object. If not specified, the set of values of <b>PageList/PageData/@SourceClipBox</b> selected by <b>@PageListIndex</b> is applied.
<i>SourceMediaBox</i> ? <a href="#">New in JDF 1.4</a>	rectangle	The MediaBox of the <b>LayoutElement</b> .
<i>SourceTrimBox</i> ? <a href="#">Modified in JDF 1.2</a>	rectangle	A rectangle that describes the intended trimmed size of the element to be included. This rectangle is expressed in the source coordinate system of the object. If not specified, the set of values of <b>PageList/PageData/@SourceTrimBox</b> selected by <b>@PageListIndex</b> is applied.
<i>Template</i> ? <a href="#">Modified in JDF 1.2</a>	boolean	<b>@Template</b> is "false" when this layout element is self-contained. This Attribute is "true" if the <b>LayoutElement</b> represents a template that SHALL be completed with information from a database. If not specified, the value of <b>PageList/PageData/@Template</b> is applied.
<b>ColorPool</b> ? <b>ColorRef</b> ? <a href="#">New in JDF 1.2</a>	refelementIDREF	Reference to a <b>ResourceSet[@Name="Color"]</b> . Definition of the color details.
<b>ContentList</b> ? <b>ContentRef</b> ? <a href="#">New in JDF 1.4</a>	refelementIDREF	<b>ContentList</b> with additional metadata. <b>Constraint:</b> at most one of <b>ContentList</b> and <b>PageList</b> SHALL be specified.
<b>Dependencies</b> ? <b>LayoutElementRefs</b> ? <a href="#">New in JDF 1.2</a>	elementIDREFS	List of dependent references (e.g., fonts, external images, etc.).

**Table 8-178: LayoutElement Resource (Sheet 4 of 4)**

Name	Data Type	Description
<b>ElementColorParams</b> ? <a href="#">New in JDF 1.2</a>	refelementelement	Color details of the <b>LayoutElement</b> . If not specified, the value of <b>PageList/PageData/ElementColorParams</b> is applied.
<b>FileSpec</b> ? <a href="#">Modified in JDF 1.2</a>	refelementelement	URL plus metadata about the physical characteristics of a file representing the <b>LayoutElement</b> . If not present, then only metadata is known but not the content file.
<b>ImageCompressionParams</b> ? <b>ImageCompressionParamsRef</b> ? <a href="#">New in JDF 1.2</a>	refelementIDREF	Specification of the image compression properties. If not specified, the value of <b>PageList/PageData/ImageCompressionParams</b> is applied.
<b>PageList</b> ? <b>PageListRef</b> ? <a href="#">New in JDF 1.2</a>	refelementIDREF	Specification of page metadata for pages described by this <b>LayoutElement</b> . <b>Constraint:</b> at most one of <b>ContentList</b> and <b>PageList</b> SHALL be specified.
<b>ScreeningParams</b> ? <b>ScreeningParamsRef</b> ? <a href="#">New in JDF 1.2</a>	refelementIDREF	Specification of the screening properties. If not specified, the value of <b>PageList/PageData/ScreeningParams</b> is applied.
<b>SeparationSpec</b> * <b>Separations</b> ? <a href="#">Modified in JDF 1.2</a>	elementNMTO-KENS	List of used separation names. If not specified, the value of <b>PageList/PageData/SeparationSpec</b> applies.

— Attribute: **ElementType**

**Table 8-179: ElementType Attribute Values (Sheet 1 of 2)**

value	Description
<i>Auxiliary</i>	Any type of file that is needed to complete a layout but not explicitly displayed (e.g., ICC profiles or fonts).
<i>Barcode</i> <a href="#">New in JDF 1.3</a>	A barcode.
<i>Composed</i>	Combination of elements that define an element that is not bound to a document page.
<i>Document</i>	An ordered set of one or more pages.
<i>Graphic</i>	Line art.
<i>IdentificationField</i> <a href="#">New in JDF 1.3</a>	A general identification field excluding bar codes.
<i>Image</i>	Bitmap image.
<i>MultiDocument</i>	An ordered set of one or more Documents including document breaks (e.g., PPML, PPML/VDX, MIME Multipart/Related).
<i>MultiSet</i>	An ordered set of one or more document sets, including document set breaks, document breaks and sub document breaks (e.g., PPML, PPML/VDX, ISO 16612-2 PDF/VT). <b>Modification note:</b> starting with JDF 1.4, 3 kinds of breaks are added.
<i>Page</i>	Representation of one document page.

**Table 8-179: ElementType Attribute Values (Sheet 2 of 2)**

<b>Value</b>	<b>Description</b>
<i>Reservation</i>	Empty element. Content for this area of the page might be provided by a subsequent Process.
<i>Surface</i>	Representation of an imposed surface.
<i>Text</i>	Formatted or unformatted text.
<i>Tile</i>	Representation of the contents of one tile.
<i>Unknown</i>	
<a href="#">Deprecated in JDF 1.2</a>	

**8.88.1 Element: Dependencies**[New in JDF 1.2](#)This Element provides a container for dependent references of the **LayoutElement**.**Table 8-180: Dependencies Element**

<b>Name</b>	<b>Data Type</b>	<b>Description</b>
<b>LayoutElement</b> *	refelement	Description of dependent elements (e.g., fonts, images, etc.).

**8.89 LayoutElementProductionParams**[New in JDF 1.3](#)

This Resource is needed for **LayoutElementProduction**. This Resource contains detailed information about the type of **LayoutElementRunList** to be produced. Before JDF 1.4, it only contains information for automated production of barcodes. Starting with JDF 1.4, the description of positioning of the graphics is added.

**Resource Properties****Resource Class:** Parameter**Resource referenced by:** —**Example Partition:** —**Input of Processes:** *LayoutElementProduction***Output of Processes:** —**Table 8-181: LayoutElementProductionParams Resource (Sheet 1 of 2)**

<b>Name</b>	<b>Data Type</b>	<b>Description</b>
<b>ContentRefs</b> ?	IDREFS	@ContentRefs SHALL reference <b>Content</b> that provide metadata related to the output <b>RunList</b> .
<b>ShapeDefRef</b> ?	IDREF	@ShapeDefRef SHALL reference a <b>ShapeDef</b> that represents the shape of the <b>RunList</b> to be produced.
<b>ActionPool</b> ? <a href="#">New in JDF 1.4</a>	element	A pool of <b>Action</b> Elements that describe the restrictions that are applied to the created output
<b>FileSpec</b> (DataList) ? <a href="#">New in JDF 1.5</a>	refelement	References a data list containing record information for variable data production. The format of the referenced data is implementation specific.
<b>FileSpec</b> (PreflightProfile) ?	element	External preflight profile that describes the rules that the completed <b>RunList</b> SHALL adhere to.

**Table 8-181: LayoutElementProductionParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
LayoutElementPart *ContentRef ?	elementI-DREF	Description of the specific parameters for generating a <b>LayoutElementRunList</b> .
ShapeDef ? ShapeDefRef ? <a href="#">New in JDF 1.4</a>	refelementI-DREF	A Resource describing the shape of the <b>LayoutElementRunList</b> to be produced.
TestPool ? <a href="#">New in JDF 1.4</a>	element	Container for zero or more Test elements that are referenced from Action Elements in the ActionPool. TestPool SHALL be supplied if ActionPool is present.

**Example 8-27: LayoutElementProductionParams: Page Shape****TBD 2.x Example.**

```
<!-- Page Shape Sample
    Date: Aug 2, 2007 Version: 2
    A page with a certain size -->
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="n001"
    Type="LayoutElementProduction"
    Status="Waiting" DescriptiveName="Page sample for shape"
    JobPartID="ID34" Version="1.4">
    <ResourcePool>
        <LayoutElementProductionParams Class="Parameter" ID="LEPPParams"
            Status="Available" />
        <LayoutElement Class="Parameter" ID="LayElOut" Status="Unavailable"
            SourceMediaBox="0 0 595.27 822.05"
            SourceTrimBox="28.34 28.34 566.93 793.71"/>
    </ResourcePool>
    <ResourceLinkPool>
        <LayoutElementProductionParamsLink rRef="LEPPParams" Usage="Input"/>
        <LayoutElementLink rRef="LayElOut" Usage="Output"/>
    </ResourceLinkPool>
    <AuditPool>
        <Created AgentName="XYZ Corporation"TimeStamp="2006-01-09T09:00:00+01:00"/>
    </AuditPool>
</JDF>
```

**Example 8-28: LayoutElementProductionParams: Label Shape****TBD 2.x Example.**

```
<!-- Shape Sample for a label with a cut line
    Date: Jan 9, 2005 Version: 1.00
    A page with a certain size -->
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="n001"
    Type="LayoutElementProduction"
    Status="Waiting" DescriptiveName="Page sample for shape"
    JobPartID="ID400" Version="1.4">
    <ResourcePool>
        <LayoutElementProductionParams Class="Parameter" ID="LEPPParams"
            Status="Available" />
        <ShapeDef>
            <Shape ShapeType="Path" DDESCutType="101" CutPath="..." />
        </ShapeDef>
    </LayoutElementProductionParams>
    <LayoutElement Class="Parameter" ID="LayElOut" Status="Unavailable"
```

```

        SourceMediaBox="0 0 595.27 822.05"
        SourceTrimBox="28.34 28.34 566.93 793.71"/>
    </ResourcePool>
    <ResourceLinkPool>
        <LayoutElementProductionParamsLink rRef="LEPParams" Usage="Input"/>
        <LayoutElementLink rRef="LayElOut" Usage="Output"/>
    </ResourceLinkPool>
    <AuditPool>
        <Created AgentName="ABC-Corporation" TimeStamp="2006-01-09T09:00:00+01:00"/>
    </AuditPool>
</JDF>
```

### Example 8-29: LayoutElementProductionParams: Box Shape

TBD 2.x Example.

```

<!-- Shape Sample for a box defined by a CAD file
     Date: Jan 9, 2005 Version: 1.00
     A page with a certain size -->
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="n001"
    Type="LayoutElementProduction"
    Status="Waiting" JobPartID="ID100"
    DescriptiveName="Page sample for shape" Version="1.4">
    <ResourcePool>
        <LayoutElementProductionParams Class="Parameter" ID="LEPParams"
            Status"Available">
            <ShapeDef>
                <FileSpec URL="file:///myserver/myshare/olive.dd3"/>
            </ShapeDef>
        </LayoutElementProductionParams>
        <LayoutElement Class="Parameter" ID="LayElOut" Status="Unavailable"/>
    </ResourcePool>
    <ResourceLinkPool>
        <LayoutElementProductionParamsLink rRef="LEPParams" Usage="Input"/>
        <LayoutElementLink rRef="LayElOut" Usage="Output"/>
    </ResourceLinkPool>
    <AuditPool>
        <Created AgentName="ZYX Corporation" TimeStamp="2006-01-09T09:00:00+01:00"/>
    </AuditPool>
</JDF>
```

#### 8.89.1 Element: **LayoutElementPart**

**LayoutElementPart** is a generic placeholder for specifying details of **LayoutElementProduction**. Currently only details of barcode production have been fleshed out but additional Processes are anticipated. Note that the ordering of **LayoutElementPart** Elements might become significant in future versions.

Table 8-182: **LayoutElementPart** Element (Sheet 1 of 2)

Name	Data Type	Description
<b>ColorCorrectionParams ?</b> <b>ColorCorrectionParamsRef ?New</b> in JDF 1.5	refelementI-DREF	Parameters of <b>ColorCorrection</b> that have been applied to this <b>LayoutElementPart</b> .

**Table 8-182: LayoutElementPart Element (Sheet 2 of 2)**

Name	Data Type	Description
<a href="#">LayoutElement ?</a> <a href="#">RunListRef ?</a> <a href="#">New in JDF 1.4</a>	refelementI-DREF	Specification of an existing <a href="#">LayoutElement</a> <a href="#">@RunListRef</a> that is used to initially populate this <a href="#">LayoutElementPart</a> . Any <a href="#">LayoutElement</a> Resources that are specified here SHALL also be specified as Input Resources to the <a href="#">LayoutElementProduction</a> Process.
<a href="#">ID ?</a> <a href="#">New in JDF 1.4</a>	ID	ID of the LayoutElementPart.
<a href="#">Comment ?</a>	element	Human readable instructions how this LayoutElementPart should be processed.
<a href="#">ImageCompressionParams ?</a> <a href="#">ImageCompressionParamsRef ?</a> <a href="#">New in JDF 1.5</a>	refelementI-DREF	Image compression that has been applied to this LayoutElementPart.
<a href="#">ImageEnhancementParams ?</a> <a href="#">ImageEnhancementParamsRef ?</a> <a href="#">New in JDF 1.5</a>	refelementI-DREF	Image enhancement operations that have been applied to this LayoutElementPart
<a href="#">BarcodeProductionParams ?</a>	element	Description of the specific parameters for barcode production.
<a href="#">ColorCorrectionParams ?</a> <a href="#">ColorCorrectionParamsRef ?</a> <a href="#">New in JDF 1.5</a>	refelementI-DREF	Parameters of <a href="#">ColorCorrection</a> that have been applied to this LayoutElementPart.
<a href="#">ImageCompressionParams ?</a> <a href="#">ImageCompressionParamsRef ?</a> <a href="#">New in JDF 1.5</a>	refelementI-DREF	Image compression that has been applied to this LayoutElementPart.
<a href="#">ImageEnhancementParams ?</a> <a href="#">ImageEnhancementParamsRef ?</a> <a href="#">New in JDF 1.5</a>	refelementI-DREF	Image enhancement operations that have been applied to this LayoutElementPart
<a href="#">LayoutElement ?</a> <a href="#">RunListRef ?</a> <a href="#">New in JDF 1.4</a>	refelementI-DREF	Specification of an existing <a href="#">LayoutElement</a> <a href="#">@RunListRef</a> that is used to initially populate this <a href="#">LayoutElementPart</a> . Any <a href="#">LayoutElement</a> Resources that are specified here SHALL also be specified as Input Resources to the <a href="#">LayoutElementProduction</a> Process.
<a href="#">PositionObj ?</a> <a href="#">New in JDF 1.4</a>	element	Definition of the size and position of this LayoutElementPart

### 8.89.2 Element: BarcodeProductionParams

BarcodeProductionParams describes of the specific parameters for barcode production.

**Table 8-183: BarcodeProductionParams Element (Sheet 1 of 2)**

Name	Data Type	Description
<a href="#">IdentificationFieldIdentificationFieldRef</a>	refelementI-DREF	Description of the barcode metadata.
<a href="#">BarcodeReproParams ?</a>	element	Description of the formatting and reproduction parameters for barcode production.

**Table 8-183: BarcodeProductionParams Element (Sheet 2 of 2)**

Name	Data Type	Description
IdentificationField	refelement	Description of the barcode metadata.

**8.89.3 Element: PositionObj**New in JDF 1.4

PositionObj describes the size and position of the LayoutElementPart.

**Table 8-184: PositionObj Element**

Name	Data Type	Description
Anchor ?	Anchor	@Anchor specifies the origin (0,0) of the coordinate system in the unrotated LayoutElementPart.
CTM ?	matrix	Transformation matrix of the origin of LayoutElementPart as specified by @Anchor. Note that this is not necessarily the actual CTM that will position a given LayoutElementPart. The actual CTM SHALL be recalculated based on the values of @Anchor and @Size.
PageRange ?	IntegerRangeList	Reader Page index in the PageList.
PositionPolicy ?	enumeration	Specifies the level of freedom when applying the values specified in PositionObj. <b>Allowed values are:</b> <i>Exact</i> – The values SHALL be followed precisely. <i>Free</i> – The values are used as guidance and MAY be modified by the designer.
RelativeSize ?	XYPair	Specifies the size of the unrotated and unscaled object, relative to the parent specified in RefAnchor.
RotationPolicy ?	enumeration	Specifies the level of freedom when applying the values specified in PositionObj. <b>Allowed values are:</b> <i>Exact</i> – The values SHALL be followed precisely. <i>Free</i> – The values are used as guidance and MAY be modified by the designer.
Size ?	XYPair	Specifies the size of the unrotated and unscaled object, in points.
SizePolicy ?	enumeration	Specifies the level of freedom when applying the values specified in PositionObj. <b>Allowed values are:</b> <i>Exact</i> – The values SHALL be followed precisely. <i>Free</i> – The values are used as guidance and MAY be modified by the designer.
RefAnchor ?	element	Reference to a LayoutElementPart that this LayoutElementPart is positioned relative to. If RefAnchor is not specified, PositionObj refers to the lower left of the first page specified in page Range.

### Example 8-30: **LayoutElementProductionParams: PositionObj**

TBD 2.x Example.

```

<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="n000002"
      JobPartID="n000002" Status="Waiting" Type="LayoutElementProduction"
      Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:type="LayoutElementProduction">
    <!--Generated by the CIP4 Java open source JDF Library version :
        CIP4 JDF Writer Java 1.3 BLD 46-->
    <AuditPool>
        <Created AgentName="CIP4 JDF Writer Java" AgentVersion="1.3 BLD 46"
                  ID="a000003"
                 TimeStamp="2007-09-05T18:20:31+02:00"/>
    </AuditPool>
    <ResourcePool>
        <RunList Class="Parameter" ID="r000004" Status="Unavailable">
            <LayoutElement Class="Parameter">
                <FileSpec Class="Parameter" MimeType="application/pdf" URL="output.pdf"/>
            </LayoutElement>
        </RunList>
        <LayoutElementProductionParams Class="Parameter" ID="r000005"
                                         Status="Unavailable">
            <!--This is a "well placed" CTM defined mark
                The anchor defines the 0,0 point to be transformed
                The element to be placed is referenced by LayoutElement/FileSpec/URL
            -->
            <LayoutElementPart>
                <PositionObj Anchor="BottomLeft" CTM="1 0 0 1 0 0" PageRange="0"
                             PositionPolicy="Exact">
                    <RefAnchor Anchor="BottomLeft" AnchorType="Parent"/>
                </PositionObj>
                <LayoutElement Class="Parameter">
                    <FileSpec Class="Parameter" MimeType="application/pdf"
                            URL="bkg.pdf"/>
                </LayoutElement>
            </LayoutElementPart>
            <!--This is a "roughly placed" reservation in the middle of the page-->
            <LayoutElementPart ID="1000006">
                <PositionObj Anchor="Center" PageRange="0" PositionPolicy="Free">
                    <RefAnchor Anchor="Center" AnchorType="Parent"/>
                </PositionObj>
                <LayoutElement Class="Parameter" ElementType="Image">
                    <Comment ID="c000007">
                        Please add an image of a palm tree on a beach here!
                    </Comment>
                </LayoutElement>
            </LayoutElementPart>
            <!--This is a "roughly placed" reservation 36 points below the previous
                image; NextPosition points from Anchor on this to NextAnchor on next,
                i.e. a positive vector specifies that next is shifted in the positive
                direction in the parent (in this case page) coordinate system
            -->
            <LayoutElementPart>
                <PositionObj Anchor="TopCenter" CTM="1 0 0 1 0 36"
                             PageRange="0" PositionPolicy="Free">
                    <RefAnchor Anchor="BottomCenter" AnchorType="Sibling"
                            rRef="1000006"/>
                </PositionObj>
            </LayoutElementPart>
        </LayoutElementProductionParams>
    </ResourcePool>

```

```

</PositionObj>
<LayoutElement Class="Parameter" ElementType="Image">
    <Comment ID="c000008">
        Please add an image of a beach ball below the palm tree!
    </Comment>
</LayoutElement>
</LayoutElementPart>
<!--This is a "well placed" CTM defined mark. The anchor defines the
0,0 point used as the RefAnchor for the element to be transformed
-->
<LayoutElementPart>
    <PositionObj Anchor="BottomLeft" CTM="1 0 0 1 2 3" PageRange="0"
        PositionPolicy="Exact">
        <RefAnchor Anchor="BottomLeft" AnchorType="Parent"/>
    </PositionObj>
    <BarcodeProductionParams>
        <!--barcode details here-->
        <IdentificationField Encoding="Barcode" EncodingDetails="CODABAR" />
    </BarcodeProductionParams>
</LayoutElementPart>
<LayoutElementPart>
    <PositionObj Anchor="TopRight" PageRange="0" PositionPolicy="Exact">
        <RefAnchor Anchor="TopRight" AnchorType="Parent"/>
        <!--This is a "roughly placed" mark.
            The anchor at top right is placed at the right (=1.0) top (=1.0)
            position of the page. No rotation is specified
        -->
    </PositionObj>
    <BarcodeProductionParams>
        <!--barcode details here-->
        <IdentificationField Encoding="Barcode" EncodingDetails="CODABAR" />
    </BarcodeProductionParams>
</LayoutElementPart>
<!--This is a "roughly placed" container for marks
    The anchor at top left is defined in the !Unrotated! orientation.
    It is placed at the left (=0.0) bottom(=0.0) position of the page.
    The text flows bottom to top (=Rotate 90 = counterclockwise)
    do we need margins?
-->
<LayoutElementPart ID="1000009">
    <PositionObj Anchor="TopLeft" CTM="0 1 -1 0 0 0"
        PageRange="1" PositionPolicy="Free">
        <RefAnchor Anchor="BottomCenter" AnchorType="Parent"/>
    </PositionObj>
</LayoutElementPart>
<!--This is a barcode inside the previous container
    The anchor at bottom left is defined in the !Unrotated! orientation.
    It is placed at the left (=0.0) bottom(=0.0) position of the container.
-->
<LayoutElementPart ID="1000010">
    <PositionObj Anchor="BottomLeft" CTM="1 0 0 1 0 0">
        <RefAnchor Anchor="BottomLeft" AnchorType="Parent" rRef="1000009"/>
    </PositionObj>
    <BarcodeProductionParams>
        <!--barcode details here-->
        <IdentificationField Encoding="Barcode" EncodingDetails="CODABAR" />
    </BarcodeProductionParams>
</LayoutElementPart>

```

```

<!--This is a disclaimer text inside the previous container
   The anchor at top left is defined in the !Unrotated! orientation.
   The barcode and text are justified with their top margins and spaced
   by 72 points which corresponds to the left of the page because the
   container is rotated 90° AbsoluteSize specifies the size of the
   object in points
-->
<LayoutElementPart>
  <PositionObj Size="300 200" Anchor="TopLeft" CTM="1 0 0 1 -72 0">
    <RefAnchor Anchor="TopRight" AnchorType="Sibling" rRef="1000010"/>
  </PositionObj>
  <LayoutElement Class="Parameter" ElementType="Text">
    <FileSpec Class="Parameter"
      URL="file:///myServer/disclaimers/de/aspirin.txt"/>
  </LayoutElement>
</LayoutElementPart>
<!--This is a "VERY roughly placed" piece of text somewhere on pages 2-3
   RelativeSize specifies the size of the object as a ratio of the size
   of the container
-->
<LayoutElementPart>
  <PositionObj PageRange="1 ~ 2" RelativeSize="0.8 0.5"/>
  <LayoutElement Class="Parameter" ElementType="Text">
    <Comment ID="c000011" Name="Instructions">
      Please add some text about
      the image of a palm tree on a beach here!
    </Comment>
  </LayoutElement>
</LayoutElementPart>
<!--This is another "VERY roughly placed" piece of text somewhere on
   pages 2-3; the text source is the JDF-->
<LayoutElementPart>
  <PositionObj PageRange="1 ~ 2"/>
  <LayoutElement Class="Parameter" ElementType="Text">
    <Comment ID="c000012" Name="TextInput">
      Laurum Ipsum Blah blah blah!
      btw. this is unformatted plain text and nothing else!
    </Comment>
  </LayoutElement>
</LayoutElementPart>
</LayoutElementProductionParams>
</ResourcePool>
<ResourceLinkPool>
  <RunListLink Usage="Output" rRef="r000004"/>
  <LayoutElementProductionParamsLink Usage="Input" rRef="r000005"/>
</ResourceLinkPool>
</JDF>

```

### Example 8-31: LayoutElementProductionParams: Preflight

TBD 2.x Example.

```

<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="n000002"
  JobPartID="n000002" Status="Completed" Type="LayoutElementProduction"
  Version="1.4" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:type="LayoutElementProduction">
  <!--Generated by the CIP4 Java open source JDF Library version : CIP4 JDF
  Writer Java 1.3 BLD 47-->

```

```

<AuditPool>
    <Created AgentName="CIP4 JDF Writer Java" AgentVersion="1.3 BLD 47"
        ID="a000003"
        TimeStamp="2007-10-11T20:23:18+02:00"/>
    <PhaseTime AgentName="CIP4 JDF Writer Java"
        AgentVersion="1.3 BLD 47"
        End="2007-10-11T20:23:23+02:00" ID="a000020"
        Start="2007-10-11T20:23:21+02:00" Status="InProgress"
        StatusDetails="Creative Work" TimeStamp="2007-10-11T20:23:21+02:00"/>
    <ProcessRun AgentName="CIP4 JDF Writer Java"
        AgentVersion="1.3 BLD 47"
        Duration="PT2S" End="2007-10-11T20:23:23+02:00"
        EndStatus="Completed" ID="a000024"
        Start="2007-10-11T20:23:21+02:00" TimeStamp="2007-10-11T20:23:23+02:00"/>
</AuditPool>
<ResourcePool>
    <RunList Class="Parameter" ID="r000004" Status="Unavailable">
        <LayoutElement Class="Parameter">
            <FileSpec Class="Parameter" MimeType="application/pdf" URL="output.pdf"/>
        </LayoutElement>
    </RunList>
    <LayoutElementProductionParams Class="Parameter" ID="r000005"
        Status="Unavailable">
        <Comment ID="c000006" Name="Instruction">
            Add any human readable instructions here
        </Comment>
        <ActionPool>
            <Action DescriptiveName="set number of pages to 4" ID="A000007"
                Severity="Error" TestRef="T000008"/>
            <Action
                DescriptiveName="set number of separations to 6 on page 0 and 3"
                ID="A000009" Severity="Error" TestRef="T000010">
                <PreflightAction SetRef="T000011"/>
            </Action>
            <Action
                DescriptiveName="separation to black only on page 1 and 2"
                ID="A000012" Severity="Error" TestRef="T000013">
                <PreflightAction SetRef="T000014"/>
            </Action>
            <Action DescriptiveName="set TrimBox to 8.5*11 Method 2"
                ID="A000015" Severity="Error" TestRef="T000016">
                <PreflightAction SetRef="T000017"/>
            </Action>
            <Action
                DescriptiveName="Warn when effective resolution<300 dpi"
                ID="A000018" Severity="Warning" TestRef="T000019"/>
        </ActionPool>
        <TestPool>
            <Test ID="T000008">
                <not>
                    <IntegerEvaluation ValueList="4">
                        <BasicPreflightTest Name="NumberOfPages"/>
                    </IntegerEvaluation>
                </not>
            </Test>
            <Test ID="T000010">
                <not>
                    <StringEvaluation>

```

```

        <BasicPreflightTest ListType="UniqueList" MaxOccurs="6"
            MinOccurs="6" Name="SeparationList"/>
        </StringEvaluation>
    </not>
</Test>
<Test ID="T000011">
    <IntegerEvaluation ValueList="0 3">
        <BasicPreflightTest Name="PageNumber"/>
    </IntegerEvaluation>
</Test>
<Test ID="T000013">
    <not>
        <StringEvaluation>
            <BasicPreflightTest Name="SeparationList"/>
            <Value Value="Black"/>
        </StringEvaluation>
    </not>
</Test>
<Test ID="T000014">
    <IntegerEvaluation ValueList="1 ~ 2">
        <BasicPreflightTest Name="PageNumber"/>
    </IntegerEvaluation>
</Test>
<Test ID="T000016">
    <not>
        <RectangleEvaluation ValueList="0 0 612 792">
            <BasicPreflightTest Name="PageBoxSize"/>
        </RectangleEvaluation>
    </not>
</Test>
<Test ID="T000017">
    <EnumerationEvaluation ValueList="TrimBox">
        <BasicPreflightTest Name="PageBoxName"/>
    </EnumerationEvaluation>
</Test>
<Test ID="T000019">
    <XYPairEvaluation ValueList="0 0 ~ 300 300">
        <BasicPreflightTest Name="EffectiveResolution"/>
    </XYPairEvaluation>
</Test>
</TestPool>
</LayoutElementProductionParams>
</ResourcePool>
<ResourceLinkPool>
    <RunListLink Usage="Output" rRef="r000004"/>
    <LayoutElementProductionParamsLink Usage="Input" rRef="r000005"/>
</ResourceLinkPool>
</JDF>

```

## 8.90 LayoutPreparationParams

New in JDF 1.1

This Resource provides the parameters of the **LayoutPreparation** Process, which provides the details of how finished page contents will be imaged onto media. This Resource has a provision for specifying either a multi-up grid of content page cells or an imposition layout of finished pages. The **LayoutPreparation** also provides means to specify creeping gutters for booklet imposition. In the case where Attributes of **LayoutPreparationParams** used

to explicitly control creep are specified, the `@MinGutter` and `@GutterPolicy` Attributes of FitPolicy, which affect the adjustment of gutter widths, SHALL NOT be specified.

A multi-up grid of pages can be step and repeated across, down, or through a stack of Sheets in any axis order. Note that for all Resources, the coordinate system for all parameters is defined with respect to the process coordinate system as defined in Section 2.5.3, “Coordinate Systems of Resources and Processes”. The process coordinate system for **LayoutPreparation** is defined by the **Layout** Resource coordinate system.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	<b>LayoutIntent</b>
<b>Example Partition:</b>	<code>"DocIndex", "DocRunIndex", "RunIndex", "SetIndex", "SheetName"</code>
<b>Input of Processes:</b>	<b>LayoutPreparation</b>
<b>Output of Processes:</b>	—

Table 8-185: LayoutPreparationParams Resource (Sheet 1 of 9)

Name	Data Type	Description		
<code>BindingEdge ?</code> <a href="#">New in JDF 1.3</a>	enumeration	<p>Indicates which finished page edge should be bound. The binding edge is defined relative to the orientation of the page cell containing the first Reader Page in the finished print component with content on it.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Left</i></li> <li><i>Right</i></li> <li><i>Top</i></li> <li><i>Bottom</i></li> <li><i>None</i></li> </ul>		
<code>BackMarkList ?</code>	NMTOKENS	List of marks that are to be marked on each back surface. The appearance of the marks are defined by the Process implementation. For a list of predefined values, see <code>@FrontMarkList</code> .		
<code>CreepValue ?</code>	XYPair	<p>This parameter specifies horizontal and vertical creep compensation value in points. The first value specifies the creep compensation of all horizontal gutters, and the second value specifies the creep compensation of all vertical gutters. The numbers specify the distance in points by which the respective explicitly creeping gutter either increments (positive values) or decrements (negative values) in width from one Sheet to the next for a given sequence of Sheets related to the same bound component.</p> <p>If not specified, it MAY be calculated based on the information taken from Media.</p>		

**Table 8-185: LayoutPreparationParams Resource (Sheet 2 of 9)**

Name	Data Type	Description		
<i>FinishingOrder = "GatherFold"</i>	enumeration	<p>Specifies the order of operations for finishing a bound booklet created from multiple imposed Sheets.</p> <p>The <b>LayoutPreparation</b> Process needs this information in order to completely determine content page distribution onto the sequence of Sheets comprising the pages of a single booklet under consideration of the values of the <i>@PageDistributionScheme</i> and <i>@FoldCatalog</i> Attributes.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>FoldGather</i> – The Sheets of a document are first folded according to the value of the <i>@FoldCatalog</i> Attribute and then gathered on a pile. Usually applies to finishing of perfect-bound documents.</li> <li><i>FoldCollect</i> – The Sheets of a document are first folded, according to the value of the <i>@FoldCatalog</i> Attribute, and then collected on a saddle. Usually applies to finishing of both perfect-bound and saddle-stitched booklets.</li> <li><i>Gather</i> – The Sheets of a document are gathered on a pile. No folding is assumed.</li> <li><i>GatherFold</i> – The Sheets of a document are first gathered on a pile then folded according to the value of the <i>@FoldCatalog</i> Attribute. Usually applies to finishing of both perfect-bound and saddle-stitched booklets.</li> </ul>		
<i>FoldCatalog ?</i>	string	<p>Description of the type of fold that will be applied to all printed Sheets according to the folding catalog in Figure 8-34, “Fold catalog part 1,” on page 664 and Figure 8-35, “Fold catalog part 2,” on page 665.</p> <p><b>Value format is:</b> “<i>Fn-i</i>” where “n” is the number of finished pages and “i” is either an integer, which identifies a particular fold or the letter “X”, which identifies a generic fold (e.g., “<i>F6-2</i>” describes a Z-fold of 6 finished pages, and “<i>F6-X</i>” describes a generic fold with 6 finished pages).</p> <p>The <b>LayoutPreparation</b> Process uses the fold description specified by this Attribute in the determination of the proper distribution of pages onto the surfaces of the Sheets in the context of the values of both the <i>@PageDistributionScheme</i> and <i>@FinishingOrder</i> Attributes.</p> <p>If not present, no folding other than the folding that is implied by <i>@PageDistributionScheme = "Saddle"</i> is assumed.</p>		
<i>FoldCatalogOrientation = "Rotate0"</i> <a href="#">New in JDF 1.3</a>	Orientation	This Attribute specifies the orientation of how the identified fold catalog entry SHALL be interpreted for the purposes of mapping input pages into the imposition layout (not for purposes of performing the folding, if any, or orienting the Sheet).		

**Table 8-185: LayoutPreparationParams Resource (Sheet 3 of 9)**

Name	Data Type	Description		
<i>FrontMarkList</i> ?  <a href="#">Modified in JDF 1.2</a>	NMTOKENS	<p>List of marks that are to be marked on each front surface. The appearance of the marks are defined by the Process implementation.</p> <p><b>Values include those from:</b> Table 8-186, “FrontMarkList Attribute Values” on page 772.</p>		
<i>Gutter</i> ?  <a href="#">Modified in JDF 1.2</a>	XYPair	<p>Width in points of the horizontal and vertical gutters formed between rows and columns of page cells of a multi-up Sheet layout. The gutter width is defined as the distance between the <i>PageCell/@TrimSize</i> defined trim boxes of adjacent page cells. The first value specifies the width of all horizontal gutters, and the second value specifies the width of all vertical gutters. If no gutters are defined because either the <i>@NumberUp</i> Attribute is not specified or its explicit values are equal to one, this Attribute SHALL be ignored.</p> <p>In the case where a gutter is identified as creeping by either <i>@VerticalCreep</i> or <i>@HorizontalCreep</i>, then the values of <i>@Gutter</i> specify the initial width of explicitly creeping gutters where the gutter width may increment or decrement depending on the <i>@CreepValue</i> Attribute. If a value of <i>@CreepValue</i> is negative then <i>@Gutter</i> SHALL be interpreted as the starting gutter width of the outermost Sheet, otherwise it SHALL be interpreted as the starting gutter width of the innermost Sheet.</p> <p><i>@Gutter</i> is applied in addition to any <i>@Border</i> specified in the <i>PageCell</i>.</p>		
<i>GutterMinimumLimit</i> ?  <a href="#">New in JDF 1.3</a>	XYPair	Specifies the minimum width in points of explicitly creeping horizontal and vertical gutter(s). If an explicitly creeping gutter shrinks to a width equal to or less than this value, all subsequent gutters SHALL be set to this value. If <i>@GutterMinimumLimit</i> is specified and neither <i>@Gutter</i> nor <i>@CreepValue</i> is specified, the device SHOULD calculate creep in a device specific manner.		
<i>HorizontalCreep</i> ?  <a href="#">Modified in JDF 1.2</a>	IntegerList	<p>Specifies which horizontal gutters creep. The allowed values are zero-based indexes that reference horizontal gutters formed by multiple rows of pages in a multi-up page layout specified by the second value of <i>@NumberUp</i>. The value for an entry in this list SHALL be between zero and two (2) less than the second value of <i>@NumberUp</i>.</p> <p>If not specified, then horizontal gutters SHALL NOT creep. Gutters identified by this Attribute are known as explicitly creeping gutters whereas those not identified are known as implicitly creeping gutters.</p> <p>Note: In order preserve the absolute position of the center lines of all gutters across all Sheets, only specify alternating gutters starting with gutter index zero.</p>		

**Table 8-185: LayoutPreparationParams Resource (Sheet 4 of 9)**

Name	Data Type	Description		
<i>ImplicitGutter</i> ? <a href="#">New in JDF 1.3</a>	XYPair	Specifies the initial gutter width in points for implicitly creeping horizontal and vertical gutters. The first number corresponds to horizontal gutters and the second number corresponds to vertical gutters. The particular Sheet to which this initial gutter applies (innermost or outermost) depends upon the polarity of the creep increment specified by <i>@CreepValue</i> (see <i>@Gutter</i> ).		
<i>ImplicitGutterMinimumLimit</i> ? <a href="#">New in 1.3</a>	XYPair	Specifies the minimum width in points of implicitly creeping vertical and horizontal gutter(s). If an implicitly creeping gutter shrinks to a width equal to or less than this value, all subsequent gutters SHALL be set to this value.		
<i>NumberUp</i> ?	XYPair	<p>Specifies a regular, multi-up grid of <b>PageCell</b> Elements into which content finished pages are mapped. The first value specifies the number of columns of page cells and the second value specifies the number of rows of page cells in the multi-up grid (both numbers are integers).</p> <p>The relative positioning of the page cells within the multi-up grid are defined by the explicit or implied values of the <i>@Gutter</i>, <i>@HorizontalCreep</i>, <i>@VerticalCreep</i> and <i>@CreepValue</i> Attributes.</p> <p>The distribution of content pages from the content <b>RunList</b> into the page cells is defined by the explicit or implied values of the <i>@PageDistributionScheme</i>, <i>@PresentationDirection</i>, <i>@Sides</i>, <i>@FinishingOrder</i> and <i>@FoldCatalog</i> Attributes and the implicit number of Sheets comprising the bound component.</p>		
<i>PageDistributionScheme</i> = "Sequential" <a href="#">Modified in JDF 1.5</a>	NMTOKEN	<p>Specifies how finished pages are to be distributed onto a multi-up grid of finished <b>PageCell</b> Elements defined by the values of the <i>@NumberUp</i> Attribute.</p> <p><b>Values include those from:</b> Table 8-187, “<b>PageDistributionScheme</b> Attribute Values”</p> <p><b>Note:</b> Page distribution ordering depends upon the implied number of Sheets per finished <b>Component</b> and how the imposed Sheets are to be folded during finishing as well as the order of gathering and folding. Refer to the <i>@FoldCatalog</i> and <i>@FinishingOrder</i> Attributes.</p> <p><b>Note:</b> The <i>@NumberUp</i> Attribute SHALL always specify a multi-up layout appropriate for a given finished page distribution ordering and <i>@FoldCatalog</i>. Setting this Attribute does not imply the multi-up grid dimensions are appropriate for the selected page distribution scheme.</p> <p><b>Note:</b> In all cases, the order of finished pages as represented by the content <b>RunList</b> SHALL be either in reader order or in an order appropriate for multi-up saddle stitching. Refer to the <i>@PageOrder</i> Attribute.</p> <p><b>Modification note:</b> starting with JDF 1.5, there are new values.</p>		

**Table 8-185: LayoutPreparationParams Resource (Sheet 5 of 9)**

Name	Data Type	Description		
<i>PageOrder = "Reader"</i>	NMTOKEN	<p>The assumed ordering of the finished pages in the <b>RunList</b>.</p> <p><b>Values include:</b></p> <p><i>Booklet</i> – The finished pages are ordered in the <b>RunList</b> and SHALL be processed exactly in the order as specified by <i>@PresentationDirection</i>. <i>@NumberUp</i> SHALL still be set to the appropriate value and is not implied by specifying <i>@PageOrder = "Booklet"</i>.  <i>@PageOrder = "Booklet"</i> SHALL NOT be used in conjunction with <i>@FoldCatalog</i>.</p> <p><i>Reader</i> – The finished pages are in reader order in the <b>RunList</b>.</p>		

**Table 8-185: LayoutPreparationParams Resource (Sheet 6 of 9)**

Name	Data Type	Description																	
<i>PresentationDirection</i> ?	enumeration	<p>Indicates the order in which finished pages will be distributed into the page cells of the <i>@NumberUp</i> layout. If <i>@PageDistributionScheme</i> = "Saddle", <i>@PresentationDirection</i> applies to sets of two adjacent pages. This allows positioning of multiple page pairs for SaddleStitching onto one Sheet.</p> <p><b>Allowed values are:</b></p> <p><i>FoldCatalog</i> – Finished Pages are imaged so that the result is compatible with a finished product produced from the folding catalog as specified in <i>@FoldCatalog</i>.</p> <p><i>XYZ</i> – Permutations of the letters XYZ and xyz so that exactly one of upper or lower case of x, y and z define the order in which finished pages are flowed along each axis with respect to the coordinate system of the front side of the Sheet. The first letter of the triplet specifies the initial axis of flow. The second letter of the triplet specifies the second axis of flow and so on.</p> <ul style="list-style-type: none"> <li>• <i>X</i> – Specifies flowing left to right across a Sheet surface.</li> <li>• <i>x</i> – Specifies flowing right to left across a Sheet surface.</li> <li>• <i>Y</i> – Specifies flowing bottom to top vertically across a Sheet surface.</li> <li>• <i>y</i> – Specifies flowing top to bottom vertically across a Sheet surface.</li> <li>• <i>Z</i> – Specifies flowing bottom of stack to top of it through the stack.</li> <li>• <i>z</i> – Specifies flowing top of stack to bottom of it through the stack.</li> </ul> <p><b>Examples:</b> The following table specifies how cells are ordered on a simplex 4-up layout for a 2-Sheet stack depending on <i>@PresentationDirection</i>. In each example, the left set of 4 numbers represent the top Sheet and the right set of 4 numbers represent the bottom Sheet of the 2-Sheet stack.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th><i>Xyz</i></th><th><i>xyz</i></th><th><i>XYZ</i></th><th><i>Zxy</i></th><th><i>yxz</i></th></tr> <tr> <td>1 2    5 6</td><td>2 1    6 5</td><td>7 8    3 4</td><td>4 2    3 1</td><td>7 5    3 1</td></tr> <tr> <td>3 4    7 8</td><td>4 3    8 7</td><td>5 6    1 2</td><td>8 6    7 5</td><td>8 6    4 2</td></tr> </table>	<i>Xyz</i>	<i>xyz</i>	<i>XYZ</i>	<i>Zxy</i>	<i>yxz</i>	1 2    5 6	2 1    6 5	7 8    3 4	4 2    3 1	7 5    3 1	3 4    7 8	4 3    8 7	5 6    1 2	8 6    7 5	8 6    4 2		
<i>Xyz</i>	<i>xyz</i>	<i>XYZ</i>	<i>Zxy</i>	<i>yxz</i>															
1 2    5 6	2 1    6 5	7 8    3 4	4 2    3 1	7 5    3 1															
3 4    7 8	4 3    8 7	5 6    1 2	8 6    7 5	8 6    4 2															

**Table 8-185: LayoutPreparationParams Resource (Sheet 7 of 9)**

Name	Data Type	Description				
<i>Rotate = "Rotate0"</i>	enumeration	<p>Orthogonal rotation including the implied translation to be applied to the grid of <b>PageCell</b> Elements on the entire surface relative to the process coordinate system.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Rotate0</i></li> <li><i>Rotate90</i> – 90° counterclockwise rotation.</li> <li><i>Rotate180</i> – 180° rotation.</li> <li><i>Rotate270</i> – 90° clockwise rotation.</li> </ul> <p><b>Note:</b> For details of orthogonal rotations, refer to Table 2-4, “Matrices and Orientation values for describing the orientation of a Component” on page 39. If a <b>@RotatePolicy</b> value other than <b>"NoRotate"</b> is specified in <b>FitPolicy</b>, the actual rotation specified in <b>@Rotate</b> MAY be modified accordingly.</p> <p><b>Note:</b> A rotation of the grid also rotates the gutters (i.e., it is applied after all other parameters have been evaluated and applied).</p>				
<i>Sides = "OneSidedFront"</i>	enumeration	<p>Indicates whether the content layout is to be imaged on one or both sides of the media. When the content layout consists of multiple input <b>RunList</b> pages to be imposed on a single surface, <b>@Sides</b> applies to the entire unfolded Sheet.</p> <p>When a different value for the <b>@Sides</b> Attribute is encountered, it SHALL force a new Sheet. However, when the same value for the <b>@Sides</b> Attribute is restated for consecutive pages, it is the same as if that restatement was not present.</p> <p><b>Allowed values are from:</b> Table 8-142, “Sides Attribute Values” on page 694.</p>				
<i>StackDepth ?</i>	integer	The number of Sheets in a stack that are processed when imposing down the Z axis. If not specified, the entire Job defines one stack.				
<i>StepDocs ?</i>  <u>Modified in JDF 1.2</u>	XYPair	<p>A list of two integers that species how to impose multiple Instance Documents on one Sheet. The first value specifies the document repeats along the X axis, the second value specifies the repeats along the Y axis. Each entry of <b>@NumberUp</b> SHALL be an integer multiple of <b>@StepRepeat * @StepDocs</b>. Positive values define grouped step and repeat whereas negative values define alternating step and repeat. The following examples, where documents are denoted A and B while pages are denoted 1 and 2, have</p> <p><b>@PresentationDirection = "Xyz", @NumberUp = "4 4" and @StepRepeat = "2 2 1" and @StepDocs =:</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;"><i>"2 1"</i> (2 documents in X, 1 in Y) A1 A1 B1 B1 A1 A1 B1 B1 A2 A2 B2 B2 A2 A2 B2 B2</td><td style="padding: 5px;"><i>"1 2"</i> (1 document in X, 2 in Y) A1 A1 A2 A2 A1 A1 A2 A2 B1 B1 B2 B2 B1 B1 B2 B2</td></tr> </table>	<i>"2 1"</i> (2 documents in X, 1 in Y) A1 A1 B1 B1 A1 A1 B1 B1 A2 A2 B2 B2 A2 A2 B2 B2	<i>"1 2"</i> (1 document in X, 2 in Y) A1 A1 A2 A2 A1 A1 A2 A2 B1 B1 B2 B2 B1 B1 B2 B2		
<i>"2 1"</i> (2 documents in X, 1 in Y) A1 A1 B1 B1 A1 A1 B1 B1 A2 A2 B2 B2 A2 A2 B2 B2	<i>"1 2"</i> (1 document in X, 2 in Y) A1 A1 A2 A2 A1 A1 A2 A2 B1 B1 B2 B2 B1 B1 B2 B2					

**Table 8-185: LayoutPreparationParams Resource (Sheet 8 of 9)**

Name	Data Type	Description																													
<i>StepRepeat</i> ?	IntegerList	<p>A list of three integers that specifies the number of identical pages to impose. The first value specifies the repeats along the X axis, the second value specifies the repeats along the Y axis, and the third value specifies the repeats down the stack — the Z axis. Each entry of <i>@NumberUp</i> SHALL be an integer multiple of <i>@StepRepeat * @StepDocs</i>. Positive values define grouped step and repeat, whereas negative values define alternating step and repeat. Note that negative values are illegal for the third component, since the total depth of the stack might be unknown. The following examples have <i>@PresentationDirection = "XYZ"</i>, <i>@NumberUp = "4 4 "</i> and <i>@StepRepeat =:</i></p> <table border="1"> <tr> <td>"2 2 1"</td><td>"-2 2 1"</td><td>"-2 -2 1"</td><td>"2 -2 1"</td><td>"1 4 1"</td></tr> <tr> <td>1 1 2 2</td><td>1 2 1 2</td><td>1 2 1 2</td><td>1 1 2 2</td><td>1 2 3 4</td></tr> <tr> <td>1 1 2 2</td><td>1 2 1 2</td><td>3 4 3 4</td><td>3 3 4 4</td><td>1 2 3 4</td></tr> <tr> <td>3 3 4 4</td><td>3 4 3 4</td><td>1 2 1 2</td><td>1 1 2 2</td><td>1 2 3 4</td></tr> <tr> <td>3 3 4 4</td><td>3 4 3 4</td><td>3 4 3 4</td><td>3 3 4 4</td><td>1 2 3 4</td></tr> </table>					"2 2 1"	"-2 2 1"	"-2 -2 1"	"2 -2 1"	"1 4 1"	1 1 2 2	1 2 1 2	1 2 1 2	1 1 2 2	1 2 3 4	1 1 2 2	1 2 1 2	3 4 3 4	3 3 4 4	1 2 3 4	3 3 4 4	3 4 3 4	1 2 1 2	1 1 2 2	1 2 3 4	3 3 4 4	3 4 3 4	3 4 3 4	3 3 4 4	1 2 3 4
"2 2 1"	"-2 2 1"	"-2 -2 1"	"2 -2 1"	"1 4 1"																											
1 1 2 2	1 2 1 2	1 2 1 2	1 1 2 2	1 2 3 4																											
1 1 2 2	1 2 1 2	3 4 3 4	3 3 4 4	1 2 3 4																											
3 3 4 4	3 4 3 4	1 2 1 2	1 1 2 2	1 2 3 4																											
3 3 4 4	3 4 3 4	3 4 3 4	3 3 4 4	1 2 3 4																											
<i>SurfaceContentsBox</i> ? <a href="#">Modified in JDF 1.1A</a>	rectangle	<p>This box, specified in <b>Layout</b> coordinate space, defines the area into which <b>PageCell</b> Elements are distributed. The lower left corner of the rectangle specified by the value of this Attribute establishes the coordinate system into which the content is mapped and SHOULD have a value of "<i>0 0</i>".</p> <p><i>@SurfaceContentsBox</i> MAY imply clipping. This Attribute SHOULD be supplied in order to get predictable placement of content. If this Attribute is not supplied, a rectangle with the origin at "<i>0 0</i>" and an extent that MAY be dependent on the dimensions of the <b>Media</b> is implied.</p>																													
<i>VerticalCreep</i> ?	IntegerList	<p>Specifies which vertical gutters creep. The allowed values are zero-based indexes that reference vertical gutters formed by multiple columns of pages in a multi-up page layout specified by the first value of <i>@NumberUp</i>.</p> <p>The value for an entry in this list SHALL be between zero and two (2) less than the first value of <i>@NumberUp</i>. An index value outside of this range is ignored. If not specified then vertical gutters SHALL NOT creep.</p> <p>Gutters identified by this Attribute are known as explicitly creeping gutters whereas those not identified are known as implicitly creeping gutters.</p> <p>Note: In order preserve the absolute position of the center lines of all gutters across all Sheets, only specify alternating gutters starting with gutter index zero.</p>																													
<i>DeviceMark</i> ?	element	<p>Details how Device-dependent marks are to be generated. If not specified, the marks are Device-dependent.</p>																													

**Table 8-185: LayoutPreparationParams Resource (Sheet 9 of 9)**

Name	Data Type	Description		
ExternalImpositionTemplate ? <a href="#">New in JDF 1.3</a>	refelement	Reference to an external imposition template in a proprietary format.  <b>LayoutPreparationParams</b> SHOULD NOT contain information that overlaps information specified in <b>ExternalImpositionTemplate</b> . Information specified in <b>LayoutPreparationParams</b> overrides parameters specified in <b>ExternalImpositionTemplate</b> .		
FitPolicy ?	element	Details how to fit the grid of <b>PageCell</b> Elements onto the <b>@SurfaceContentsBox</b> .		
ImageShift ?	element	Details how to place the grid of <b>PageCell</b> Elements into the <b>@SurfaceContentsBox</b> . <b>ImageShift</b> SHALL be applied before any transformations of the grid of <b>PageCell</b> Elements as specified by <b>@Rotate</b> or <b>FitPolicy</b> .  The reference origin of the grid of page cells is the lower left corner of the trim box of the lower left page cell of the grid of the first Sheet prior to applying any creep.  Note that <b>ImageShift</b> will generally be required to allow for space when <b>@CreepValue</b> is positive.		
InsertSheet *	refelement	Additional Sheets to be inserted before, after or within a Job.		
JobField *	element	Specific information about this kind of mark object.		
Media ?	refelement	Specific information about the media.		
PageCell ? <a href="#">Modified in JDF 1.1A</a>	element	<b>PageCell</b> Elements describe how page contents will be imaged onto individual page cells. At most one <b>PageCell</b> SHALL be specified and it is applied to all page cells on both surfaces of a Sheet.		

**— Attribute: FrontMarkList****Table 8-186: FrontMarkList Attribute Values**

Value	Description	Value	Description
<i>CIELABMeasuringField</i>		<i>IdentificationField</i>	
<i>ColorControlStrip</i>		<i>JobField</i>	
<i>ColorRegisterMark</i>		<i>PaperPathRegisterMark</i>	
<i>CutMark</i>		<i>RegisterMark</i>	
<i>DensityMeasuringField</i>		<i>ScavengerArea</i>	

**— Attribute: PageDistributionScheme****Table 8-187: PageDistributionScheme Attribute Values (Sheet 1 of 2)**

Value	Description
<i>Perfect</i>	Distribute finished pages onto a sequence of one or more Signatures in proper order for perfect binding. For this page distribution scheme, creep is usually not used.

**Table 8-187: PageDistributionScheme Attribute Values (Sheet 2 of 2)**

Value	Description
<i>PerfectFront</i> <a href="#">New in JDF 1.5</a>	Distribute finished pages onto a sequence of one or more Signatures in proper order for perfect binding where only the reader order front pages respective of the finished product are placed in the signature layout. For left hand binding, only right facing page cells contain pages and left facing page cells are empty. For right hand binding, only left facing page cells contain pages and right facing page cells are empty. For top binding, only bottom facing page cells contain pages and top facing page cells are empty. For bottom binding, only top facing page cells contain pages and bottom facing page cells are empty. For this page distribution scheme, creep is usually not used.
<i>Saddle</i>	Distribute finished pages onto a sequence of one or more imposition layouts in proper order for saddle stitch binding. For this page distribution scheme, creep is to be applied only to odd-numbered vertical gutters where any even-numbered gutters is to automatically creep in the opposite direction.
<i>SaddleFront</i> <a href="#">New in JDF 1.5</a>	Distribute finished pages onto a sequence of one or more imposition layouts in proper order for saddle stitch binding where only the reader order front pages respective of the finished product are placed in the signature layout. For left hand binding, only right facing page cells contain pages and left facing page cells are empty. For right hand binding, only left facing page cells contain pages and right facing page cells are empty. For top binding, only bottom facing page cells contain pages and top facing page cells are empty. For bottom binding, only top facing page cells contain pages and bottom facing page cells are empty. For this page distribution scheme, creep is to be applied only to odd-numbered vertical gutters where any even-numbered gutters is to automatically creep in the opposite direction.
<i>Sequential</i>	The finished pages are distributed onto the multi-up layout according to the value of the <i>@PresentationDirection</i> Attribute.

#### 8.90.1 Element: [PageCell](#)

**Table 8-188: PageCell Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Border ?</i> <a href="#">Modified in JDF 1.1A</a>	double	<p>A number indicating the width in points of a drawn border line, that appears around the trim region specified by the explicit or implied value of <i>@TrimSize</i>. A value of "0" specifies no border.</p> <p>If the value of this Attribute is non-zero and positive, then a border of that specified width will be drawn to the outside of the page cell whose inside dimension is the same as the explicit or implied value of the <i>@TrimSize</i> Attribute. The border marks SHALL NOT overwrite the page contents of the trimmed page. Note that when the page cells are distributed evenly over the area of the <i>@SurfaceContentsBox</i>, the page cells position and/or size can be adjusted to accommodate the border.</p> <p>If the value of this Attribute is non-zero and negative, then a border of a width specified by the absolute value of this Attribute will be drawn to the inside of the page cell whose outside dimension is the same as the explicit or implied value of the <i>@TrimSize</i> Attribute. The border marks MAY overwrite the page contents of the trimmed page.</p> <p>The rectangle defined by the inside edge of the border defines a <i>@ClipBox</i> beyond which no content will be imaged.</p>

**Table 8-188: PageCell Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>ClipBox</i> ?	rectangle	Defines a rectangle with an origin relative to the lower left corner of the page cell rectangle defined by the explicit or implied value of the @TrimSize Attribute. Page content data imaged outside of the region defined by this rectangle SHALL be clipped. If @ClipBox is larger than @TrimSize, it is used to specify a bleed region. If not specified, its default value is "0 0 X Y" where X and Y are the explicit or implied values of @TrimSize.
<i>MarkList</i> ?	NMTOKENS	<p>List of marks that are to be marked on each page cell. The appearance of the marks are defined by the Process implementation.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>CIELABMeasuringField</i></li> <li><i>ColorControlStrip</i></li> <li><i>ColorRegisterMark</i></li> <li><i>CutMark</i></li> <li><i>DensityMeasuringField</i></li> <li><i>IdentificationField</i></li> <li><i>JobField</i></li> <li><i>PaperPathRegisterMark</i></li> <li><i>RegisterMark</i></li> <li><i>ScavengerArea</i></li> </ul>
<i>Rotate</i> = "Rotate0"	enumeration	<p>Orthogonal rotation to be applied to the contents in each page cell.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Rotate0</i></li> <li><i>Rotate90</i> – 90° counterclockwise rotation.</li> <li><i>Rotate180</i> – 180° rotation.</li> <li><i>Rotate270</i> – 90° clockwise rotation.</li> </ul> <p><b>Note:</b> for details of orthogonal rotation, refer to Table 2-4, “Matrices and Orientation values for describing the orientation of a Component” on page 39. If a @RotatePolicy value other than "NoRotate" is specified in FitPolicy, the actual rotation specified in @Rotate MAY be modified accordingly.</p>
<i>TrimSize</i> ? <a href="#">Modified in JDF 1.1A</a>	XYPair	<p>Defines the dimensions of the page cell. The lower left corner of the rectangle specified by the value of this Attribute establishes the coordinate system into which the page content is mapped.</p> <p>If not specified, @TrimSize is calculated by subtracting the gutters from the <b>LayoutPreparationParams/@SurfaceContentsBox</b> and dividing by the appropriate @NumberUp value.</p>
<i>Color</i> ?	refelement	Color of the border.
<i>DeviceMark</i> ?	element	Details how Device dependent marks are to be generated. Defaults to the value of <b>DeviceMark</b> in the parent <b>LayoutPreparationParams</b> .
<i>FitPolicy</i> ?	element	Details how page content is fit into the page cells. If the dimensions of the page contents vary, <b>FitPolicy</b> is applied to the contents of each cell individually.
<i>ImageShift</i> ?	element	Element which describes how content is to be placed into the page cells. X and Y are specified in the coordinate system of the <b>PageCell</b> .

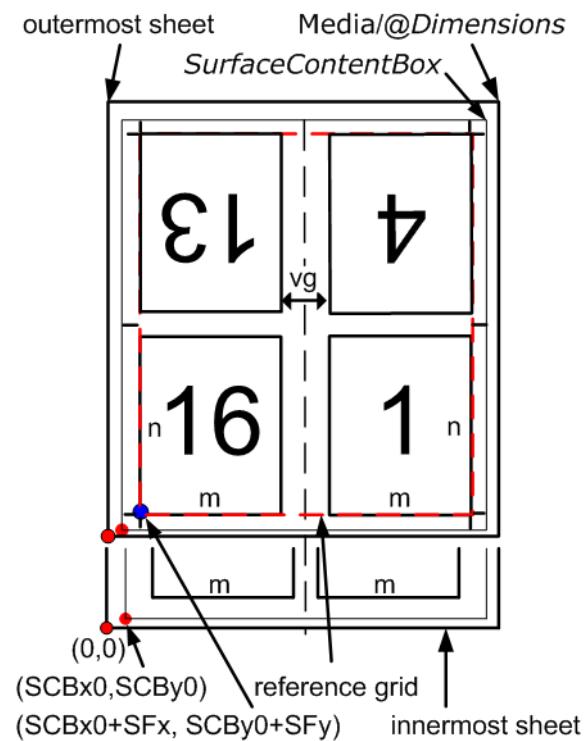
### 8.90.2 Element: **ImageShift**

**ImageShift** Elements describe how the grid of page cells will be imaged onto media, when **ImageShift** is specified in the context of **LayoutPreparationParams**. When **ImageShift** is specified in the context of a **PageCell**, it specifies how content is imaged into the respective page cells.

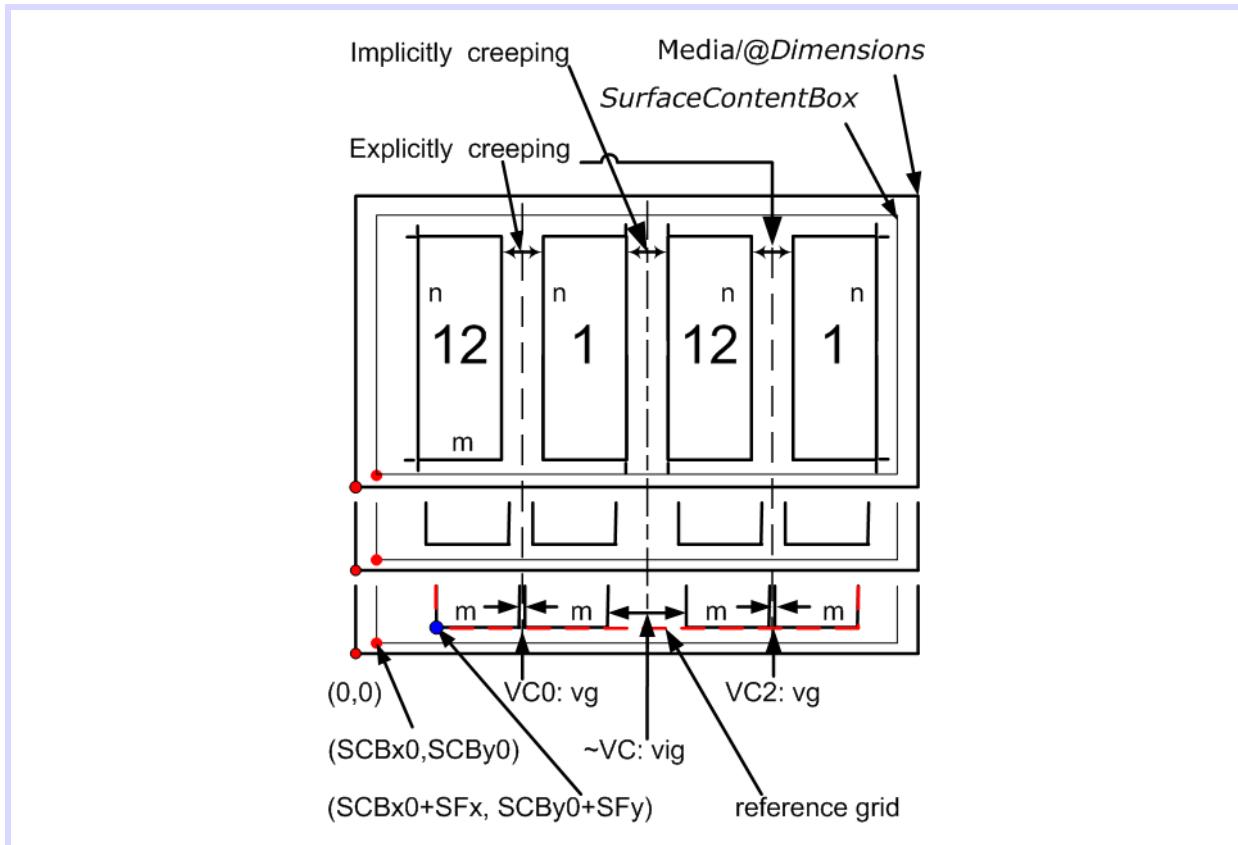
**Table 8-189: ImageShift Element**

Name	Data Type	Description
<i>PositionX</i> ?	enumeration	<p>Indicates how content is to be positioned horizontally. The <i>@ShiftBack</i> and <i>@ShiftFront</i> are applied after <i>@PositionX</i> and <i>@PositionY</i>.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Center</i> – Center the content horizontally without regard to limitations of the receiving container.</li> <li><i>Left</i> – Position the left edge of the content so that it is coincident with the left edge of the receiving container.</li> <li><i>Right</i> – Position the right edge of the content so that it is coincident with the right edge of the receiving container.</li> <li><i>Spine</i> – Position the content so that it is coincident with the vertical binding edge of the receiving container. <a href="#">New in JDF 1.2</a></li> <li><i>None</i> – Place the content wherever the print data specify. <a href="#">Deprecated in JDF 1.3</a></li> </ul>
<i>PositionY</i> ?	enumeration	<p>Indicates how content is to be positioned vertically. The <i>@ShiftBack</i> and <i>@ShiftFront</i> are applied after <i>@PositionX</i> and <i>@PositionY</i>.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Bottom</i> – Position the bottom edge of the content so that it is coincident with the bottom edge of the receiving container.</li> <li><i>Center</i> – Center the content horizontally without regard to limitations of the receiving container.</li> <li><i>Top</i> – Position the top edge of the content so that it is coincident with the top edge of the receiving container.</li> <li><i>Spine</i> – Position the content so that it is coincident with the horizontal binding edge of the receiving container. <a href="#">New in JDF 1.2</a></li> <li><i>None</i> – Place the content wherever the print data specify. <a href="#">Deprecated in JDF 1.3</a></li> </ul>
<i>ShiftBack</i> ?	XYPair	The amount in X and Y direction by which the content is to be shifted on the back side of the receiving container. If not specified, <i>@ShiftBack</i> SHALL be calculated from <i>@ShiftFront</i> so that the content remains aligned.
<i>ShiftFront</i> = "0 0"	XYPair	The amount in X and Y direction by which the content is to be shifted on the front side of the receiving container.

Figure 8-44: Diagram of a 4-up cross-folded saddle-stitch imposition with vertical gutter creep



**Figure 8-45: Diagram of a step-and-repeat 2-up saddle-stitch imposition with vertical spine gutter creep**



#### Description for Figure 8-44

The following terms are used in Figure 8-44.

- **reference grid** in Figure 8-44 refers to the dashed red box around page cells of outermost Sheet, which indicates the size of the reference grid used in calculating grid placement relative to the *@SurfaceContentsBox* origin using **LayoutPreparationParams/@ImageShift**
- **SCBx0, SCBy0, SFx, SFy, m, n and vg** are used in the JDF below.

Figure 8-44 illustrates the JDF below. The JDF assumes that the dimensions of the **RunList** page's trim rectangle matches **PageCell/@TrimSize**, whose dimensions are **m** by **n** (width and height) in the JDF example below. The Sheet with the widest creep gutter is on the top of the logical Sheet stack.

#### Example 8-32: **LayoutPreparationParams: JDF for Figure 8-44**

```
<LayoutPreparationParams Status="Available" Class="Parameter" ID="LPP_2"
    NumberUp="2 2" PageDistributionScheme="Saddle" FoldCatalog="F8-7"
    FoldCatalogOrientation="Flip270" Sides="TwoSidedFlipY"
    StepRepeat="1 1 1" SurfaceContentsBox="0 0 612 792" BindingEdge="Left"
    VerticalCreep="0" GutterMinimumLimit="5 5" CreepValue="0 -5"
    Gutter="20 20" FinishingOrder="FoldCollect" FrontMarkList="CutMark">
    <!-- Note: the value of some attributes in LayoutPreparationParams and
        subElements relate to symbols in the above Figure:
        SurfaceContentsBox="SCBx0 SCBy0 SCBx1 SCBy1"
        GutterMinimumLimit="hml vml"
        CreepValue="0 -vc"
        Gutter="hg vg"
```

```

    TrimSize="m n"
    ShiftFront="SFx SFy"
-->
<PageCell TrimSize="612 792">
    <ImageShift PositionX="Spine" PositionY="Center" />
</PageCell>
<ImageShift PositionY="Bottom" PositionX="Left" ShiftFront="20 20"/>
</LayoutPreparationParams>

```

### Description for Figure 8-45

The following terms are used in Figure 8-45.

- **reference grid** in Figure 8-45 refers to the dashed red box around page cells of innermost Sheet, which indicates the size of the reference grid used in calculating grid placement relative to the `@SurfaceContentsBox` origin using `LayoutPreparationParams/@ImageShift`
- `SCBx0, SCBy0, SFx, SFy, m, n, vg` and `vig` are used in the JDF below.

Figure 8-45 illustrates the JDF below. The JDF assumes that the dimensions of source content page rectangle matches `PageCell/@TrimSize`, whose dimensions are `m` by `n` (width and height) in the JDF example below.

### Example 8-33: LayoutPreparationParams: JDF for Figure 8-45

```

<LayoutPreparationParams Class="Parameter" ID="LPP_1" Status="Available"
    NumberUp="4 1" PageDistributionScheme="Saddle" FoldCatalog="F4-1"
    FoldCatalogOrientation="Flip0" Sides="TwoSidedFlipY" StepRepeat="2 1 1"
    SurfaceContentsBox="0 0 612 792" VerticalCreep="0 2"
    ImplicitGutter="0 30" ImplicitGutterMinimumLimit="0 20" CreepValue="0 5"
    Gutter="0 10" FinishingOrder="GatherFold" FrontMarkList="CutMark">
    <!--Note: folding pattern F4-1 applies to each of the two 2x1
        signatures
        Note: step and repeat by two in X direction logically divides grid
        into two 2x1 signatures
        Note: first (VC0) and third (VC2) vertical gutters are explicitly
            creeping and the rest (~VC) are implicitly creeping
        Note: Positive vertical creep value indicates initial gutter
            widths of inner most Sheet
        Note: cut marks are located relative to largest page cell grid
            trim box
        Note: the value of some attributes in LayoutPreparationParams and
            subElements relate to symbols in the above Figure:
            SurfaceContentsBox="SCBx0 SCBx1 SCBy0 SCBy1"
            ImplicitGutter="0 vig"
            ImplicitGutterMinimumLimit="0 vigl"
            CreepValue="0 +vc"
            Gutter="0 vg"
            TrimSize="m n"
            ShiftFront="SFx SFy"
    -->
<PageCell TrimSize="612 792">
    <ImageShift PositionX="Spine" PositionY="Bottom"/>
</PageCell>
<ImageShift PositionY="Bottom" PositionX="Left" ShiftFront="20 20"/>
</LayoutPreparationParams>

```

## 8.91 LayoutShift

[New in JDF 1.4.](#)

### Resource Properties

**Resource Class:** Parameter

**Resource referenced by:** —

**Example Partition:** `@SheetName, @Side, @Separation`

**Input of Processes:** `LayoutShifting`

**Output of Processes:** —

**Table 8-190: LayoutShift Resource**

Name	Data Type	Description
ShiftPoint +	element	Description of separation dependent transformations for a given point on the <code>Layout</code> .

### 8.91.1 Element: ShiftPoint

**Table 8-191: ShiftPoint Element**

Name	Data Type	Description
<code>CTM</code>	matrix	<code>@CTM</code> that SHALL be applied to the Separation after all other transformations.
<code>Position</code>	XYPair	Point that this <code>ShiftPoint</code> applies to. <b>Note:</b> the interpolation algorithm between <code>ShiftPoint</code> positions is implementation dependent.

### Example 8-34: LayoutShift

[New in JDF 1.4.](#)

Example of absolute positions with `@Position`

**TBD 2.x Example.**

```
<!--LayoutShift SHOULD be partitioned: at least Side and Separation
     will make sense -->
<LayoutShift ID="r000005" Class="Parameter" Status="Unavailable"
  PartIDKeys="Side Separation" >
  <!--LayoutShift SHOULD be partitioned: at least Side and Separation
       will make sense-->
  <!--Note that the interpolation algorithm between positions is
       implementation dependent-->
  <LayoutShift Side="Front">
    <LayoutShift Separation="Cyan">
      <ShiftPoint CTM="1 0 0 1 0 0" Position="360 500"/>
      <ShiftPoint CTM="1 0 0 1 0 2" Position="1800 500"/>
      <ShiftPoint CTM="1 0 0 1 1 0" Position="360 1500"/>
      <ShiftPoint CTM="1 0 0 1 1 2" Position="1800 1500"/>
      <ShiftPoint CTM="1 0 0 1 2 0" Position="360 2500"/>
      <ShiftPoint CTM="1 0 0 1 2 2" Position="1800 2500"/>
      <ShiftPoint CTM="1 0 0 1 3 0" Position="360 3500"/>
      <ShiftPoint CTM="1 0 0 1 3 2" Position="1800 3500"/>
    </LayoutShift>
    <LayoutShift Separation="Magenta">
      <ShiftPoint CTM="1 0 0 1 1 1" Position="360 500"/>
      <ShiftPoint CTM="1 0 0 1 1 3" Position="1800 500"/>
    </LayoutShift>
  </LayoutShift>
</LayoutShift>
```

```

<ShiftPoint CTM="1 0 0 1 2 1" Position="360 1500"/>
<ShiftPoint CTM="1 0 0 1 2 3" Position="1800 1500"/>
<ShiftPoint CTM="1 0 0 1 3 1" Position="360 2500"/>
<ShiftPoint CTM="1 0 0 1 3 3" Position="1800 2500"/>
<ShiftPoint CTM="1 0 0 1 4 1" Position="360 3500"/>
<ShiftPoint CTM="1 0 0 1 4 3" Position="1800 3500"/>
</LayoutShift>
<LayoutShift Separation="Yellow">
  <ShiftPoint CTM="1 0 0 1 2 2" Position="360 500"/>
  <ShiftPoint CTM="1 0 0 1 2 4" Position="1800 500"/>
  <ShiftPoint CTM="1 0 0 1 3 2" Position="360 1500"/>
  <ShiftPoint CTM="1 0 0 1 3 4" Position="1800 1500"/>
  <ShiftPoint CTM="1 0 0 1 4 2" Position="360 2500"/>
  <ShiftPoint CTM="1 0 0 1 4 4" Position="1800 2500"/>
  <ShiftPoint CTM="1 0 0 1 5 2" Position="360 3500"/>
  <ShiftPoint CTM="1 0 0 1 5 4" Position="1800 3500"/>
</LayoutShift>
<LayoutShift Separation="Black">
  <ShiftPoint CTM="1 0 0 1 3 3" Position="360 500"/>
  <ShiftPoint CTM="1 0 0 1 3 5" Position="1800 500"/>
  <ShiftPoint CTM="1 0 0 1 4 3" Position="360 1500"/>
  <ShiftPoint CTM="1 0 0 1 4 5" Position="1800 1500"/>
  <ShiftPoint CTM="1 0 0 1 5 3" Position="360 2500"/>
  <ShiftPoint CTM="1 0 0 1 5 5" Position="1800 2500"/>
  <ShiftPoint CTM="1 0 0 1 6 3" Position="360 3500"/>
  <ShiftPoint CTM="1 0 0 1 6 5" Position="1800 3500"/>
</LayoutShift>
</LayoutShift>
</LayoutShift>

```

## 8.92 LongitudinalRibbonOperationParams

Deprecated in JDF 1.1.

See Section P.6.12, “LongitudinalRibbonOperationParams” on page 1357 for details of this deprecated Resource.

## 8.93 LooseBindingParams

This Parameter describes the details of the **LooseBinding** Process.

### Resource Properties

Resource referenced by:



Intent Pairing:

**BindingIntent**

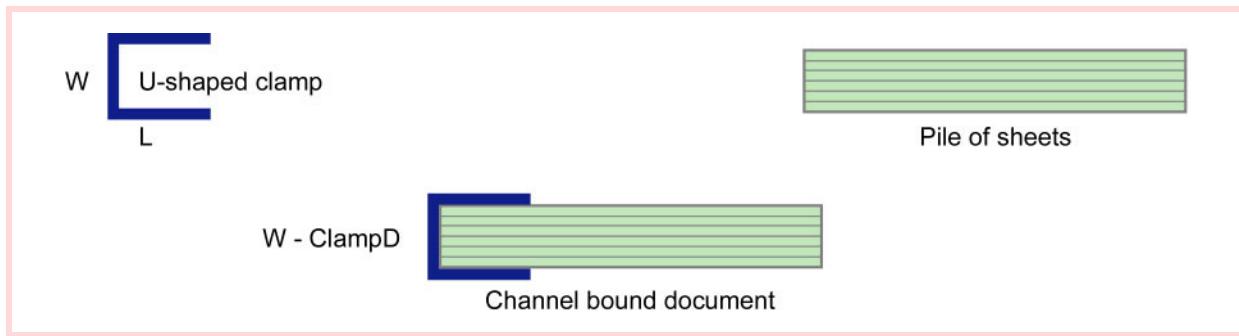
Input of Processes:

**LooseBinding**

Output of Processes:



Figure 8-46 depicts the ChannelBinding process.

**Figure 8-46: Parameters used for channel binding**

The symbols W, L and ClampD of Figure 8-46 are described by the Attributes `@ClampD` and `@ClampSize` of the table below.

**Table 8-192: LooseBindingParams Resource (Sheet 1 of 3)**

Name	Data Type	Description
<i>BinderBrand</i> ?	string	Specifies the name of the binder: <b>ChannelBinding</b> : the clamp (or preassembled cover with clamp) manufacturer and the specific item. <b>CoilBinding</b> : the coil manufacturer and the specific item. <b>PlasticCombBinding</b> : the comb manufacturer and the specific item. <b>RingBinding</b> : binder manufacturer and the specific item. <b>Note:</b> for 2.x, <code>@Brand</code> replaces <code>@BinderName</code> in 1.x. <b>StripBinding</b> : strip manufacturer and the specific item. <b>WireCombBinding</b> : the comb manufacturer (e.g., <i>Wire-O</i> ®) and the specific item.
<i>BindingType</i> ?	NMTOKEN	Type of binding that is performed. <b>Values include:</b> <i>ChannelBinding</i> – Metal clamps are used to bind sheets. <i>CoilBinding</i> – Metal wire, wire with plastic or pure plastic is used to fasten pre-punched sheets of paper, cardboard or other materials. <i>CombBinding</i> – Plastic insert wraps through pre-punched holes in the substrate. <i>RingBinding</i> – Pre-punched sheets are placed in a ring binder. <i>StripBinding</i> – Hard plastic strips are held together by plastic pins, which in turn are bound to the strips with heat.
<i>CoverColor</i> ?	NamedColor	Color of the cover used for <b>LooseBinding</b> . See also <code>@SpineColor</code> .
<i>CoverColorDetails</i> ?	string	A more specific, specialized or site-defined name for the color of the cover used for <b>LooseBinding</b> . If <code>@CoverColorDetails</code> is supplied, <code>@CoverColor</code> SHOULD also be supplied.

**Table 8-192: LooseBindingParams Resource (Sheet 2 of 3)**

Name	Data Type	Description
<i>CoverMaterial</i> ?	NMTOKEN	<p>The following describe binder materials used.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Cardboard</i> – Cardboard with no covering.</li> <li><i>ClothCovered</i> – Cardboard with cloth covering.</li> <li><i>Plastic</i> – Binder cover fabricated from solid plastic Sheet material (e.g., PVC Sheet). <b>Note:</b> for 1.x, called "<i>PVC</i>".</li> <li><i>VinylCovered</i> – Cardboard with colored vinyl covering. <b>Note:</b> for 1.x, called "<i>PVCCovered</i>".</li> </ul>
<i>FlipBackCover</i> ?	boolean	<p>The spine is typically hidden between the last page of the <b>Component</b> and the back cover. Flip the back cover after the wire was “closed” or keep it open. The latter makes sense if further processing is needed (e.g., inserting a CD) before closing the book.</p> <p><b>Note:</b> <i>@FlipBackCover</i> is for "<i>WireCombBinding</i>" only.</p>
<i>Length</i> ?	double	<p>The length of the pin is determined by the height of the pile of Sheets to be bound.</p> <p><b>Note:</b> <i>@Length</i> is for "<i>StripBinding</i>" only.</p>
<i>Material</i> ?	enumeration	<p>The material used for forming the coil binding with "<i>CoilBinding</i>" or wire comb binding with "<i>WireCombBinding</i>".</p> <p><b>Allowed values</b> are:</p> <ul style="list-style-type: none"> <li><i>Steel</i> – Plain steel. For both binding types.</li> <li><i>ColorCoatedSteel</i> – Coated steel. For both binding types.</li> <li><i>Plastic</i> – any kind of plastic. For "<i>CoilBinding</i>" only</li> </ul> <p><b>Note:</b> "<i>LaqueredSteel</i>", "<i>TinnedSteel</i>", "<i>ZincsSteel</i>", for 1.x "<i>CoilBinding</i>" and "<i>WireCombBinding</i>" renamed to "<i>ColorCoatedSteel</i>".</p> <p><b>Note:</b> "<i>NylonCoatedSteel</i>" for 1.x "<i>CoilBinding</i>" renamed to "<i>ColorCoatedSteel</i>".</p> <p><b>Note:</b> "<i>PVC</i>" for 1.x "<i>CoilBinding</i>" renamed to "<i>Plastic</i>".</p>
<i>SpineColor</i> ?	NamedColor	<p>Determines the color of the respective Binder.:</p> <p><b>ChannelBinding:</b> the clamp/cover. If <i>@ClampSystem</i> = "true", then the color of the cover is also meant.</p> <p><b>CoilBinding:</b> the coil.</p> <p><b>PlasticCombBinding:</b> the plastic comb.</p> <p><b>RingBinding:</b> the binders spine; see also <i>@BinderColor</i>.</p> <p><b>StripBinding:</b> the strip.</p> <p><b>WireCombBinding:</b> the wire comb.</p>
<i>SpineColorDetails</i> ?	string	A more specific, specialized or site-defined name for the color of the spine. If <i>@SpineColorDetails</i> is supplied, <i>@SpineColor</i> SHOULD also be supplied.

**Table 8-192: LooseBindingParams Resource (Sheet 3 of 3)**

Name	Data Type	Description
HolePattern *	element	Details of the holes for binding. Values for HolePattern/@ <i>Pattern</i> SHOULD be taken from Appendix M, “JDF XJDF/CIP4 Hole Pattern Catalog” on page 1239 and SHOULD follow the conventions specified in Table M-1, “Naming Scheme for Hole Patterns”
ChannelBindingDetails ?	element	
CoilBindingDetails ?	element	
CombBindingDetails ?	element	
RingBindingDetails ?	element	

**8.93.1 Element: ChannelBindingDetails****Table 8-193: ChannelBindingDetails Element**

Name	Data Type	Description
ClampD ?	double	The distance of the clamp that was “pressed away” (see Figure 8-46). Parameters used for channel binding). <b>Note:</b> @ClampD is for “ChannelBinding” only.
ClampSize ?	shape	The shape size of the clamp. The first number of the shape data type corresponds to the clamp width W (see Figure 8-46) which is determined by the final height of the block of Sheets to be bound. The second number corresponds to the length L (see Figure 8-46). The third corresponds to the spine length (not visible in Figure 8-46). The spine length is perpendicular on the paper plane. <b>Note:</b> @ClampSize is for “ChannelBinding” only.
Cover ?	boolean	If “true” the clamp is inside of a preassembled cover. <b>Note:</b> @Cover replaces 1.x @ClampSystem. <b>Note:</b> @Cover is for “ChannelBinding” only.

**8.93.2 Element: CoilBindingDetails****Table 8-194: CoilBindingDetails Element**

Name	Data Type	Description
Diameter ?	double	Specifies the diameter of the coil to be produced. The diameter is determined by the height of the block of Sheets to be bound.
Thickness ?	double	The thickness of the coil or comb. <b>Note:</b> @Thickness is for “CoilBinding”, “PlasticCombBinding” and “WireCombBinding” only.
Tucked ?	boolean	If “true”, the ends of the coils are “tucked in”. <b>Note:</b> @Tucked is for “CoilBinding” only.

### 8.93.3 Element: CombBindingDetails

**Table 8-195: CombBindingDetails Element**

Name	Data Type	Description
Diameter ?	double	Specifies the diameter of the comb to be produced. The diameter is determined by the height of the block of Sheets to be bound
Thickness ?	double	The thickness of the coil or comb. <b>Note:</b> @Thickness is for "CoilBinding", "PlasticCombBinding" and "WireCombBinding" only.
WireCombShape ?	enumeration	The shape of the wire comb binding. <b>Allowed values</b> are: <i>Single</i> – Each “tooth” is made with one wire. <i>Twin</i> – The shape of each “tooth” is made with a double wire. <b>Note:</b> @WireCombShape replaces 1.x @Shape. <b>Note:</b> @WireCombShape is for "WireCombBinding" only.

### 8.93.4 Element: RingBindingDetails

**Table 8-196: RingBindingDetails Element (Sheet 1 of 2)**

Name	Data Type	Description
Diameter ?	double	Specifies the diameter of the rings, in points.
RingMechanic ?	boolean	If "true", a hand lever is available for opening. <b>Note:</b> @RingMechanic is for "RingBinding" only.
RingShape ?	NMTOKEN	<i>RingBinding</i> values: <b>Values include:</b> <i>Round</i> <i>Oval</i> <i>D-shape</i> <i>SlantD</i> <b>Note:</b> @RingShape is for "RingBinding" only.
RivetsExposed ?	boolean	The following "RingBinding" choice describes mounting of ring mechanism in binder case. If "true", the heads of the rivets are visible on the exterior of the binder. If "false", the binder covering material covers the rivet heads. <b>Note:</b> @RivetsExposed is for "RingBinding" only.
SpineWidth ?	double	The spine width is determined by the final height of the block of Sheets to be bound. <b>Note:</b> @SpineWidth is for "RingBinding" only.

**Table 8-196: RingBindingDetails Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>ViewBinder</i> ?	NMTOKEN	<p>For "RingBinding" clear vinyl outer-wrap types on top of a colored base wrap:</p> <p><b>Values include:</b></p> <p><i>Embedded</i> – Printed material is embedded by sealing between the colored and clear vinyl layers during the binder manufacturing.</p> <p><i>Pocket</i> – Binder is designed so that printed material can be inserted between the color and clear vinyl layers after the binder is manufactured.</p> <p><b>Note:</b> @<i>ViewBinder</i> is for "RingBinding" only.</p>

## 8.94 ManualLaborParams

[New in JDF 1.1](#)

This Resource describes the parameters to qualify generic manual work within graphic arts production. Additional Comment Elements will generally be needed to describe the work in human readable form.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	<i>ManualLabor</i>
<b>Output of Processes:</b>	—

**Table 8-197: ManualLaborParams Resource**

Name	Data Type	Description
<i>LaborType</i> <a href="#">Modified in JDF 1.4</a>	NMTOKEN	<p>Type of manual labor that is performed.</p> <p><b>Values include:</b></p> <p><i>CreateCoatingForm</i> – create a form to apply coatings during or after printing</p> <p><i>EditArt</i> – Unspecific Art editing (for work on specific files <i>LayoutElementProduction</i> is to be used)</p> <p><i>EditMarks</i> – Marks editing</p> <p><i>EditTraps</i> – Traps editing</p> <p><i>ManageJob</i> – General work on the Job.</p> <p><i>PhoneCallToCustomer</i> – Phone calls to ask/inform the Customer.</p> <p><i>SeparateBlanks</i> – Manual separation of blanks from a sheet after die cutting. <a href="#">New in JDF 1.4</a></p> <p><b>Modification note:</b> starting with JDF 1.3, the data type is changed from the erroneous NMTOKENS.</p>

## 8.95 Media

This Resource describes a physical element that represents a raw, unexposed printable surface such as Sheet, film or plate. @*Gloss*, @*MediaColorName* and @*Opacity* Attributes provide media characteristics pertinent to color management.

**Resource Properties**

<b>Resource Class:</b>	Consumable
<b>Resource referenced by:</b>	<b>Color/Media, Media, DieLayout, DigitalPrintingParams, EmbossingParams/Emboss, ExposedMedia, FeedingParams/Feeder, FeedingParams/CollatingItem, ImageSetterParams, InterpretingParams, Layout, LayoutPreparationParams, Media/MediaLayers, RasterReadingParams, ShapeDef, StrippingParams, Tile</b>
<b>Intent Pairing:</b>	<b>MediaIntent, HoleMakingIntent, ProofingIntent</b> <b>ContentCheckIntent</b>
<b>Example Partition:</b>	<b>"Location", "SheetName", "Side", "SignatureName", "TileID", "WebName"</b>
<b>Input of Processes:</b>	<b>Bending, BoxPacking, Bundling, CaseMaking, ConventionalPrinting, ContactCopying, Cutting, DigitalPrinting, Embossing, Feeding, ImageSetting, Laminating, Varnishing, Wrapping</b>
<b>Output of Processes:</b>	<b>Cutting, Feeding</b>

Table 8-198: Media Resource (Sheet 1 of 11)

Name	Data Type	Description
<i>BackBrightness</i> ? <a href="#">New in JDF 1.5</a>	double	Equivalent to <i>@Brightness</i> (see below), but applied to the back surface of the Media. If not specified, the value of <i>@Brightness</i> applies to the Front and Back surfaces of the Media.
<i>BackCoatingDetail</i> ? <a href="#">New in JDF 1.4</a>	NMTOKEN	Identical to <i>@FrontCoatingDetail</i> (see below), but applied to the back surface of the media. <b>Default value is from:</b> <i>@FrontCoatingDetail</i> . <b>Allowed values are from:</b> <i>@FrontCoatingDetail</i> .
<i>BackCoatings</i> ?	enumeration	Identical to <i>FrontCoatings</i> (see below), but applied to the back surface of the media. <b>Default value is from:</b> <i>@FrontCoatings</i> . <b>Allowed values are from:</b> <i>@FrontCoatings</i> .
<i>BackGlossValue</i> ? <a href="#">New in JDF 1.2</a>	double	Gloss of the back surface of the media in gloss units as defined by [ISO8254-1:1999]. When not known, <i>@BackGlossValue</i> defaults to the value of <i>@FrontGlossValue</i> .
<i>BackGrade</i> ?	integer	Grade of the back side of the material. If not specified, defaults to the value of <i>@Grade</i> . See <i>@Grade</i> for details.
<i>BackISOPaperSubstrate</i> ?	integer	ISOPaperSubstate of the back side of the material. If not specified, defaults to the value of <i>@ISOPaperSubstrate</i> . See <i>@ISOPaperSubstrate</i> for details.
<i>Brightness</i> ? <a href="#">Modified in JDF 1.5</a>	double	Reflectance percentage of diffuse blue reflectance as defined by [ISO2470:1999]. The reflectance is reported per [ISO2470:1999] as the diffuse blue reflectance factor of the Media in percent to the nearest 0.5% reflectance factor. See also <i>@BackBrightness</i> . <b>Modification note:</b> starting with JDF 1.5, the brightness MAY be specified separately for the Front and Back surfaces by specifying both <i>@Brightness</i> and <i>@BackBrightness</i> .

Table 8-198: Media Resource (Sheet 2 of 11)

Name	Data Type	Description
<i>Certification</i> * <a href="#">New in JDF 1.6</a>	element	Certification SHALL specify a paper certification level that the paper fulfills.
<i>CIETint</i> ? <a href="#">New in JDF 1.2</a>	double	Average CIE tint value. Average CIE tint is calculated according to equations given in [TAPPI T560].
<i>CIEWhiteness</i> ? <a href="#">New in JDF 1.2</a>	double	Average CIE whiteness value. Average CIE whiteness is calculated according to equations given in [TAPPI T560].
<i>ColorName</i> ? <a href="#">New in JDF 1.1</a> <a href="#">Deprecated in JDF 1.2</a>	string	Link to a definition of the color specifics. The value of <i>@ColorName</i> color SHOULD match the <i>@Name</i> Attribute of a <b>Color</b> defined in a <b>ColorPool</b> Resource that is linked to the Process using this <b>Media</b> Resource. <b>Deprecation note:</b> starting with JDF 1.2, use <i>@MediaColorName</i> and <i>@MediaColorNameDetails</i> .
<i>CoreWeight</i> ? <a href="#">New in JDF 1.3</a>	double	Weight of the core of a Roll, in grams [g]
<i>Dimension</i> ? <a href="#">Modified in JDF 1.4</a>	XYPair	The X and Y dimensions of the chosen medium, measured in points. <i>@Dimension</i> specifies the outer bounding box of the <b>Media</b> . The X, Y values of <i>@Dimension</i> establishes the user coordinate system into which content is mapped (i.e., the origin is in the lower left corner of the rectangle defined by 0 0 X Y). In case of "Roll" media, the X coordinate specifies the reel width and the Y coordinate specifies the length of the Web in points. If a <i>@Dimension</i> coordinate is unknown, the value SHALL be "0". If not specified, the dimension is unknown. If either or both X or Y = "0" (i.e., unknown), the default orientation is assumed to be portrait (i.e., Y > X). <b>Values include those from:</b> Table G-1, "Media Sizes" on page 1161. <a href="#">New in JDF 1.4</a> <b>Modification note:</b> starting with JDF 1.4, the description states that <i>@Dimension</i> specifies the outer bounding box of the <b>Media</b> and new values are specified.
<i>Flute</i> ? <a href="#">New in JDF 1.3</a>	NMTOKEN	Single, capital letter that specifies the Flute type of corrugated media. Although the classification of flutes using a letter code "A", "B", etc., are used very frequently (e.g., in the specification of the order for a box), there seems to be no agreement on the exact numerical specification of those categories. Slightly varying numbers for flute size and frequency can be found between regions (European versus US) and between vendors. <b>Values include:</b> A B C

Table 8-198: Media Resource (Sheet 3 of 11)

Name	Data Type	Description
<i>FluteDirection</i> ? <a href="#">New in JDF 1.3</a>	enumeration	<p>Direction of the fluting.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>LongEdge</i> – Along the longer axis as defined by <i>@Dimension</i>.</li> <li><i>ShortEdge</i> – Along the shorter axis as defined by <i>@Dimension</i>.</li> <li><i>XDirection</i> – Along the X-axis of the Media coordinate system</li> <li><i>YDirection</i> – Along the Y-axis of the Media coordinate system</li> </ul>
<i>FrontCoatingDetail</i> ? <a href="#">New in JDF 1.4</a>	NMTOKEN	<p>Describes (beyond <i>@FrontCoatings</i>) the coating to the front surface of the media and possibly the technology used to apply the coating.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Cast</i></li> </ul>
<i>FrontCoatings</i> ? <a href="#">Modified in JDF 1.4</a>	enumeration	<p>What preprocess coating has been applied to the front surface of the media.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>None</i> – No coating.</li> <li><i>Coated</i> – A coating of a system-specified type. <a href="#">New in JDF 1.2</a></li> <li><i>Glossy</i></li> <li><i>HighGloss</i></li> <li><i>InkJet</i> – A coating intended for use with inkjet technology. <b>Deprecation note:</b> use <i>@PrintingTechnology = "InkJet"</i> <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.4</a></li> <li><i>Matte</i></li> <li><i>Polymer</i> – Coating for a photo polymer process <a href="#">New in JDF 1.3</a></li> <li><i>Silver</i> – Coating for a silver halide process <a href="#">New in JDF 1.3</a></li> <li><i>Satin</i></li> <li><i>Semigloss</i></li> </ul>
<i>FrontGlossValue</i> ? <a href="#">New in JDF 1.2</a>	double	Gloss of the front side of the media in gloss units as defined by [ISO8254-1:1999]. Refer also to [TAPPI T480] for examples of gloss calculation.

Table 8-198: Media Resource (Sheet 4 of 11)

Name	Data Type	Description
<i>Grade</i> ? <a href="#">Modified in JDF 1.5</a>	integer	<p>The <i>@Grade</i> of the media on a scale of 1 through 5. The <i>@Grade</i> is ignored if <i>@MediaType</i> is not "Paper". <i>@Grade</i> of paper material is defined in accordance with the paper "types" set forth in [ISO12647-2:2004]. If a workflow supports <i>@ISOPaperSubstrate</i>, and both <i>@Grade</i> and <i>@ISOPaperSubstrate</i> are present, it SHALL use <i>@ISOPaperSubstrate</i>.</p> <p><b>Note:</b> [ISO12647-2:2004] paper type Attribute Values do NOT align with U.S. GRACOL paper grade Attribute Values (e.g., [ISO12647-2:2004] type 1 does not equal U.S. GRACOL grade 1).</p> <p>The values define offset printing paper types.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li>1 – Gloss-coated paper.</li> <li>2 – Matt-coated paper.</li> <li>3 – Gloss-coated, Web paper.</li> <li>4 – Uncoated, white paper.</li> <li>5 – Uncoated, yellowish paper.</li> </ul> <p><b>Modification note:</b> starting in JDF 1.5, <i>@Grade</i> interacts with <i>@ISOPaperSubstrate</i>.</p>
<i>GrainDirection</i> ? <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.3</a>	enumeration	<p>Direction of the grain in the coordinate system defined by <i>@Dimension</i>.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>LongEdge</i> – Along the longer axis as defined by <i>@Dimension</i>.</li> <li><i>ShortEdge</i> – Along the shorter axis as defined by <i>@Dimension</i>.</li> <li><i>XDirection</i> – Along the X-axis of the Media coordinate system. <a href="#">New in JDF 1.3</a></li> <li><i>YDirection</i> – Along the Y-axis of the Media coordinate system. <a href="#">New in JDF 1.3</a></li> </ul>
<i>HoleCount</i> ? <a href="#">Deprecated in JDF 1.1</a>	integer	<p>The number of holes that are to be punched in the media (either pre- or post-punched). In JDF/1.1, use <i>@HoleType</i>, <i>HolePattern</i> or <i>HoleLine</i>, which includes the number of holes.</p>
<i>HoleType</i> ?="None" <a href="#">New in JDF 1.1</a>	enumerations	<p>Predefined hole pattern. Multiple hole patterns are allowed (e.g., 3-hole ring binding and 4-hole ring binding holes on one piece of media). For details of the hole types, refer to Appendix M, "JDF XJDF/CIP4 Hole Pattern Catalog" on page 1239.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>None</i> – No holes.</li> <li><i>Explicit</i> – Holes are defined in a <b>HoleList</b><b>HolePattern</b>.</li> </ul> <p><b>Allowed values are from:</b> Appendix M, "JDF XJDF/CIP4 Hole Pattern Catalog" on page 1239.</p>

Table 8-198: Media Resource (Sheet 5 of 11)

Name	Data Type	Description
<i>ImagableSide</i> ?  <a href="#">New in JDF 1.4</a>	enumeration	Side of the chosen medium that are to be marked.  <b>Allowed values are:</b> <i>Front</i> <i>Back</i> <i>Both</i> <i>Neither</i>
<i>InnerCoreDiameter</i> ?  <a href="#">New in JDF 1.4</a>	double	Specifies the inner diameter of the core of a Roll, in points. See also @OuterCoreDiameter and @RollDiameter.
<i>InsideLoss</i> ?  <a href="#">New in JDF 1.3</a>	double	The inside loss of corrugated board material in microns [ $\mu\text{m}$ ]. Note: @InsideLoss + @OutsideGain need not be exactly equal to thickness.
<i>ISOPaperSubstrate</i> ?  <a href="#">New in JDF 1.5</a>	enumeration	The Paper Substrate Type of the Medium from "PS1" through "PS8".  @ISOPaperSubstrate supersedes @Grade and adds new values to allow for improved papers. If a workflow supports @ISOPaperSubstrate, and both @Grade and @ISOPaperSubstrate are present, it SHALL use @ISOPaperSubstrate. @ISOPaperSubstrate type of paper material is defined in accordance with the Print Substrate set forth in [ISO12647-2:2013].  <b>Allowed values are:</b> <i>PS1</i> – Premium Coated <i>PS2</i> – Improved Coated <i>PS3</i> – Standard Coated Glossy <i>PS4</i> – Standard Coated Matte <i>PS5</i> – Wood-free Uncoated <i>PS6</i> – Super Calendered <i>PS7</i> – Improved Uncoated <i>PS8</i> – Standard Uncoated
<i>LabColorValue</i> ?  <a href="#">New in JDF 1.2</a>	LabColor	@LabColorValue is the CIELAB color value of the media, computed as specified in [TAPPI T527].
<i>MediaColorName</i> ?  <a href="#">Modified in JDF 1.1</a>	NamedColor	A name for the color. If more specific, specialized or site-defined media color names are needed, use @MediaColorNameDetails.  <b>Allowed values are from:</b> Table A-3, "NamedColor Enumeration Values" on page 1125.
<i>MediaColorNameDetails</i> ?  <a href="#">New in JDF 1.2</a>	string	A more specific, specialized or site-defined name for the media color. If @MediaColorNameDetails is supplied, @MediaColorName SHOULD also be supplied. <b>@MediaColorNameDetails SHOULD be used to specify specialized media properties such as holographic or transparent foils.</b>

**Table 8-198: Media Resource (Sheet 6 of 11)**

Name	Data Type	Description
<i>MediaQuality</i> ? <a href="#">New in JDF 1.4</a>	string	Named quality description of the media. For folding carton quality, multiple named quality description systems are in use (e.g., GC1, SBB, etc.). For an overview, see <a href="http://www.procarton.com/files/fact_file_6.pdf">http://www.procarton.com/files/fact_file_6.pdf</a>
<i>MediaSetCount</i> ?	integer	When the input media is grouped in sets, identifies the number of pieces of media in each set. For example, if the <i>@MediaTypeDetails</i> is "PreCutTabs", a <i>@MediaSetCount</i> of "5" would indicate that each set includes five tab Sheets.
<i>MediaType</i> ? <a href="#">Modified in JDF 1.5</a>	NMTOKEN	<p>Describes the medium being employed.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>CorrugatedBoard</i> <a href="#">New in JDF 1.3</a></li> <li><i>Disc</i> – CD or DVD disc to be printed on.</li> <li><i>EndBoard</i> – end board used in the <b>Bundling</b> Process.</li> <li><i>EmbossingFoil</i></li> <li><i>Film</i></li> <li><i>Foil</i></li> <li><i>GravureCylinder</i> – gravure cylinder. <a href="#">New in JDF 1.3</a></li> <li><i>ImagingCylinder</i> – reusable direct imaging cylinder in a press. <a href="#">New in JDF 1.3</a></li> <li><i>LaminatingFoil</i></li> <li><i>MountingTape</i> – for flexo plate mounting tape. <a href="#">New in JDF 1.4</a></li> <li><i>Other</i> – not one of the defined values.</li> <li><i>Paper</i></li> <li><i>Plate</i></li> <li><i>Screen</i> – used for Screen Printing. <a href="#">New in JDF 1.4</a></li> <li><i>SelfAdhesive</i> – <a href="#">New in JDF 1.3</a></li> <li><i>Sleeve</i> – for flexo sleeves <a href="#">New in JDF 1.4</a></li> <li><i>ShrinkFoil</i></li> <li><i>Textile</i> <a href="#">New in JDF 1.5</a></li> <li><i>Transparency</i></li> <li><i>Unknown</i> – <a href="#">Deprecated in JDF 1.2</a></li> <li><i>Vinyl</i> <a href="#">New in JDF 1.5</a></li> </ul>
<i>MediaTypeDetails</i> ? <a href="#">Modified in JDF 1.5</a>	NMTOKEN	<p>Additional details of the chosen medium.</p> <p><b>Constraint:</b> If <i>@MediaTypeDetails</i> is specified, <i>@MediaType</i> SHALL be specified.</p> <p><b>Values include those from:</b> Table 8-199, "MediaTypeDetails Attribute Values" on page 796.</p>

Table 8-198: Media Resource (Sheet 7 of 11)

Name	Data Type	Description
<i>MediaUnit</i> ?= "Sheet" <a href="#">Modified in JDF 1.2</a>	enumeration	<p>Describes the format of the media as it is delivered to the Device.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Continuous</i> – Continuously connected Sheets which can be fan folded. <a href="#">New in JDF 1.2</a></li> <li><i>Roll</i></li> <li><i>Sheet</i> – Individual cut Sheets.</li> </ul>
<i>Opacity</i> ? <a href="#">Modified in JDF 1.2</a>	enumeration	<p>The opacity of the media. See <i>@OpacityLevel</i> to specify the degree of opacity for any of these values.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Opaque</i> – The media is opaque. With two-sided printing the printing on the other side does not show through under normal incident light.</li> <li><i>Translucent</i> – The media is translucent to a system specified amount. For example, translucent media can be used for back lit viewing. <a href="#">New in JDF 1.2</a></li> <li><i>Transparent</i> – The media is transparent.</li> </ul>
<i>OpacityLevel</i> ? <a href="#">New in JDF 1.2</a>	double	Normalized TAPPI opacity (Cn), as defined and computed in [ISO2471:1998]. Refer also to [TAPPI T519] for calculation examples.
<i>OuterCoreDiameter</i> ? <a href="#">New in JDF 1.3</a>	double	Specifies the outer diameter of the core of a Roll, in points. See also <i>@InnerCoreDiameter</i> and <i>@RollDiameter</i> .
<i>OutsideGain</i> ? <a href="#">New in JDF 1.3</a>	double	The outside gain of corrugated board material in microns [ $\mu\text{m}$ ].
<i>PlateTechnology</i> ? <a href="#">New in JDF 1.3</a> <a href="#">Modified in JDF 1.4</a>	enumeration	<p>Exposure technology of the plates.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>FlexoAnalogSolvent</i> <a href="#">New in JDF 1.4</a></li> <li><i>FlexoAnalogThermal</i> <a href="#">New in JDF 1.4</a></li> <li><i>FlexoDigitalSolvent</i> <a href="#">New in JDF 1.4</a></li> <li><i>FlexoDigitalThermal</i> <a href="#">New in JDF 1.4</a></li> <li><i>FlexoDirectEngraving</i> <a href="#">New in JDF 1.4</a></li> <li><i>InkJet</i> – Exposure with inkjet technology. Note that <i>@FrontCoatings</i> = "Inkjet" specifies inkjet specific coating of paper or transparency Media, not of plates.</li> <li><i>Thermal</i> – Thermal exposure</li> <li><i>UV</i> – Ultraviolet exposure</li> <li><i>Visible</i> – Visible light exposure</li> </ul>
<i>Polarity</i> ?	enumeration	<p>Polarity of the chosen medium.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Positive</i></li> <li><i>Negative</i></li> </ul>

Table 8-198: Media Resource (Sheet 8 of 11)

Name	Data Type	Description
<i>PrePrinted ?= "false"</i>	boolean	Indicates whether the media is preprinted.
<i>PrintingTechnology ?</i> <a href="#">New in JDF 1.4</a> <a href="#">Modified in JDF 1.5</a>	NMTOKEN	Describes the printing technology that the media or coatings on the media are intended for or optimized for.  <b>Values include:</b> <i>DyeSublimation</i> <i>Electrostatic</i> <i>InkJet</i> <i>Laser</i> <i>Latex</i> <a href="#">New in JDF 1.5</a> <i>Offset</i> <i>Thermal</i> <i>UV</i> <a href="#">New in JDF 1.5</a>
<i>Recycled ?</i> <a href="#">Deprecated in JDF 1.2</a>	boolean	If "true", recycled media is requested. If not specified, the <b>Media</b> might have recycled content. In JDF 1.2 and beyond, use <i>@RecycledPercentage</i> .
<i>RecycledPercentage ?</i> <a href="#">New in JDF 1.2</a>	double	The percentage, between 0 and 100, of recycled material that the media is to contain.
<i>ReliefThickness ?</i> <a href="#">New in JDF 1.4</a>	double	The thickness of the relief, measured in microns [ $\mu\text{m}$ ]. The floor thickness can be calculated as ( <i>@Thickness - @ReliefThickness</i> ). See Figure 8-48.
<i>RollDiameter ?</i>	double	Specifies diameter of a Roll, in points. See also <i>@InnerCoreDiameter</i> and <i>@OuterCoreDiameter</i> .
<i>ShrinkIndex ?</i> <a href="#">New in JDF 1.1</a>	XYPair	Specifies the ratio of the media linear dimension after shrinking to prior shrinking. The X Value specifies index in the major shrink axis, whereas the Y Value specifies the index in the minor shrink axis. Used to describe shrink wrap media.
<i>SleeveInterlock ?</i> <a href="#">New in JDF 1.4</a>	NMTOKEN	The type of interlock (or notch) to use for a flexo sleeve.  <b>Values include:</b> <i>Type01</i> – see Figure 8-49. ... <i>Type20</i> – see Figure 8-49.

Table 8-198: Media Resource (Sheet 9 of 11)

Name	Data Type	Description
<i>StockType</i> ? <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.4</a>	NMTOKEN	<p>Strings describing the available stock.</p> <p>@<i>StockType</i> defines the base size when calculating North American or Japanese paper weights. See Appendix F, “North American and Japanese Media Weight Explained” on page 1157. <a href="#">New in JDF 1.4</a></p> <p>Values with Kanji names support Japanese media.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Bible</i> – equivalent to "Book". <a href="#">New in JDF 1.4</a></li> <li><i>Book</i> – Base size: 25" x 38" <a href="#">New in JDF 1.4</a></li> <li><i>Bond</i> – Base size: 17" x 22"</li> <li><i>Bristol</i> – Base size: 22½" x 28½"</li> <li><i>Coated</i> – equivalent to "Book". <a href="#">New in JDF 1.4</a></li> <li><i>Cover</i> – Base size: 20" x 26"</li> <li><i>Index</i> – Base size: 25½" x 30½"</li> <li><i>Ledger</i> – equivalent to "Bond". <a href="#">New in JDF 1.4</a></li> <li><i>Manifold</i> – equivalent to "Bond". <a href="#">New in JDF 1.4</a></li> <li><i>Newsprint</i> – Base size: 24" x 36"</li> <li><i>Offset</i> – This includes book stock, equivalent to "Book".</li> <li><i>Tag</i> – equivalent to "Newsprint".</li> <li><i>Text</i> – equivalent to "Book".</li> <li><i>Aatoposutoshi</i> – <b>アートポスト紙</b> (“art-post paper”) is cover stock coated on one side. <a href="#">New in JDF 1.4</a></li> <li><i>Aatoshi</i> – <b>アート紙</b> (“art paper”) is machine coated paper, available in top quality and medium quality (Joushitsu and Chuushitsu). <a href="#">New in JDF 1.4</a></li> <li><i>Chuushitsushi</i> – <b>中質紙</b> (“medium-quality paper”) contains a minimum of 70% chemical pulp. <a href="#">New in JDF 1.4</a></li> <li><i>Joushitsushi</i> – <b>上質紙</b> (“top-quality paper”) contains 100% chemical pulp. <a href="#">New in JDF 1.4</a></li> <li><i>Mashinkootoshi</i> – <b>マシンコート紙</b> (“machine coated paper”), also called Kootoshi ( <b>コート紙</b> ), is machine coated paper given only a thin coat of clay. <a href="#">New in JDF 1.4</a></li> </ul>

**Table 8-198: Media Resource (Sheet 10 of 11)**

Name	Data Type	Description
<i>Texture</i> ?  <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.2</a>	NMTOKEN	<p>The intended texture of the media.</p> <p><b>Values include:</b></p> <p><i>Antique</i> – Rougher than vellum surface.</p> <p><i>Calendared</i> – Extra smooth or polished, uncoated paper.</p> <p><i>Glossy</i> – Glossy Media, e.g. laminating foil</p> <p><i>Linen</i> – Texture of coarse woven cloth.</p> <p><i>Matte</i> – Matte Media, e.g. laminating foil</p> <p><i>Smooth</i></p> <p><i>Stipple</i> – Fine pebble finish.</p> <p><i>Uncalendared</i> – Rough, unpolished and uncoated papers. <a href="#">New in JDF 1.2</a></p> <p><i>Vellum</i> – Slightly rough surface.</p>
<i>Thickness</i> ?	double	<p>The thickness of the chosen medium, measured in microns [<math>\mu\text{m}</math>].</p> <p>Note: Thickness is often referred to as caliper.</p>
<i>UserMediaType</i> ?  <a href="#">Deprecated in JDF 1.1</a>	NMTOKEN	<p>A human-readable description of the type of media. The value can be used by an operator to select the correct media to load. The semantics of the values will be site-specific.</p> <p><b>Deprecation note:</b> starting with JDF 1.1, <i>@UserMediaType</i> has been merged into <i>@MediaTypeDetails</i>.</p>
<i>Weight</i> ?	double	Weight of the chosen medium, measured in grams per square meter [ $\text{g}/\text{m}^2$ ]. See Appendix F, “North American and Japanese Media Weight Explained” on page 1157 for details on converting North American paper weights to $\text{g}/\text{m}^2$ .
<i>WrapperWeight</i> ?  <a href="#">New in JDF 1.3</a>	double	Weight of the wrapper of a Roll, in grams [g]
<i>Color</i> ?  <a href="#">Deprecated in JDF 1.1</a>	refelement	A <b>Color</b> Resource that provides the color of the chosen medium.
<i>ColorMeasurementConditions</i> ?  <a href="#">New in JDF 1.2</a>	refelement	Detailed description of the measurement conditions for color measurements used to measure <i>@LabColorValue</i> .
<i>HoleList</i> ? <i>HolePattern</i> * <a href="#">New in JDF 1.3</a>	refelemen-telement	Explicit list of holes. <b>HoleList</b> <b>HolePattern</b> SHALL be specified if <i>@HoleType</i> = "Explicit".
<i>MediaLayers</i> ?  <a href="#">New in JDF 1.3</a>	element	Subelement describing the layer structure of media such as corrugated or self adhesive materials.

**Table 8-198: Media Resource (Sheet 11 of 11)**

Name	Data Type	Description
TabDimensions ? <a href="#">New in JDF 1.4</a>	element	Specifies the dimensions of the tabs when <code>@MediaTypeDetails = "TabStock"</code> , <code>"PreCutTabs"</code> or <code>"FullCutTabs"</code> . <b>Note:</b> see <b>BindingIntent/Tabs</b> (Table 7-43, “Tabs Element” on page 460) (rather than <b>MediaIntent</b> ) for how tabbed media is specified in Product Intent.

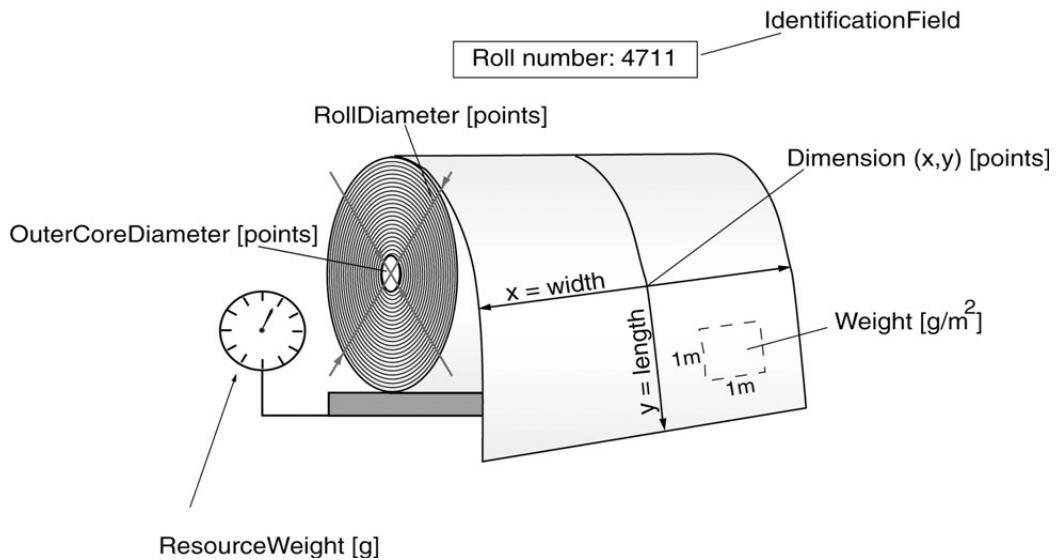
**— Attribute: MediaTypeDetails****Table 8-199: MediaTypeDetails Attribute Values (Sheet 1 of 2)**

Value	Description
<i>Aluminum</i> <a href="#">Modified in JDF 1.3</a>	Conventional or CtP press plate.
<i>Backlit</i> <a href="#">New in JDF 1.5</a>	Any Media that is designed to be illuminated from the back side.
<i>Cardboard</i>	
<i>CD</i> <a href="#">New in JDF 1.3</a>	CD disc to be printed on.
<i>Cloth</i> <a href="#">New in JDF 1.6</a>	Cloth; e.g., for a hard cover book case.
<i>ContinuousLong</i>	Continuously connected Sheets of an opaque material connected along the long edge.
<i>ContinuousShort</i>	Continuously connected Sheets of an opaque material connected along the short edge.
<i>CtPVisiblePhotoPolymer</i> <a href="#">Deprecated in JDF 1.3</a>	Visible light CtP plate with photo polymer process.
<i>CtPVisibleSilver</i> <a href="#">Deprecated in JDF 1.3</a>	Visible light CtP plate with silver halide process.
<i>CtPThermal</i> <a href="#">Deprecated in JDF 1.3</a>	Thermal CtP plate.
<i>DoubleWall</i> <a href="#">New in JDF 1.3</a>	Double wall corrugated board
<i>DVD</i> <a href="#">New in JDF 1.3</a>	DVD disc to be printed on.
<i>DryFilm</i>	
<i>Envelope</i>	Envelopes that can be used for conventional mailing purposes.
<i>EnvelopePlain</i>	Envelopes that are not preprinted and have no windows.
<i>EnvelopeWindow</i>	Envelopes that have windows for addressing purposes.
<i>EnvelopeWindowLeft</i> <a href="#">New in JDF 1.6</a>	Envelopes that have windows on the left for addressing purposes.

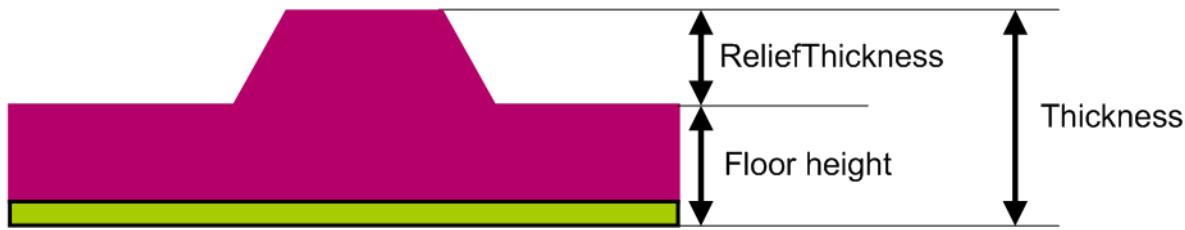
**Table 8-199: MediaTypeDetails Attribute Values (Sheet 2 of 2)**

Value	Description
<i>EnvelopeWindowRight</i> <a href="#">New in JDF 1.6</a>	Envelopes that have windows on the right for addressing purposes.
<i>FlexoBase</i> <a href="#">New in JDF 1.4</a>	For the base layer of flexo plates.
<i>FlexoPhotoPolymer</i> <a href="#">New in JDF 1.4</a>	For the photopolymer layer of flexo plates.
<i>Flute</i>	Flute layer of a corrugated board
<i>FullCutTabs</i>	Media with a tab that runs the full length of the medium so that only one tab is visible extending out beyond the edge of non-tabbed media.
<i>ImageSetterPaper</i>	Contact paper as replacement for film.
<i>Labels</i>	Label stock (e.g., a Sheet of peel-off labels).
<i>Leather</i> <a href="#">New in JDF 1.6</a>	Leather; e.g., for a hard cover book case.
<i>Letterhead</i>	Separately cut Sheets of an opaque material including a letterhead.
<i>MultiLayer</i>	Form medium composed of multiple layers which are preattached to one another (e.g., for use with impact printers).
<i>MultiPartForm</i>	Form medium composed of multiple layers not preattached to one another; each Sheet might be drawn separately from an input source.
<i>Photographic</i>	Separately cut Sheets of an opaque material to produce photographic quality images.
<i>PlateUV</i> <a href="#">Deprecated in JDF 1.3</a>	Press plate for the UV process.
<i>Polyester</i> <a href="#">Modified in JDF 1.3</a>	Conventional or CtP press plate.
<i>PreCutTabs</i>	Media with tabs that are cut so that more than one tab is visible extending out beyond the edge of non-tabbed media.
<i>ScrimBanner</i> <a href="#">New in JDF 1.5</a>	Specific type of vinyl.
<i>SingleFace</i> <a href="#">New in JDF 1.3</a>	Single face corrugated board.
<i>SingleWall</i> <a href="#">New in JDF 1.3</a>	Single wall corrugated board.
<i>Stationery</i>	Separately cut Sheets of an opaque material, includes generic paper.
<i>TabStock</i>	Media with tabs, either precut or full-cut.–
<i>Tractor</i>	Tractor feed with holes.
<i>TripleWall</i> <a href="#">New in JDF 1.3</a>	Triple wall corrugated board
<i>WallPaper</i> <a href="#">New in JDF 1.5</a>	Details of Paper.
<i>WetFilm</i>	Conventional photographic film.

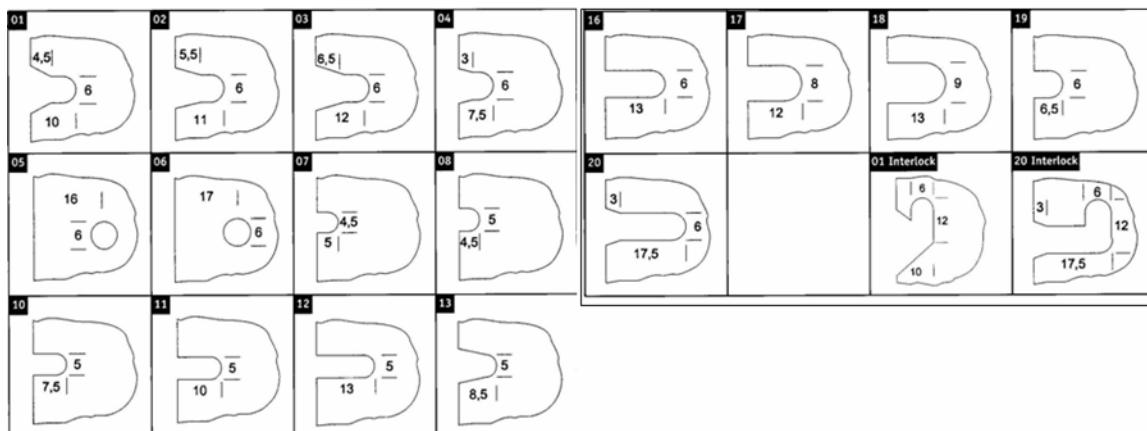
**Figure 8-47: Paper Roll with some Roll-specific Information**



**Figure 8-48: Relief and Floor Thickness for a Flexo Plate or Flexo Sleeve**



**Figure 8-49: Types of Interlocks for Flexo Sleeve**



### 8.95.1 Element: TabDimensions

[New in JDF 1.4](#)

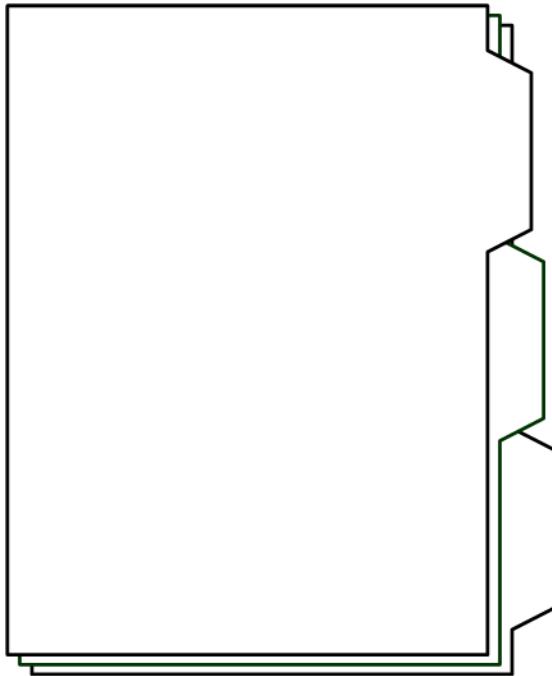
Specifies the size and placement of tabs in a bank and in a set of tab stock.

**Table 8-200: TabDimensions Element**

Name	Data Type	Description
<i>TabEdge</i> ?	enumeration	<p>Indicates which edge of the media has tabs. Sets the coordinate system for <i>@TabOffset</i>, <i>@TabExtensionDistance</i>, and <i>@TabWidth</i>.</p> <p><b>Allowed values are:</b></p> <p><i>Left</i>  <i>Top</i>  <i>Right</i>  <i>Bottom</i></p>
<i>TabExtensionDistance</i> ?	double	<p>The positive distance in points that the tab extends beyond the body of the other media.</p> <p><b>Note:</b> same as <b>BindingIntent/Tabs/@TabExtensionDistance</b>.</p> <p><b>Note:</b> This value is always included in the value of the overall extent of the <b>Media</b> defined by <b>Media/@Dimension</b>. See Figure 8-51, “Diagram of a Single Bank of Tabs,” on page 801.</p>
<i>TabOffset</i> ?	double	<p>Specifies the magnitude of the distance in points from the two corners to the edge of the first “tab pitch” point of the first tab in the bank along the <i>@TabEdge</i>. This distance is the same on both ends of the bank of tabs. See Figure 8-51, “Diagram of a Single Bank of Tabs,” on page 801.</p>
<i>TabSetCollationOrder</i> ?	NMTOKEN	<p>Collation order of media provided in sets. Applicable to sets of pre-cut tabs. See Figure 8-50, “TabSetCollationOrder Attribute Values,” on page 800.</p> <p><b>Values include:</b></p> <p><i>Forward</i> – first tab is towards top of stack  <i>Reverse</i> – first tab is toward bottom of stack.</p>
<i>TabsPerBank</i> ?	integer	<p>Specifies the number of equal-sized tabs in a single bank if all positions were filled.</p> <p><b>Note:</b> banks can have tabs only in some of the possible positions.</p> <p><b>Note:</b> same as <b>BindingIntent/Tabs/@TabsPerBank</b>.</p> <p><b>Media/@MediaSetCount</b> specifies the number of tabs per set. A set can consist of one or more banks. If <b>Media/@MediaSetCount</b> is not an even multiple of <i>@TabsPerBank</i>, the last bank in each set is partially filled.</p>
<i>TabWidth</i> ?	double	<p>The width along the <i>@TabEdge</i> of each tab as measured along the mid-line of the tab. Each tab is centered within a space called the “tab pitch”. See Figure 8-51, “Diagram of a Single Bank of Tabs,” on page 801.</p>

**Figure 8-50: TabSetCollationOrder Attribute Values**

*TabSetCollationOrder = "Forward"*



*TabSetCollationOrder = "Reverse"*

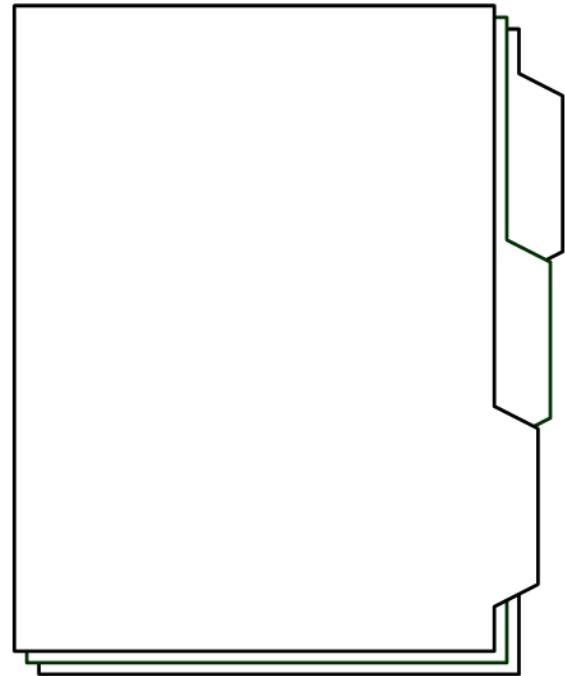
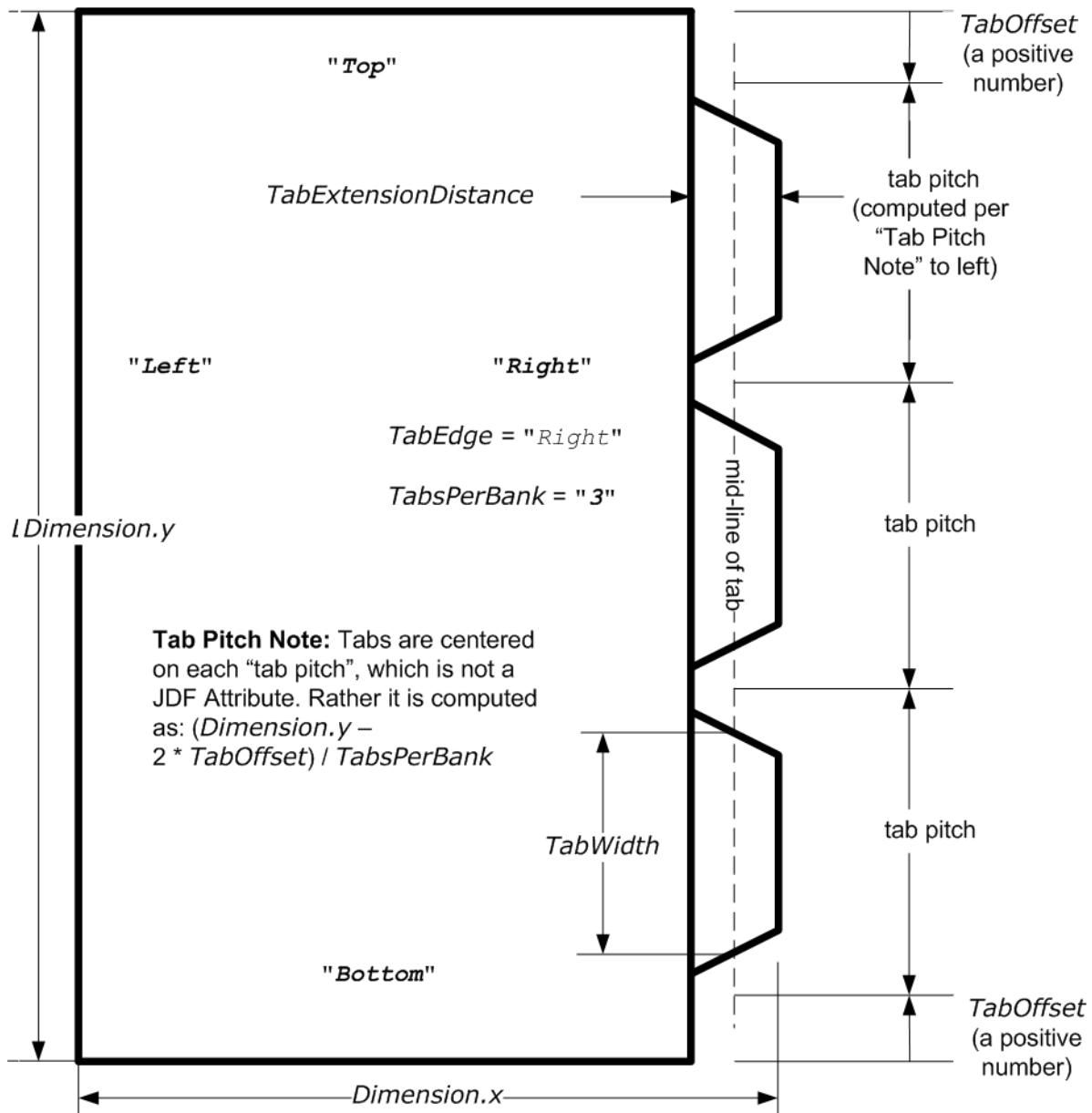


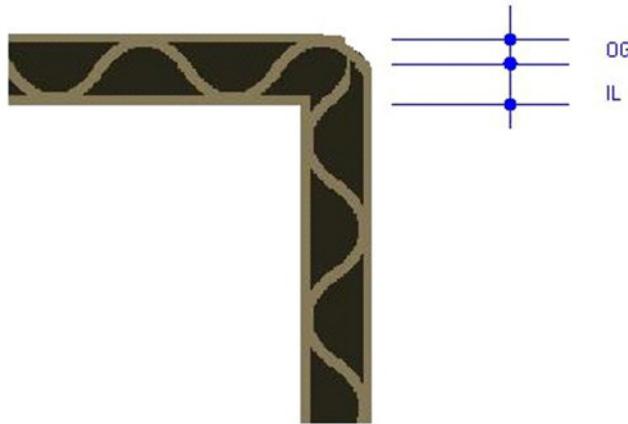
Figure 8-51: Diagram of a Single Bank of Tabs



## 8.95.2 More about Media

### 8.95.2.1 Inside Loss and Outside Gain

Inside loss and outside gain: dimensional values used in the mechanical design phase of a box. Note: IL + OG is not exactly equal to thickness. Thickness is most often referred to as caliper.

**Figure 8-52: Inside Loss, Outside Gain**

### 8.95.2.2 Corrugated Media:

Corrugated material consists of multiple Sheets of paper (called liners) with fluted material in between. For background information on Corrugated Media, see <http://cpc.corrugated.org/Basics>. Corrugated media comes in different variants.

- Number of layers:
  - single face (1 liner, 1 flute),
  - single wall (2 liners, 1 flute),
  - double wall (3 liners, 2 flutes),
  - triple wall (4 liners, 3 flutes)
- Flute size and frequency: A, B, C, E, F flute. See <http://cpc.corrugated.org/Basics/BasicAllAbout.aspx>

### Example 8-35: Media: Corrugated

**TBD 2.x Example.**

```
<Media Class="Consumable" ID="M123456" ProductID="B190Y180D1050x120"
      Status="Available" DescriptiveName="B Flute 190Y 180D 1050x1210"
      Dimension="1050.0 120.0" MediaType="CorrugatedBoard"
      MediaTypeDetails="SingleWall" MediaUnit="Sheet" Thickness="2382.0"
      InsideLoss="1000.0" OutsideGain="1380.0" Weight="600">
<MediaLayers>
  <!-- FrontLiner -->
  <Media DescriptiveName="190gsm clay coated" MediaType="Paper"
        Weight="190" FrontCoatings="Coated"/>
  <!-- Flute -->
  <Media DescriptiveName="Flute" MediaType="Paper" Weight="180"
        FluteDirection="ShortEdge" Flute="B" MediaTypeDetails="Flute"/>
  <!-- BackLiner -->
  <Media DescriptiveName="180gsm white top" MediaType="Paper"
        Weight="180"/>
</MediaLayers>
</Media>
```

### 8.95.2.3 Self adhesive Media

Self adhesive media is described as **MediaLayers** Elements with nested **Media** and **GlueLineGlue** Elements.

#### Example 8-36: Media: Self Adhesive

TBD 2.x Example.

```
<Media Class="Consumable" ID="M123456" ProductID="7890123" Status="Available"
      DescriptiveName="40# Fasson coated label stock" Dimension="1134.0 0"
      MediaType="SelfAdhesive" MediaUnit="Roll" Thickness="1000.0"
      Weight="150">
  <MediaLayers>
    <!-- Front -->
    <Media DescriptiveName="Antique Cream Smooth WS IL" MediaType="Paper"
           Weight="90"/>
    <!-- Glue -->
    <GlueLine DescriptiveName="Permanent 91A" AreaGlue="true"
               GlueType="Hotmelt" GlueBrand="Uhu"/>
    <!-- Back -->
    <Media DescriptiveName="Blue Glassine 50" MediaType="Paper" Weight="50"/>
  </MediaLayers>
</Media>
```

### 8.95.2.4 Flexo Plate Media

A sample of a flexo plate with dimensions of 900 mm x 1200 mm, a base of 177 microns and a total thickness of 1143 microns.

A raw plate can contain several separations from multiple jobs. The real printing dimensions can only be determined when all elements of the mounting process are known: circumference of the sleeve on which the flat plate will be mounted, thickness of the mounting tape, thickness of base and thickness of the photopolymer.

#### Example 8-37: Media: Flat Plate

TBD 2.x Example.

```
<Media Class="Consumable" ID="M123456" ProductID="FlexoPlate"
      Status="Available" DescriptiveName="" Dimension="2551.181 3401.574"
      MediaType="Plate" PlateTechnology="FlexoDigitalThermal"
      Manufacturer="PlateManufacturerA" Brand="BrandB" BatchID="Batch 12345"
      Thickness="1143" ReliefThickness="500">
  <!--MediaLayers contains 2 items: the base layer and the
      photopolymer layer of the flexo plate -->
  <MediaLayers>
    <Media DescriptiveName="Base" MediaType="Plate"
           MediaTypeDetails="FlexoPlateBase" Thickness="177"/>
    <Media DescriptiveName="Photopolymer Layer" MediaType="Plate"
           MediaTypeDetails="FlexoPlatePhotopolymer" Thickness="966"/>
  </MediaLayers>
</Media>
```

### 8.95.2.5 Flexo Sleeve Media

The flexo sleeve has dimensions of 500 x 250 mm, a base of 1249 microns and a total thickness of 2810 microns. The sleeve dimensions are identical to printing dimensions (no distortion).

#### Example 8-38: Media: Flexo Sleeve

TBD 2.x Example.

```
<Media Class="Consumable" ID="M123456" ProductID="FlexoSleeve"
      Status="Available"
```

```

DescriptiveName="Sleeve" Dimension"1417.32 750.0" MediaType="Sleeve"
PlateTechnology="FlexoDigitalSolvent" Manufacturer="PlateManufacturerB"
Brand="BrandB" BatchID="Batch 6789" Thickness="2810"
ReliefThickness="500">
<!--MediaLayers contains 2 items: the base layer and the
photopolymer layer of the flexo plate -->
<MediaLayersMedia DescriptiveName="Base" MediaType="Plate"
    MediaTypeDetails="FlexoPlateBase" Thickness="1249"/>
  <Media DescriptiveName="Photopolymer Layer" MediaType="Plate"
    MediaTypeDetails="FlexoPhotopolymer" Thickness="1570"/>
</MediaLayersMedia>

```

## 8.96 MediaSource

[Deprecated in JDF 1.1](#)

See Section P.6.13, “MediaSource” on page 1358 for details of this deprecated Resource.

## 8.97 MiscConsumable

[New in JDF 1.3](#)

The **MiscConsumable** Resource is intended for cost accounting, inventory control and availability scheduling of supplies used in the production workflow where a more detailed parameterization of the Resource is not necessary. **MiscConsumable** is limited to modeling consumables not already more specifically defined in JDF (**Ink**, **Media**, **Pallet**, **RegisterRibbon**, **Strap** or **UsageCounter**).

**MiscConsumable** Resources MAY appear as inputs to any **JDF XJDF** Process. The default Unit for Amounts of **MiscConsumable** is Countable Objects.

Certain types of **MiscConsumable** Elements such as **MiscConsumable[@ConsumableType = "WasteContainer"]** are typically “consumed” by being filled. The sense of the **@Amount** Attribute for such Resources shall be the quantity of unused or empty waste containers that are available. If **@Unit** is a volume, distance or weight instead of Countable Objects, such **@Amount** will still represent the remaining unused capacity of the waste container.

### Resource Properties

<b>Resource Class:</b>	Consumable
<b>Resource referenced by:</b>	—
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	Any Process
<b>Output of Processes:</b>	—

**Table 8-201: MiscConsumable Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>Color</i> ?	NamedColor	<i>@Color</i> specifies the machine readable color of the consumable.
<i>ColorDetails</i> ?	string	<i>@ColorDetails</i> specifies additional details of the color of the consumable which MAY be site specific and MAY be human readable. <i>@Color</i> SHOULD be specified if <i>@ColorDetails</i> is supplied.

**Table 8-201: MiscConsumable Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>ConsumableType ?</i> <i>Type ?</i> <a href="#">Modified in JDF 1.5</a>	NMOKEN	<p>Identifies the type of <b>MiscConsumable</b> (machine-readable). A human-readable (possibly localized) description of the consumable SHOULD also be supplied in <i>@DescriptiveName</i>.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Developer</i> – Chemicals used in filmsetters and platesetters.</li> <li><i>Electricity</i> – Electrical energy. Typically monitored for CO<sub>2</sub> tracking. Measured in kWh. <a href="#">New in JDF 1.5</a></li> <li><i>FuserOil</i> – Silicon Oil</li> <li><i>Gas</i> – Natural Gas. Typically monitored for CO<sub>2</sub> tracking. Measured in m<sup>3</sup>. <a href="#">New in JDF 1.5</a></li> <li><i>Glue</i></li> <li><i>Headband</i> – <a href="#">New in JDF 1.4</a></li> <li><i>RegistrationRibbon</i> <a href="#">New in JDF 1.5</a></li> <li><i>Paperclips</i></li> <li><i>Staples</i></li> <li><i>Strap</i> - Straps are used in a <b>Strapping</b> process</li> <li><i>WasteContainer</i> – Waste Toner Bottle.</li> <li><i>Wire</i> – bulk wire used for forming staples or other binding.</li> </ul>
<i>TypeDetails ?</i>	string	Additional site specific details of the consumable.

## 8.98 NodeInfo

The **NodeInfo** Resource contains information about planned scheduling and message routing. It allows MIS to plan, schedule and invoice Jobs or Job Parts. Prior to JDF 1.3, **NodeInfo** was a direct Subelement of the JDF Node and not a Resource.

**Modification note:** starting with JDF 1.3, **NodeInfo** is a Resource that SHALL be linked (via **NodeInfoLink**) like any other Resource; there is no “inheritance”. However, a Node MAY link to the same **NodeInfo** Resource as its parent

**Note:** the NORMATIVE **NodeInfo** is specified by a linked Resource. An Informative **NodeInfo** MAY be retrieved by searching the **NodeInfo** of parent Nodes or Ancestor Elements.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	Ancestor
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	<i>Any Process</i>
<b>Output of Processes:</b>	—

**Table 8-202: NodeInfo Resource (Sheet 1 of 4)**

Name	Data Type	Description
<i>CleanupDuration ?</i>	duration	Estimated duration of the clean-up phase of the Process.

Table 8-202: NodeInfo Resource (Sheet 2 of 4)

Name	Data Type	Description
<i>DueLevel</i> ?	enumeration	<p>Description of the severity of a missed deadline.</p> <p><b>Allowed values are:</b></p> <p><i>Unknown</i> – Consequences of missing the deadline are not known. <a href="#">Deprecated in JDF 1.2</a></p> <p><i>Trivial</i> – Missing the deadline has minor or no consequences.</p> <p><i>Penalty</i> – Missing the deadline incurs a penalty.</p> <p><i>JobCancelled</i> – The Job is cancelled if the deadline is missed.</p>
<i>End</i> ?	dateTime	Date and time at which the Process is scheduled to end.
<i>FirstEnd</i> ?	dateTime	Earliest date and time at which the Process is to end.
<i>FirstStart</i> ?	dateTime	Earliest date and time at which the Process is to begin.
<i>IPPVersion</i> ? <a href="#">New in JDF 1.1</a>	XYPair	A pair of numbers (as integers) indicating the version of the IPP protocol to use when communicating to IPP Devices. The X value is the major version number.
<i>JobPriority</i> ?= "50" <a href="#">New in JDF 1.1</a>	integer	<p>The scheduling priority for the Node where 100 is the highest and 0 is the lowest. Amongst the Nodes that can be processed in the <b>JDF XJDF</b> Instance, all higher priority Nodes are to be processed before any lower priority ones. If one or more of the deadline oriented Attributes (e.g., <i>@FirstStart</i> or <i>@LastEnd</i>) is specified, such attribute(s) SHALL be honored before considering <i>@JobPriority</i>.</p> <p>The priority from JMF (<a href="#">QueueSubmissionParams</a>/<a href="#">QueueSubmissionParams/@Priority</a> or <a href="#">QueueEntryPriParams</a>/<a href="#">ModifyQueueEntryParams/@Priority</a>) takes precedence over <b>NodeInfo/@JobPriority</b>.</p> <p><b>Modification note:</b> starting with JDF 1.4, scheduling priority in the first paragraph is described in terms of the Node rather than the job</p>
<i>LastEnd</i> ?	dateTime	Latest date and time at which the Process is to end. This is the deadline to which <i>@DueLevel</i> refers.
<i>LastStart</i> ?	dateTime	Latest date and time at which the Process is to begin.
<i>NaturalLang</i> ? <a href="#">New in JDF 1.1</a>	language	Language selected for communicating Attributes. If not specified, the operating system language is assumed.
<i>NodeStatus</i> ? <a href="#">New in JDF 1.3</a>	enumeration	<p>Identifies the status of an individual part of the Node.</p> <p><b>Default value is from:</b> <a href="#">JDF/@Status</a>.</p> <p><b>Allowed values are from:</b> Table 8-203, “NodeStatus Attribute Values” on page 808.</p>
<i>NodeStatusDetails</i> ? <a href="#">New in JDF 1.3</a>	string	<p><a href="#">Machine readable description</a> <a href="#">Description</a> of the status that provides details beyond the enumerative values given by <i>@NodeStatus</i>.</p> <p><b>Default value is from:</b> <a href="#">JDF/@StatusDetails</a>.</p> <p><b>Values include those from:</b> Section C.1, “StatusDetails Supported Strings” on page 1133.</p>

Table 8-202: NodeInfo Resource (Sheet 3 of 4)

Name	Data Type	Description
<i>MergeTarget</i> ? <small>Deprecated in JDF 1.1</small>	boolean	If <i>@MergeTarget</i> = "true" and this Node has been spawned, it SHALL be merged with its direct ancestor by the Controller that executes this Node. The path of the ancestor is specified in the last <i>Ancestor</i> Element located in the <i>AncestorPool</i> of this Node. It is an error to specify both <i>@MergeTarget</i> and <i>@TargetRoute</i> in one Node.  <b>Note:</b> <i>@MergeTarget</i> has been deprecated in JDF 1.1 because avoiding concurrent access to the ancestor Node is ill defined and cannot be implemented in an open system without proprietary locking mechanisms.
<i>Route</i> ?	URL	The URL of the Controller or Device that is to execute this Node. If <i>@Route</i> is not specified, the routing Controller SHALL determine a potential target Controller or Device independently. For details, see Section 4.2, "Process Routing".  Note that the receiving Device SHALL NOT use <i>@Route</i> to determine whether to execute the Node. Rather a Device SHALL use a <b>Media</b> Input Resource (if specified) to determine whether to execute the Node.
<i>rRefs</i> ? <small>Deprecated in JDF 1.2</small>	IDREFS	Array of IDs of any Elements that are specified as <i>ResourceRef</i> Elements. In version 1.1, <i>@rRefs</i> contained the IDREF of an <b>Employee</b> . In JDF 1.2 and beyond, it is up to the implementation to maintain references.
<i>SetupDuration</i> ?	duration	Estimated duration of the setup phase of the Process.
<i>Start</i> ?	dateTime	Date and time of the planned Process start.
<i>TargetRoute</i> ?	URL	The URL where the JDF is to be sent after completion. If <i>@TargetRoute</i> is not specified, it defaults to the input <i>@Route</i> Attribute of the subsequent Node in the Process chain. If this is also not known (e.g., because the Node is spawned), the JDF Node SHALL be sent to the processor default output URL.  If <i>@TargetRoute</i> specifies a file-schemed URL, it SHALL be the exact file name and NOT just the directory of the resulting JDF. <i>JMF/QueueSubmissionParams/@ReturnURL</i> takes precedence over <i>NodeInfo/@TargetRoute</i> of the JDF that is processed.
<i>TotalDuration</i> ?	duration	Estimated total duration of the Process, including setup and cleanup.
<i>WorkStepID</i> ? <small>New in JDF 1.4</small>	string N- MTOKEN	ID of an individual work step (e.g., a Press Run). If <b>NodeInfo</b> is not Partitioned, or all Partitions are executed simultaneously, <i>@WorkStepID</i> corresponds to <i>@JobPartID</i> .
<i>BusinessInfo</i> ?	element	Container for business related information. It is expected that JDF will be utilized in conjunction with other e-commerce standards, and this container is provided to store the e-commerce information within JDF in case a workflow with JDF as the root level document is desired. When JDF is used as part of an e-commerce solution such as PrintTalk, the information given in the envelope document overrides the information in <b>BusinessInfo</b> .
<b>Employee</b> ? <b>Contact</b> ?	refeleme nt	The internal administrator or supervisor that is responsible for the product or Process defined in this Node.

**Table 8-202: NodeInfo Resource (Sheet 4 of 4)**

Name	Data Type	Description
JMF * <a href="#">Deprecated in JDF 1.5</a>	element	<p>Represents JMF Query Messages that set up a persistent channel, as described in Section 5.4.4, “Persistent Channels”. These Message Elements define the receiver that is designated to track Jobs via JMF Messages. These Message Elements SHOULD be honored by any JMF-capable Controller or Device that executes this Node. When these Messages are honored, a persistent communication channel is established that allows Devices to transmit (e.g., the status of the Job as JMF Signal Messages).</p> <p>The JMF specified in this <b>NodeInfo</b> SHALL be restricted in scope to the containing JDF Element. Typically this will be achieved by explicitly stating <code>@JobID</code> in the appropriate <code>QueryTypeObj</code>.</p> <p><b>Deprecation note:</b> Starting with JDF 1.5, subscriptions SHOULD only be specified as root JMF.</p>
MISDetails? <a href="#">New in JDF 1.2</a>	element	Definition how the costs for the execution of this Node are to be charged.
NotificationFilter *NotificationFilter *	element	Defines the set of <b>NotificationFilter</b> Elements that are to be logged in the <b>AuditPool</b> . This provides a logging method for Devices that do not support <b>JMF XJMF</b> messaging. For details of the <b>NotificationFilter</b> Element, see <a href="#">Section 5.8.7.2, “NotificationFilter”</a> <a href="#">Section 5.8.7.1.1, “NotificationFilter”</a> .

**— Attribute: NodeStatus****Table 8-203: NodeStatus Attribute Values (Sheet 1 of 2)**

Value	Description
Aborted	Indicates that the Process executing the Node has been aborted, which means that execution will not be resumed again. <a href="#">For QueueEntry</a> <a href="#">New in JDF 1.2</a>
Cleanup	The Process represented by this Node is currently being cleaned up.
Completed	Indicates that the Node or queue entry has been executed correctly, and is finished. <a href="#">For QueueEntry</a> <a href="#">New in JDF 1.2</a>
FailedTestRun	An error occurred during the test run. Error information is logged in the <b>Notification</b> Element, which is an OPTIONAL Subelement of the <b>AuditPool</b> Element described in Section 3.16, “AuditPool and Audit”.
InProgress	The Node is currently executing.
Part <a href="#">New in JDF 1.3</a>	Indicates that the Node is processing Partitioned Resources and that the Status varies depending on the Partition Keys. Details are provided in the <b>NodeInfo</b> Resource of the Node.
Pool <a href="#">Deprecated in JDF 1.3</a>	Indicates that the Node processes Partitioned Resources and that the <code>@Status</code> varies depending on the Partition Keys. Details are provided in the <b>StatusPool</b> Element of the Node.
Ready	As indicated by the successful completion of a test run; all <b>ResourceLink</b> Elements are correct; REQUIRED Resources are available, and the parameters of Resources are valid. The Node is ready to start.
Setup	The Process represented by this Node is currently being set up.
Spawned	The Node is spawned in the form of a separate spawned JDF. The status Spawning can only be assigned to the original instance of the spawned JDF. For details, see <a href="#">Section 4.4, “Spawning and Merging”</a> .

**Table 8-203: NodeStatus Attribute Values (Sheet 2 of 2)**

Value	Description
<i>Stopped</i>	Execution has been stopped. If a Job is " <i>Stopped</i> ", running can be resumed later. This status can indicate a break, a pause, maintenance or a breakdown — in short, any pause that does not lead the Job to be aborted.
<i>Suspended</i> <a href="#">New in JDF 1.3</a> <a href="#">Modified in JDF 1.4</a>	Execution has been stopped. If a Job is " <i>Suspended</i> ", running will be resumed later. Unlike " <i>Stopped</i> " this status indicates that the Job has been taken off the Device to execute another Job or perform some other action that is not related to this Job. When resumed, the Job MAY go into <i>@NodeStatus</i> = " <i>Setup</i> " before changing to " <i>InProgress</i> " again. The value " <i>Suspended</i> " is also used to describe iterations. In an iterative environment, " <i>Suspended</i> " specifies that at least one iteration cycle has completed but additional iteration cycles MAY still occur. In this use case, <i>@NodeStatusDetails</i> SHOULD be set to " <i>IterationPaused</i> "
<i>TestRunInProgress</i>	The Node is currently executing a test run.
<i>Waiting</i>	The Node can be executed, <a href="#">but it has not completed a test run</a> .

## 8.99 NumberingParams

[Deprecated in JDF 1.5](#)

See Section P.6.14, “NumberingParams” on page 1359 for details of this deprecated Resource.

## 8.100 OrderingParams

[Deprecated in JDF 1.5](#)

See Section P.6.16, “OrderingParams” on page 1360 for details of this deprecated Resource.

## 8.101 PackingParams

[Deprecated in JDF 1.1](#)

The PackingParams Resource has been deprecated in JDF 1.1 and beyond. It is replaced by the individual Resources used by the Processes defined in Section 6.7.5, “Packaging Processes”. See Section P.6.17, “PackingParams” on page 1360 for details of this deprecated Resource.

## 8.102 PageAssignParams

[New in JDF 1.4](#)

This Resource is an empty container for future extensions

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	
Example Partition:	
Input of Processes:	<a href="#">PageAssigning</a>
Output of Processes:	

**Table 8-204: PageAssignParams Resource**

Name	Data Type	Description

## 8.103 PageList

New in JDF 1.2

**PageList** defines the additional metadata of individual finished pages such as pagination details. **PageList** references the finished page regardless of the page's position in a PDL file or **RunList**.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	<b>Assembly</b> , <b>Component</b> , <b>ExposedMedia</b> , <b>LayoutElement</b> , <b>RunList</b>
Example Partition:	"PartVersion"
Input of Processes:	
Output of Processes:	

Table 8-205: PageList Resource (Sheet 1 of 2)

Name	Data Type	Description
<i>AssemblyID</i> ? <small>Deprecated in JDF 1.3</small>	string	ID of the <b>Assembly</b> or <b>AssemblySection</b> that this finished page belongs to.
<i>AssemblyIDs</i> ? <small>New in JDF 1.3</small>	NMTOKENS	IDs of the <b>Assembly</b> Elements, <b>AssemblySection</b> Elements or <b>StrippingParams[@BinderySignatureName]</b> that the finished pages specified by this <b>PageList</b> belong to.
<i>HasBleeds</i> ?	boolean	If "true", the file has bleeds.
<i>IsBlank</i> ?	boolean	If "true", the <b>PageList</b> has no content marks and is blank. Note that in JDF 1.2, the description erroneously stated that <i>@IsBlank = "false"</i> specifies a blank page.
<i>IsPrintable</i> ?	boolean	If "true", the file is a PDL file and can be printed. Possible files types include PCL, PDF or PostScript files. Application files such as MS Word have <i>@IsPrintable = "false"</i> .
<i>IsTrapped</i> ?	boolean	If "true", the file has been trapped.
<i>JobID</i> ?	string	ID of the Job that this finished page belongs to.
<i>PageLabelPrefix</i> ?	string	Prefix of the identification of the Reader Page as it is displayed on the finished page. For instance "C-", if the Reader Pages are labeled "C-1", "C-2", etc.
<i>PageLabelSuffix</i> ?	string	Suffix of the identification of the Reader Page as it is displayed on the finished page. For instance "-a", if the pages are labeled "C-1-a", "C-2-a", etc.
<i>SourceBleedBox</i> ?	rectangle	A rectangle that describes the bleed area of the page to be included. This rectangle is expressed in the source coordinate system of the object. If not specified, use defined bleed box of element (or no bleed box if element does not supply a bleed box).
<i>SourceClipBox</i> ?	rectangle	A rectangle that defines the region of the finished page to be included. This rectangle is expressed in the source coordinate system of the object. If not specified, use defined clip box of element (or no clip box if element does not supply a clip box).

**Table 8-205: PageList Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>SourceTrimBox</i> ?	rectangle	A rectangle that describes the intended trimmed size of the finished page to be included. This rectangle is expressed in the source coordinate system of the object. If not specified, use defined trim box of element (or no trim box if element does not supply a trim box).
<i>Template</i> = "false"	boolean	Template is "false" when this page is self-contained. This Attribute is "true" if the <b>PageList</b> represents a template that SHALL be completed with information from a database.
<b>Assembly</b> ? <b>AssemblyRef</b> ? <small>New in JDF 1.3</small>	refelementI-DREF	<b>Assembly</b> that is referred to by <b>PageData</b> / @AssemblyIDs or contains the AssemblySection that is referred to by <b>PageData</b> / @AssemblyIDs.
<b>ColorPool</b> ? <b>ColorRef</b> ?	refelementI-DREF	Reference to a <b>ResourceSet</b> [@Name="Color"]. Definition of the color details.
<b>ContentList</b> ? <b>ContentRef</b> ? <small>New in JDF 1.3</small>	refelementI-DREF	List of <b>ContentData</b> Elements that describe individual pieces of content on the pages.
<b>ElementColorParams</b> ?	refelement	Color details of the page list.
<b>ImageCompressionParams</b> ?	refelement	Specification of the image compression properties.
<b>PageData</b> *	element	Details of the individual finished page. The <b>PageData</b> Elements are referred to by the values of <b>PageData</b> / @PageIndex (if present), or otherwise, their index in the <b>PageList</b> . In the latter case, the <b>PageData</b> Elements SHOULD, therefore, not be removed or inserted in a position other than the end of the list. <b>Modification note:</b> see the Modification note in the section on the <b>PageData</b> Element below.
<b>ScreeningParams</b> ?	refelement	Specification of the screening properties.
<b>SeparationSpec</b> *	element	List of separation names defined in the <b>PageList</b> .

### 8.103.1 Element: **PageData**

**PageData** defines the additional metadata of individual finished pages or sets of finished pages with common properties, such as pagination details.

If @PageIndex is not present in **PageData** Elements, **PageData** Elements are referred to by index of the **PageData** in the **PageList**. If @PageIndex is present, it explicitly specifies the indices within the **PageList**. Either all or no **PageData** Elements in a **PageList** SHALL have @PageIndex. If a Page is not represented by a **PageData**, the Attributes of the **PageList** itself apply.

**Modification note:** starting with JDF 1.4, **PageData** / @PageIndex is added. It allows **PageData** to describe multiple finished pages and to explicitly specify the index of a **PageData** Element within a **PageList**. The explicit index allows a **PageList** to contain a **PageData** for a particular index (e.g., 100) without the need for **PageData** Elements for all indices that are lower (e.g., 0 to 99). Without @PageIndex, the position of **PageData** within **PageList** implicitly specifies its index.

If the **PageList** is partitioned, the index refers to **PageData** Elements in the respective leaves of the partitioned **PageList**. The index restarts at 0 with each partitioned leaf.

**Table 8-206: `PageData` Element (Sheet 1 of 3)**

Name	Data Type	Description
<code>AssemblyID</code> ? <a href="#">Deprecated in JDF 1.3</a>	string	ID of the <b>Assembly</b> or <b>AssemblySection</b> that this finished page belongs to. <b>Default value is from:</b> <code>PageList/@AssemblyID</code> .
<code>AssemblyIDs</code> ? <a href="#">New in JDF 1.3</a>	NMTOKENS	IDs of the <b>Assembly</b> Elements, <b>AssemblySection</b> Elements or <b>StrippingParams[@BinderySignatureName]</b> <b>BinderySignature/@AssemblyID</b> that this finished page belongs to. <b>Default value is from:</b> <code>PageList/@AssemblyIDs</code> .
<code>CatalogID</code> ?	string	Identification of the Resource (e.g., in a catalog environment). <b>Default value is from:</b> <code>PageList/@CatalogID</code> .
<code>CatalogDetails</code> ?	string	Additional details of a Resource in a catalog environment. <b>Default value is from:</b> <code>PageList/@CatalogDetails</code> .
<code>FoldOutPages</code> ?	IntegerList	Page indices in the <b>PageList</b> of the file pages forming a content page that flows over multiple finished pages (e.g., foldout, centerfold). The list does not include the index of this <b>PageData</b> . <b>Default behavior:</b> <code>PageData</code> does not describe a part of a foldout.
<code>HasBleeds</code> ?	boolean	If "true", the <b>file page</b> has bleeds. <b>Default value is from:</b> <code>PageList/@HasBleeds</code> .
<code>IsBlank</code> ?	boolean	If "true", the <b>PageData</b> has no content marks and is blank. Note that in JDF 1.2 the description erroneously stated that <code>@IsBlank = "false"</code> specifies a blank page. <b>Default value is from:</b> <code>PageList/@IsBlank</code> .
<code>IsPrintable</code> ?	boolean	If "true", the file is a PDL file and can be printed. Possible files types include PCL, PDF or PostScript files. Application files such as MS Word have <code>@IsPrintable = "false"</code> . <b>Default value is from:</b> <code>PageList/@IsPrintable</code> .
<code>IsTrapped</code> ?	boolean	If "true", the file has been trapped. <b>Default value is from:</b> <code>PageList/@IsTrapped</code> .
<code>JobID</code> ?	stringNMTOKEN	ID of the Job that this <b>finished</b> page belongs to. <b>Default value is from:</b> <code>PageList/@JobID</code> .

**Table 8-206: PageData Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>PageFormat</i> ? <a href="#">New in JDF 1.3</a>	NMTOKEN	<p>Defines the format of the page in a production workflow.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Broadsheet</i> – One single page that will be mounted on a broadsheet plate (one page goes on one (broadsheet) plate).</li> <li><i>Tabloid</i> – One single page that will be paired with a second tabloid page. Later, the page pair will be mounted on a broadsheet plate.</li> <li><i>Newspaper4up</i> – Four pages will be mounted on one plate.</li> <li><i>Newspaper8up</i> – Eight pages will be mounted on one plate.</li> </ul> <p><b>Note:</b> the values are for a newspaper workflow.</p>
<i>PageIndex</i> ? <a href="#">New in JDF 1.4</a>	IntegerRangeList	List of pages the PageData Element represents. A Page number SHALL NOT appear more than once in the <b>PageList</b> .
<i>PageLabel</i> ?	string	Complete identification of the finished page including <i>@PageLabelPrefix</i> and <i>@PageLabelSuffix</i> as it is displayed on the finished page, For instance "1", "iv" or "C-1". Note that this might be different from the position of the page in the finished document.
<i>PageLabelPrefix</i> ?	string	<p>Prefix of the identification of the Reader Page as it is displayed on the finished page. For instance "C-", if the Reader Pages are labeled "C-1", "C-2", etc.</p> <p><b>Default value is from: PageList/ @PageLabelPrefix.</b></p>
<i>PageLabelSuffix</i> ?	string	<p>Suffix of the identification of the Reader Page as it is displayed on the finished page. For instance "-a", if the pages are labeled "C-1-a", "C-2-a", etc.</p> <p><b>Default value is from: PageList/ @PageLabelSuffix.</b></p>
<i>PageStatus</i> ? <a href="#">New in JDF 1.3</a>	NMOKENS	<p>Status of a single PageData Element.</p> <p><b>Values include those from:</b> Table C-20, "MessageEvents and MilestoneType Values" on page 1146.</p>
<i>ProductID</i> ?	string	An ID of the page as defined in the MIS system. <b>Default value is from: PageList/@ProductID.</b>
<b>ScreeningParams</b> <b>?ScreeningParamsRef</b> ?	refelementIDREF	Specification of the screening properties. <b>Default value is from: PageList/ ScreeningParams</b>
<b>SeparationSpec</b> * <b>Separations</b> ?	elementNMTO-KENS	List of separation names defined in the Element. <b>Default value is from: PageList/SeparationSpec</b>

**Table 8-206: PageData Element (Sheet 3 of 3)**

Name	Data Type	Description
SourceBleedBox ?	rectangle	A rectangle that describes the bleed area of the page to be included. This rectangle is expressed in the source coordinate system of the object. <b>Default value is from: PageList/@SourceBleedBox.</b>
SourceClipBox ?	rectangle	A rectangle that defines the region of the finished page to be included. This rectangle is expressed in the source coordinate system of the object. <b>Default value is from: PageList/@SourceClipBox.</b>
SourceTrimBox ?	rectangle	A rectangle that describes the intended trimmed size of the finished page to be included. This rectangle is expressed in the source coordinate system of the object. <b>Default value is from: PageList/@SourceTrimBox.</b>
Template ?	boolean	Template is "false" when this page is self-contained. This Attribute is "true" if the <b>PageList</b> represents a template that SHALL be completed with information from a database. <b>Default value is from: PageList/@Template.</b>
ElementColorParams ?	refelementelement	Color details of the PageData Element. <b>Default value is from: PageList/ElementColorParams</b>
ImageCompressionParams ?	refelementelement	Specification of the image compression properties. <b>Default value is from: PageList/ImageCompressionParams</b>
PageElement * New in JDF 1.3	element	Describes an individual element on a page. This might be a part of an image, text, advertisement, editorial, etc.
ScreeningParams ?ScreeningParamsRef ?	refelementIDREF	Specification of the screening properties. <b>Default value is from: PageList/ScreeningParams</b>
SeparationSpec * <i>Separations</i> ?	elementNMTO-KENS	List of separation names defined in the Element. <b>Default value is from: PageList/SeparationSpec</b>

### 8.103.2 Element: PageElement

New in JDF 1.3

PageElement defines the positioning of ContentData on a Page or PageElement and additional metadata of individual elements within a page.

**Table 8-207: PageElement Element (Sheet 1 of 2)**

Name	Data Type	Description
ContentDataRefs ? ContentRefs ? New in JDF 1.4	IDREFS	ContentData provides metadata of the Element that is independent of the page position. ID of the ContentData Elements in the referenced ContentList. ContentData Elements provide Metadata related to this PageData. @ContentDataRefs SHALL NOT be specified if no ContentData is specified in the grand-parent PageList Element.

**Table 8-207: PageElement Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>ContentListIndex</i> ? <a href="#">Deprecated in JDF 1.4</a>	integer	Index into a <b>ContentList/ContentData</b> Element. If neither <b>@ContentListIndex</b> nor <b>PageElement</b> are specified, this <b>PageElement</b> is a reservation. <b>Deprecation note:</b> starting with JDF 1.4, use <b>@ContentDataRefs</b> .
<i>ContentType</i> ?	NMOKEN	Type of content that is placed in this <b>PageElement</b> . <b>Values include those from:</b> <b>ContentList/ContentData/ @ContentType</b> .
<i>ElementPages</i> ?	IntegerRangeList	List of Pages that this <b>PageElement</b> traverses. Multiple values designate, e.g., fold out pages or multi-page ads.
<i>RelativeBox</i> ?	Rectangle	Position of the <b>PageElement</b> in the coordinate system of the parent <b>PageData</b> .
<b>PageElement</b> *	element	Further sub-page Elements that comprise this <b>PageElement</b> .

## 8.104 Pallet

[New in JDF 1.1](#)

A **Pallet** represents the pallet used in packing goods.

### Resource Properties

<b>Resource Class:</b>	Consumable
<b>Resource referenced by:</b>	—
<b>Example Partition:</b>	
<b>Input of Processes:</b>	<b>Palletizing</b>
<b>Output of Processes:</b>	—

**Table 8-208: Pallet Resource**

Name	Data Type	Description
<i>PalletType</i> <a href="#">Modified in JDF 1.4</a>	NMOKEN	Type of pallet used. <b>Values include:</b> <i>2Way</i> – Two-way entry. <i>4Way</i> – Four-way entry. <i>Euro</i> – Standard 1*1 m Euro pallet. <a href="#">Deprecated in JDF 1.4</a> <i>Euro800x600</i> – 800x600mm according to 15146-4 (equals half Euro pallet). <a href="#">New in JDF 1.4</a> <i>Euro800x1200</i> – 800x1200mm according to DIN EN 13698-1 (equals Euro pallet). <a href="#">New in JDF 1.4</a> <i>Euro1000x1200</i> – 1000x1200mm according to DIN EN 13698-2 (flat pallet). <a href="#">New in JDF 1.4</a> <i>Euro1200x1200</i> – 1200x1200mm no norm, but in use in the field. <a href="#">New in JDF 1.4</a>
<i>Size</i> ?	XYPair	Describes the length and width of the pallet, in points (e.g., 3500 3500). If not specified, the size is defined by <b>@PalletType</b> .

## 8.105 PalletizingParams

[New in JDF 1.1](#)

**PalletizingParams** defines the details of **Palletizing**. Details of the actual pallet used for **Palletizing** can be found in the **Pallet** Resource that is also an input of the **Palletizing** Process.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	<b>PackingIntent</b>
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	<b>Palletizing</b>
<b>Output of Processes:</b>	—

**Table 8-209: PalletizingParams Resource**

Name	Data Type	Description
<i>LayerAmount</i> ? <a href="#">New in JDF 1.4</a>	IntegerList	Ordered number of input components in a layer. The first number is the first layer on the bottom. If there are more layers than entries in the list, counting restarts at the first entry.
<i>MaxHeight</i> ?	double	Maximum height of a loaded pallet in points.
<i>MaxWeight</i> ?	double	Maximum weight of a loaded pallet in grams.
<i>Overhang</i> ? <a href="#">New in JDF 1.4</a>	XYPair	Overhang in <i>x</i> and <i>y</i> direction on each side.
<i>OverhangOffset</i> ? <a href="#">New in JDF 1.4</a>	XYPair	Overhang offset if overhang is not centered.
<i>Pattern</i> ?	string	Name of the palletizing pattern. Used to store a predefined pattern that defines the layers and positioning of individual component on the pallet.
<i>Bundle</i> ? <a href="#">New in JDF 1.4</a>	refelement	Describes additional properties, such as the number of individual products, and describes the list of the individual products on the pallet.

## 8.106 PDFToPSConversionParams

This Resource specifies a set of configurable options that can be used by Processes that read PDF and generate PostScript files. It is RECOMMENDED to describe reading of arbitrary PDL documents as a combination of the **Interpreting** and **PDLCreation** Processes.

Some descriptions below mention Attributes or structures in specific source formats, such as PDF. Appropriate equivalent actions should be taken when converting from other source formats that have equivalent Attributes or structures. A small number of parameters apply only to PDF sources.

Font controls are applied in the following order:

- 1 [@IncludeBaseFonts](#)
- 2 [@IncludeEmbeddedFonts](#)
- 3 [@IncludeType1Fonts](#)
- 4 [@IncludeType3Fonts](#)
- 5 [@IncludeTrueTypeFonts](#)
- 6 [@IncludeCIDFonts](#)

For example, an embedded Type-1 font follows the rule for embedded fonts, not the rule for Type-1 fonts. In other words, if `@IncludeEmbeddedFonts` is "true", and `@IncludeType1Fonts` is "false", embedded Type-1 fonts would be included in the PostScript stream.

## Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resources referenced:</b>	<b>PDLCreationParams</b>
<b>Example Partition:</b>	<code>"DocIndex", "RunIndex", "RunTags", "DocTags", "PageTags", "SetTags", "SheetName", "Side", "SignatureName"</code>
<b>Input of Processes:</b>	<b>PDFToPSConversion</b>
<b>Output of Processes:</b>	

Table 8-210: PDFToPSConversionParams Resource (Sheet 1 of 3)

Name	Data Type	Description
<code>BinaryOK ?= "true"</code>	boolean	If "true", binary data are to be included in the PostScript stream.
<code>BoundingBox ?</code>	rectangle	It is used for <b>BoundingBox</b> DSC comment in <code>@CenterCropBox</code> calculations and for PostScript's <b>set-pageDevice</b> .
<code>CenterCropBox ?= "true"</code>	boolean	If "true", the <b>CropBox</b> from the source document is centered on the page when the <b>CropBox</b> is smaller than <b>Media-Box</b> .
<code>GeneratePageStreams ?= "false"</code>	boolean	If "true", the Process emits individual streams of data for each page in the <b>RunList</b> .
<code>IgnoreAnnotForms ?= "false"</code>	boolean	If "true", ignores annotations that contain a PDF <b>XObject</b> form. (PDF source only).
<code>IgnoreBG ?= "true"</code> <u>New in JDF 1.1</u>	boolean	Ignores the <b>BG</b> , <b>BG2</b> parameters in the PDF <b>ExtGState</b> dictionary, and the operand of any calls to the PostScript <b>set-blackgeneration</b> operator.
<code>IgnoreColorSeps ?= "false"</code>	boolean	If "true", ignores images for Level-1 separations.
<code>IgnoreDeviceExtGState ?</code> <u>Deprecated in JDF 1.1</u>	boolean	If "true", ignores all Device-dependent extended graphic state parameters. This overrides <code>@IgnoreHalftones</code> . The following parameters are to be ignored:  <code>OP</code> – Overprint parameter. <code>OPM</code> – Overprint mode. <code>BG, BG2</code> – Black generation. <code>UCR, UCR2</code> – Undercolor removal. <code>TR, TR2</code> – Transfer functions. <code>HT</code> – Halftone dictionary. <code>FL</code> – Flatness tolerance. <code>SA</code> – Automatic stroke adjustment.
<code>IgnoreDSC ?= "true"</code>	boolean	If "true", ignores DSC (Document Structuring Conventions).

Table 8-210: PDFToPSConversionParams Resource (Sheet 2 of 3)

Name	Data Type	Description
<i>IgnoreExternStreamRef</i> ?= "false"	boolean	If a PDF image Resource uses an external stream and <i>@IgnoreExternStreamRef</i> = "true", ignores code that points to the external file. (PDF source only). Note that <i>@IgnoreExternStreamRef</i> was misspelled as <i>@IgnoreExternStreamRef</i> prior to JDF 1.3.
<i>IgnoreHalftones</i> ?= "false"	boolean	If "true", ignores any halftone screening in the source file.
<i>IgnoreOverprint</i> ?= "true" <i>New in JDF 1.1</i>	boolean	Ignores OP parameters in a source PDF ExtGState dictionary <b>setoverprint</b> in a source PostScript file, etc.
<i>IgnorePageRotation</i> ?= "false"	boolean	If "true", ignores a "concatenation" provided at the beginning of each page that orients the page so that it is properly rotated. Used when emitting EPS.
<i>IgnoreRawData</i> ?= "false"	boolean	If "true", no unnecessary filters are to be added when emitting image data.
<i>IgnoreSeparableImagesOnly</i> ?= "false"	boolean	If "true", and if emitting EPS, ignores only CMYK and gray images.
<i>IgnoreShowPage</i> ?= "false"	boolean	If "true", ignores save-and-restore <b>showpage</b> in PostScript files
<i>IgnoreTransfers</i> ?= "true" <i>New in JDF 1.1</i>	boolean	Ignores TR, TR2 parameters in a source PDF ExtGState dictionary, <b>settransfer</b> and <b>setcolortransfer</b> in a source PostScript file, etc.
<i>IgnoreTTFontsFirst</i> ?= "false"	boolean	If "true", ignores TrueType fonts before any other fonts.
<i>IgnoreUCR</i> ?= "true" <i>New in JDF 1.1</i>	boolean	Ignores UCR, UCR2 parameters in a source PDF ExtGState dictionary, <b>setundercolorremoval</b> in a source PostScript file, etc.
<i>IncludeBaseFonts</i> ?= "IncludeNever"	enumeration	Determines when to embed the base fonts. The base fonts are "Symbol" and the plain, bold, italic and bold-italic faces of "Courier", "Times", and "Helvetica". <b>Allowed values are:</b> <i>IncludeNever</i> <i>IncludeOncePerDoc</i> <i>IncludeOncePerPage</i>
<i>IncludeCIDFonts</i> ?= "IncludeOncePerDoc"	enumeration	Determines when to embed CID fonts. <b>Allowed values are from:</b> @ <i>IncludeBaseFonts</i> .
<i>IncludeEmbeddedFonts</i> ?= "IncludeOncePerDoc"	enumeration	Determines when to embed fonts in the document that are embedded in the source file. This Attribute overrides the <i>@IncludeType1Fonts</i> , <i>@IncludeTrueTypeFonts</i> and <i>@IncludeCIDFonts</i> Attributes. <b>Allowed values are from:</b> @ <i>IncludeBaseFonts</i> .
<i>IncludeOtherResources</i> ?= "IncludeOncePerDoc"	enumeration	Determines when to include all other types of Resources in the file. <b>Allowed values are from:</b> @ <i>IncludeBaseFonts</i> .

**Table 8-210: PDFToPSConversionParams Resource (Sheet 3 of 3)**

Name	Data Type	Description
<i>IncludeProcSets</i> ?= "IncludeOncePerDoc"	enumeration	Determines when to include ProcSets in the file. <b>Allowed values are from:</b> @IncludeBaseFonts.
<i>IncludeTrueTypeFonts</i> ?= "IncludeOncePerDoc"	enumeration	Determines when to embed TrueType fonts. <b>Allowed values are from:</b> @IncludeBaseFonts.
<i>IncludeType1Fonts</i> ?= "IncludeOncePerDoc"	enumeration	Determines when to embed Type-1 fonts. <b>Allowed values are from:</b> @IncludeBaseFonts.
<i>IncludeType3Fonts</i> ?= "IncludeOncePerPage"	enumeration	Determines when to embed Type-3 fonts. It is included here to complete the precedence hierarchy. It has only one value. <b>Allowed values are:</b> "IncludeOncePerPage"
<i>OutputType</i> ?= "PostScript"	enumeration	Describes the kind of output to be generated. <b>Allowed values are:</b> PostScript EPS
<i>PSLevel</i> ?= "2"	integer	Number that indicates the PostScript level. Values include "1", "2" or "3".
<i>Scale</i> ?= "100"	double	Number that indicates the wide-scale factor of documents. Full size = "100".
<i>SetPageSize</i> ?= "false"	boolean	(PostScript Levels 2 and 3 only) If "true", sets page size on each page automatically. For PDF source, use MediaBox for outputting PostScript files and CropBox for EPS.
<i>SetupProcsets</i> ?= "true"	boolean	If "true", indicates that if ProcSets are included, the init/term code is also included.
<i>ShrinkToFit</i> ?= "false"	boolean	If "true", the page is scaled to fit the printer page size. This field overrides scale
<i>SuppressCenter</i> ?= "false"	boolean	If "true", suppresses automatic centering of page contents whose crop box is smaller than the page size.
<i>SuppressRotate</i> ?= "false"	boolean	If "true", suppresses automatic rotation of pages when their dimensions are better suited to landscape orientation. More specifically, the application that generates the PostScript compares the dimensions of the page. If the width is greater than the height, then pages are not rotated if @SuppressRotate = "true". On the other hand, if @SuppressRotate = "false", the orientation of each source page (e.g., as set by the PDF <b>Rotate</b> key) is honored, regardless of the dimensions of the pages (as defined by the <b>MediaBox</b> Attribute).
<i>TTasT42</i> ?= "false"	boolean	If including TrueType fonts, converts to Type-42 instead of Type-1 fonts when @TTasT42 = "true".
<i>UseFontAliasNames</i> ?= "false"	boolean	If "true", font alias names are used when printing with system fonts.

## 8.107 PDLCreationParams

New in JDF 1.3

This Resource is used to encapsulate the PDL output parameters for the describes the details of generating the supported output PDL types used in the **PDLCreation** Process.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Example Partition:	—
Input of Processes:	PDLCreation
Output of Processes:	—

Table 8-211: PDLCreationParams Resource

Name	Data Type	Description
MimeType	string	This Resource identifies the MIME type associated with this output file format. For example "application/pdf".
FontParams FontParams ? New in JDF 1.6	refelement	Fontparams describes how fonts SHALL be handled when creating PDL.
PSToPDFConversionParams ?PDFCreationDetails ?	refelement	PDF specific Parameter Resource Resource Element for the output. It SHALL NOT be specified unless @MimeType = "application/pdf".
PDFToPSConversionParams ?PSCreationDetails ?	refelement	Postscript specific Parameter Resource Resource Element for the output. SHALL NOT be specified unless @MimeType = "application/postscript".
PSToPDFConversionParams ?PDFCreationDetails ?	refelement	PDF specific Parameter Resource Resource Element for the output. It SHALL NOT be specified unless @MimeType = "application/pdf".

### 8.107.1 Element: FontParams

This element describes how fonts are handled when converting PostScript or other PDL files to PDF.

Table 8-212: FontParams Element

Name	Data Type	Description
AlwaysEmbed ?	NMTOKENS	@AlwaysEmbed specifies a list of one or more names of fonts that SHALL be embedded in the PDL. Each name SHALL be the PostScript language name of the font. Font names SHALL NOT occur in both the @AlwaysEmbed and @NeverEmbed lists.
EmbedAllFonts ?	boolean	If "true", specifies that all fonts, except those in the @NeverEmbed list, SHALL be embedded in the PDL.
MaxSubsetPct ?	integer	If the percentage of glyphs used from a font is below the value of @MaxSubsetPct, then a subset of the font SHALL be embedded in the PDL.
NeverEmbed ?	NMTOKENS	@NeverEmbed specifies a list of one or more names of fonts that SHALL NOT be embedded in the PDL and SHALL NOT be considered for subsetting. Each name SHALL be the PostScript language name of the font. Font names SHALL NOT occur in both the @AlwaysEmbed and @NeverEmbed lists.

## 8.107.2 Element: **PDFToPSConversionParams**

### 8.107.3 Element: **PSCreationDetails**

This Parameter specifies a set of configurable options that can be used by Processes that generate PostScript files.

Some descriptions below mention Attributes or structures in specific source formats, such as PDF. Appropriate equivalent actions should be taken when converting from other source formats that have equivalent Attributes or structures. A small number of parameters apply only to PDF sources.

Font controls are applied in the following order:

- 1 `@IncludeBaseFonts`
- 2 `@IncludeEmbeddedFonts`
- 3 `@IncludeType1Fonts`
- 4 `@IncludeType3Fonts`
- 5 `@IncludeTrueTypeFonts`
- 6 `@IncludeCIDFonts`

For example, an embedded Type-1 font follows the rule for embedded fonts, not the rule for Type-1 fonts. In other words, if `@IncludeEmbeddedFonts` is "true", and `@IncludeType1Fonts` is "false", embedded Type-1 fonts would be included in the PostScript stream.

**Table 8-213: PDFToPSConversionParams ResourcePSCreationDetails Element (Sheet 1 of 4)**

Name	Data Type	Description
<code>BinaryOK ?= "true"</code>	boolean	If "true", binary data are to be included in the PostScript stream.
<code>BoundingBox ?</code>	rectangle	It is used for <b>BoundingBox</b> DSC comment in <code>@CenterCropBox</code> calculations and for PostScript's <b>set-pageDevice</b> .
<code>CenterCropBox ?= "true"</code>	boolean	If "true", the <b>CropBox</b> from the source document is centered on the page when the <b>CropBox</b> is smaller than <b>Media-Box</b> .
<code>GeneratePageStreams ?= "false"</code>	boolean	If "true", the Process emits individual streams of data for each page in the <b>RunList</b> .
<code>IgnoreAnnotForms ?= "false"</code>	boolean	If "true", ignores annotations that contain a PDF <b>XObject</b> form. (PDF source only).
<code>IgnoreBG ?= "true"</code> <small>New in JDF 1.1</small>	boolean	Ignores the <b>BG</b> , <b>BG2</b> parameters in the PDF <b>ExtGState</b> dictionary, and the operand of any calls to the PostScript <b>set-blackgeneration</b> operator.
<code>IgnoreColorSeps ?= "false"</code>	boolean	If "true", ignores images for Level-1 separations.

**Table 8-213: PDFToPSConversionParams Resource PSCreationDetails Element (Sheet 2 of 4)**

Name	Data Type	Description
<i>IgnoreDeviceExtGState ?</i> <i>Deprecated in JDF 1.1</i>	boolean	If "true", ignores all Device-dependent extended graphic state parameters. This overrides <i>@IgnoreHalftones</i> . The following parameters are to be ignored: <i>OP</i> – Overprint parameter. <i>OPM</i> – Overprint mode. <i>BG, BG2</i> – Black generation. <i>UCR, UCR2</i> – Undercolor removal. <i>TR, TR2</i> – Transfer functions. <i>HT</i> – Halftone dictionary. <i>FL</i> – Flatness tolerance. <i>SA</i> – Automatic stroke adjustment.
<i>IgnoreDSC ?= "true"</i>	boolean	If "true", ignores DSC (Document Structuring Conventions).
<i>IgnoreExternStreamRef ?= "false"</i>	boolean	If a PDF image Resource uses an external stream and <i>@IgnoreExternStreamRef = "true"</i> , ignores code that points to the external file. (PDF source only). Note that <i>@IgnoreExternStreamRef</i> was misspelled as <i>@IgnoreExternStreamRef</i> prior to JDF 1.3.
<i>IgnoreHalftones ?= "false"</i>	boolean	If "true", ignores any halftone screening in the source file.
<i>IgnoreOverprint ?= "true"</i> <i>New in JDF 1.1</i>	boolean	Ignores <b>OP</b> parameters in a source PDF <b>ExtGState</b> dictionary <b>setoverprint</b> in a source PostScript file, etc.
<i>IgnorePageRotation ?= "false"</i>	boolean	If "true", ignores a “concatenation” provided at the beginning of each page that orients the page so that it is properly rotated. Used when emitting EPS.
<i>IgnoreRawData ?= "false"</i>	boolean	If "true", no unnecessary filters are to be added when emitting image data.
<i>IgnoreSeparableImagesOnly ?= "false"</i>	boolean	If "true", and if emitting EPS, ignores only CMYK and gray images.
<i>IgnoreShowPage ?= "false"</i>	boolean	If "true", ignores save-and-restore <b>showpage</b> in PostScript files
<i>IgnoreTransfers ?= "true"</i> <i>New in JDF 1.1</i>	boolean	Ignores <b>TR, TR2</b> parameters in a source PDF <b>ExtGState</b> dictionary, <b>settransfer</b> and <b>setcolortransfer</b> in a source PostScript file, etc.
<i>IgnoreTTFontsFirst ?= "false"</i>	boolean	If "true", ignores TrueType fonts before any other fonts.
<i>IgnoreUCR ?= "true"</i> <i>New in JDF 1.1</i>	boolean	Ignores <b>UCR, UCR2</b> parameters in a source PDF <b>ExtGState</b> dictionary, <b>setundercolorremoval</b> in a source PostScript file, etc.

**Table 8-213: PDFToPSConversionParams Resource PSCreationDetails Element (Sheet 3 of 4)**

Name	Data Type	Description
<i>IncludeBaseFonts</i> ?= "IncludeNever"	enumeration	Determines when to embed the base fonts. The base fonts are " <i>Symbol</i> " and the plain, bold, italic and bold-italic faces of " <i>Courier</i> ", " <i>Times</i> ", and " <i>Helvetica</i> ". <b>Allowed values are:</b> <i>IncludeNever</i> <i>IncludeOncePerDoc</i> <i>IncludeOncePerPage</i>
<i>IncludeCIDFonts</i> ?= "IncludeOncePerDoc"	enumeration	Determines when to embed CID fonts. <b>Allowed values are from:</b> @ <i>IncludeBaseFonts</i> .
<i>IncludeEmbeddedFonts</i> ?= "IncludeOncePerDoc"	enumeration	Determines when to embed fonts in the document that are embedded in the source file. This Attribute overrides the @ <i>IncludeType1Fonts</i> , @ <i>IncludeTrueTypeFonts</i> and @ <i>IncludeCIDFonts</i> Attributes. <b>Allowed values are from:</b> @ <i>IncludeBaseFonts</i> .
<i>IncludeOtherResources</i> ?= "IncludeOncePerDoc"	enumeration	Determines when to include all other types of Resources in the file. <b>Allowed values are from:</b> @ <i>IncludeBaseFonts</i> .
<i>IncludeProcSets</i> ?= "IncludeOncePerDoc"	enumeration	Determines when to include ProcSets in the file. <b>Allowed values are from:</b> @ <i>IncludeBaseFonts</i> .
<i>IncludeTrueTypeFonts</i> ?= "IncludeOncePerDoc"	enumeration	Determines when to embed TrueType fonts. <b>Allowed values are from:</b> @ <i>IncludeBaseFonts</i> .
<i>IncludeType1Fonts</i> ?= "IncludeOncePerDoc"	enumeration	Determines when to embed Type-1 fonts. <b>Allowed values are from:</b> @ <i>IncludeBaseFonts</i> .
<i>IncludeType3Fonts</i> ?= "IncludeOncePerPage"	enumeration	Determines when to embed Type-3 fonts. It is included here to complete the precedence hierarchy. It has only one value. <b>Allowed values are:</b> "IncludeOncePerPage"
<i>OutputType</i> ?= "PostScript"	enumeration	Describes the kind of output to be generated. <b>Allowed values are:</b> <i>PostScript</i> <i>EPS</i>
<i>PSLevel</i> ?= "2"	integer	Number that indicates the PostScript level. Values include "1", "2" or "3".
<i>Scale</i> ?= "100"	double	Number that indicates the wide-scale factor of documents. Full size = "100".
<i>SetPageSize</i> ?= "false"	boolean	(PostScript Levels 2 and 3 only) If "true", sets page size on each page automatically. For PDF source, use MediaBox for outputting PostScript files and CropBox for EPS.
<i>SetupProcsets</i> ?= "true"	boolean	If "true", indicates that if ProcSets are included, the init/term code is also included.

**Table 8-213: PDFToPSConversionParams Resource PSCreationDetails Element (Sheet 4 of 4)**

Name	Data Type	Description
<code>ShrinkToFit ?= "false"</code>	boolean	If "true", the page is scaled to fit the printer page size. This field overrides scale.
<code>SuppressCenter ?= "false"</code>	boolean	If "true", suppresses automatic centering of page contents whose crop box is smaller than the page size.
<code>SuppressRotate ?= "false"</code>	boolean	If "true", suppresses automatic rotation of pages when their dimensions are better suited to landscape orientation. More specifically, the application that generates the PostScript compares the dimensions of the page. If the width is greater than the height, then pages are not rotated if <code>@SuppressRotate = "true"</code> . On the other hand, if <code>@SuppressRotate = "false"</code> , the orientation of each source page (e.g., as set by the PDF <b>Rotate</b> key) is honored, regardless of the dimensions of the pages (as defined by the <b>MediaBox</b> Attribute).
<code>TTasT42 ?= "false"</code>	boolean	If including TrueType fonts, converts to Type-42 instead of Type-1 fonts when <code>@TTasT42 = "true"</code> .
<code>UseFontAliasNames ?= "false"</code>	boolean	If "true", font alias names are used when printing with system fonts.

#### 8.107.4 Element: PSToPDFConversionParams

#### 8.107.5 Element: PDFCreationDetails

This Element contains the parameters that control the conversion any PDL to PDF documents.

Some descriptions below mention Attributes or structures in specific source formats, such as PostScript. Appropriate equivalent actions should be taken when converting from other source formats that have equivalent Attributes or structures. A small number of s apply only to PostScript sources.

**Table 8-214: PSToPDFConversionParams Resource PDFCreationDetails Element (Sheet 1 of 3)**

Name	Data Type	Description
<code>AllowJBIG2Globals ?= "false"</code>	boolean	This Resource allows JBIG2 compressed images to share a single global dictionary in the resulting PDF file instead of a dictionary per image.
<code>ASCII85EncodePages ?= "false"</code>	boolean	If "true", binary streams (e.g., page contents streams, sampled images, and embedded fonts) are ASCII85-encoded, resulting in a PDF file that is almost pure ASCII. If "false", they are not, resulting in a PDF file that can contain substantial amounts of binary data.

**Table 8-214: PSToPDFConversionParams Resource PDFCreationDetails Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>AutoRotatePages</i> ?	enumeration	<p>Allows the Device to try to orient pages based on the predominant text orientation. If the source is PostScript, this Attribute is only used if the file does not contain “%%ViewingOrientation”, “%%PageOrientation” or “%%Orientation” DSC comments. If the file does contain such DSC comments, it honors them. “%%ViewingOrientation” takes precedence over others, then “%%PageOrientation”, then “%%Orientation”.</p> <p><b>Allowed values are:</b></p> <p><i>None</i> – Turns <i>@AutoRotatePages</i> off.</p> <p><i>All</i> – Takes the predominant text orientation across all pages and rotates all pages the same way.</p> <p><i>PageByPage</i> – Does the rotation on a page-by-page basis, rotating each page individually. Useful for documents that use both portrait and landscape orientations.</p>
<i>Binding</i> ?= "Left"	enumeration	<p>Determines how the printed pages would be bound.</p> <p><b>Allowed values are:</b></p> <p><i>Left</i> – for left binding.</p> <p><i>Right</i> – for right binding.</p>
<i>CompressPages</i> ?	boolean	Enables compression of pages and other content streams like forms, patterns and Type 3 fonts. If "true", use Flate compression.
<i>DefaultRenderingIntent</i> ? <u>Modified in JDF 1.2</u>	enumeration	<p>Selects the rendering intent for the current Job.</p> <p><b>Allowed values are:</b></p> <p><i>Default</i> <u>Deprecated in JDF 1.2</u></p> <p><i>Perceptual</i></p> <p><i>Saturation</i></p> <p><i>RelativeColorimetric</i></p> <p><i>AbsoluteColorimetric</i></p> <p><b>Note:</b> See the <i>Portable Document Format Reference Manual</i> for more information on rendering intent.</p>
<i>DetectBlend</i> ?= "true"	boolean	Enables or disables blend detection. If "true" and if <i>@PDFVersion</i> is 1.3 or higher, then blends will be converted to smooth shadings.
<i>DoThumbnails</i> ?= "true"	boolean	If "true", thumbnails are created.
<i>EndPage</i> ? <u>Deprecated in JDF 1.3</u>	integer	Number that indicates the last page that is displayed when the PDF file is viewed. <i>@EndPage</i> SHALL be either "-1" or greater than or equal to <i>@StartPage</i> . When combined with <i>@StartPage</i> , <i>@EndPage</i> selects a range of pages to be displayed. The entire file MAY be converted, but only <i>@StartPage</i> to <i>@EndPage</i> pages, inclusive, are opened and viewed in a PDF viewing application.
<i>ImageMemory</i> ? <u>Deprecated in JDF 1.2</u>	integer	<p>Number of bytes in the buffer used in sample processing for color, grayscale and monochrome images. Its contents are written to disk when the buffer fills up.</p> <p>This Attribute was deprecated because it is an internal application setting and not a parameter setting.</p>

**Table 8-214: PToPDFConversionParams ResourcePDFCreationDetails Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>InitialPageSize</i> ? <a href="#">New in JDF 1.1</a>	XYPair	Defines the initial page dimensions, in points, that will be used to set MediaBox. This will be overridden by any page size Attribute found in the source document, such as the PostScript <b>PageSize</b> page Device parameter. The use of this Attribute is strongly encouraged when processing EPS files (%%BoundingBox comments do not override <i>@InitialPageSize</i> ).
<i>InitialResolution</i> ? <a href="#">New in JDF 1.1</a>	XYPair	Defines the initial horizontal and vertical resolution, in dpi. This will be overridden by any resolution Attribute found in the source document, such as the PostScript <b>HWResolution</b> page Device parameter. The use of this Attribute is strongly encouraged when processing EPS files.
<i>Optimize</i> ?= "true"	boolean	If "true", the PS-to-PDF converter optimizes the PDF file. See [PDF1.6] for more information on optimization.
<i>OverPrintMode</i> ?	integer	Controls the overprint mode strategy of the Job. Set to "0" for full overprint or "1" for non-zero overprint. For more information, see [Adb-TN5044].
<i>PDFVersion</i> ?	double	Specifies the version number of the PDF file produced. Values include all legal version designators (e.g., 1.2, 1.5).
<i>StartPage</i> ? <a href="#">Deprecated in JDF 1.3</a>	integer	Sets the first page that is be displayed when the PDF file is opened with a PDF viewing application. <i>@StartPage</i> SHALL be greater than or equal to 1. <i>@EndPage</i> SHALL be either "-1" or greater than or equal to <i>@StartPage</i> .
<i>AdvancedParams</i> ? <i>?AdvancedParams</i> ? <a href="#">New in JDF 1.2</a>	element	Advanced parameters which control how certain features of PDF are handled.
<i>PDFXParams</i> ? <i>?PDFXParams</i> ? <a href="#">New in JDF 1.2</a>	element	PDF/X parameters.
<i>ThinPDFParams</i> ? <i>?ThinPDFParams</i> ?	element	Parameters that control the optional content or form of PDF files that will be created.

#### 8.107.6 Element: AdvancedParams

**Table 8-215: AdvancedParams Element (Sheet 1 of 3)**

Name	Data Type	Description
<i>AllowPSXObjects</i> ?= "true" <a href="#">New in JDF 1.2</a>	boolean	If "true", allows PostScript XObjects.
<i>AllowTransparency</i> ?= "false" <a href="#">New in JDF 1.2</a>	boolean	If "true", allows transparency in the PDF.
<i>AutoPositionEPSInfo</i> ?= "true" <a href="#">Modified in JDF 1.1A</a>	boolean	If "true", the Process automatically resizes and centers information from EPS source files on the page. (EPS source only)
<i>EmbedJobOptions</i> ?= "false" <a href="#">New in JDF 1.2</a>	boolean	If "true", the PDF settings used to create the PDF are embedded in the PDF.

Table 8-215: AdvancedParams Element (Sheet 2 of 3)

Name	Data Type	Description
<code>EmitDSCWarnings ?= "false"</code>	boolean	If "true", warning messages about questionable or incorrect DSC comments appear during the processing of the source PostScript file. (PostScript source only)
<code>LockDistillerParams ?= "true"</code>	boolean	If "true", any <b>PSToPDFConversionParams</b> <b>PDFCreationDetails</b> settings configured by the source content (e.g., with <code>setdistillerparams</code> in a PostScript source document) are ignored. If "false", each parameter defined in the source document overrides that set in the <b>JDF XJDF</b> .
<code>ParseDSCommentForDocInfo ?= "true"</code>	boolean	If "true", the Process parses the DSC comments in a PostScript source file and extracts the document information. This information is recorded in the Info dictionary of the PDF file.
<code>ParseDSCComments ?= "true"</code>	boolean	If "true", the Process parses the DSC comments in a PostScript source document for any information that might be helpful for converting the file or for information that is to be stored in the PDF file. If "false", the Process treats the DSC comments as pure PS comments and ignores them. (PostScript source only)
<code>PassThroughJPEGImages ?= "false"</code> <u>New in JDF 1.2</u>	boolean	If "true", JPEG images are passed through without recompressing them.
<code>PreserveCopyPage ?= "true"</code>	boolean	If "true", the <b>copypage</b> operator of PostScript Level 2 is maintained. If "false", the PostScript Level 3 definition of <b>copypage</b> operator is used. In PostScript Levels 1 and 2, the <b>copypage</b> operator transmits the page contents to the current output Device (similar to <b>showpage</b> ). However, <b>copypage</b> does not perform many of the re-initializations that <b>showpage</b> does. Many PostScript Level 1 and 2 programs used the <b>copypage</b> operator to perform such operations as printing multiple copies and implementing forms. These programs produce incorrect results when interpreted using the Level 3 <b>copypage</b> semantics. This Attribute provides a mechanism to retain Level 2 compatibility for this operator. (PostScript source only)
<code>PreserveEPSInfo ?= "true"</code>	boolean	If "true", preserves the EPS information in a PostScript source file and stores it in the resulting PDF file. (PostScript source only)
<code>PreserveHalftoneInfo ?= "false"</code> <u>New in JDF 1.1</u>	boolean	If "true", passes halftone screen information (frequency, angle and spot function) into the PDF file. If "false", halftone information is not passed in.
<code>PreserveOPICComments ?= "true"</code>	boolean	If "true", encapsulates Open Prepress Interface (OPI) low resolution images as a form and preserves information for locating the high resolution images.

**Table 8-215: AdvancedParams Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>PreserveOverprintSettings</i> ?= "true" <a href="#">New in JDF 1.1</a>	boolean	If "true", passes the value of the <b>setoverprint</b> operator through to the PDF file. Otherwise, overprint is ignored.
<i>TransferFunctionInfo</i> ?= "Preserve" <a href="#">New in JDF 1.1</a>	enumeration	Determines how transfer functions are handled. <b>Allowed values are:</b> <i>Preserve</i> – Transfer functions are passed into the PDF file. <i>Remove</i> – Transfer functions are ignored. They are neither applied to the color values nor passed into the PDF file. <i>Apply</i> – Transfer functions are used to modify the data that are written to the PDF file, instead of writing the transfer function itself to the file.
<i>UCRandBGInfo</i> ?= "Preserve" <a href="#">New in JDF 1.1</a>	enumeration	Determines whether the under-color removal and black-generation parameters from the source document (e.g., the arguments to the PostScript commands <b>setundercolorremoval</b> and <b>setblackgeneration</b> ) are passed into the PDF file. <b>Allowed values are:</b> <i>Preserve</i> – The arguments are passed into the PDF file. <i>Remove</i> – The arguments are ignored.
<i>UsePrologue</i> ?= "false"	boolean	If "true", the Process SHALL append a PostScript prologue file before beginning of the Job and append a PostScript epilog file after the end the Job. Such files are used to control the PostScript environment for the conversion Process. The expected location and allowable contents for these files is defined by the Process implementation. (PostScript source only)

### 8.107.7 Element: **PDFXParams**

Parameters for generating PDF/X files. Note that TrimBox, BleedBox, output intent and the Trapped state may be provided by the use of the **pdfmark** operator in a PostScript source file.

**Table 8-216: PDFXParams Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>PDFX1aCheck</i> ?= "false" <a href="#">Deprecated in JDF 1.5</a>	boolean	If "true", checks compliance with the PDF/X-1a standard [ISO15930-1:2001]. <b>Deprecation note:</b> use @PDFXCheck instead.
<i>PDFX3Check</i> ?= "false" <a href="#">Deprecated in JDF 1.5</a>	boolean	If "true", checks compliance with the PDF/X-3 standard [ISO15930-3:2002]. <b>Deprecation note:</b> use @PDFXCheck instead.
<i>PDFXBleedBoxToTrimBoxOffset</i> ?	rectangle	If the <b>BleedBox</b> entry is not specified in the page object of the source document, <b>BleedBox</b> is set to PDF <b>TrimBox</b> with offsets. All numbers SHALL be greater than or equal to 0.0. PDF <b>BleedBox</b> will be completely outside PDF <b>TrimBox</b> .

Table 8-216: PDFXParams Element (Sheet 2 of 2)

Name	Data Type	Description
<i>PDFXCheck</i> ? <a href="#">New in JDF 1.5</a>	NMTOKENS	<p>List of PDF/X versions that the output SHALL be compliant with.</p> <p>Values include:</p> <ul style="list-style-type: none"> <li><i>X1a</i> – see the PDF/X-1a standard [ISO15930-1:2001].</li> <li><i>X3</i> – see the PDF/X-3 standard [ISO15930-3:2002].</li> <li><i>X4</i> – see the PDF/X-4 standard [ISO15930-7:2010].</li> <li><i>X5</i> – see the PDF/X-5 standard [ISO15930-8:2010].</li> </ul>
<i>PDFXCompliantPDFOnly</i> ?= "false"	boolean	If "true", produces a PDF document only if PDF/X compliance tests are passed.
<i>PDFXNoTrimBoxError</i> ?= "true"	boolean	If "true" and both <b>TrimBox</b> and <b>ArtBox</b> entries are not specified in the page object of the source document, the condition is reported as an error.
<i>PDFXOutputCondition</i> ?	string	The string is an optional comment which is added to the PDF file. It describes the intended printing condition in a form that ought to be meaningful to a human operator at the site receiving the PDF document.
<i>PDFXOutputIntentProfile</i> ?	string	<p>If the source document does not specify an output intent name, then this value is used.</p> <p><b>Values include those from:</b> Table 8-256, "PDFXOutputIntentProfile Attribute Values"</p>
<i>PDFXRegistryName</i>	URL	Indicates a location at which more information regarding the registry that defines the <b>OutputConditionIdentifier</b> can be obtained.
<i>PDFXSetBleedBoxToMediaBox</i> ?= "true"	boolean	If "true" and the <b>BleedBox</b> entry is not specified in the page object of the source document, <b>BleedBox</b> is set to <b>MediaBox</b> .
<i>PDFXTrapped</i> ?	enumeration	<p>If a source document does not specify a <b>Trapped</b> state, then the value provided here is used. The value "Unknown" is to be used for workflows requiring 1) that the document specify a <b>Trapped</b> state and 2) that compliance checking fail if <b>Trapped</b> is not present in the document.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Unknown</i></li> <li><i>false</i></li> <li><i>true</i></li> </ul> <p><b>Note:</b> "Unknown" is prohibited in PDF/X files.</p>
<i>PDFXTrimBoxToMediaBoxOffset</i> ?	rectangle	If both the <b>TrimBox</b> and <b>ArtBox</b> entries are not specified in the page object of the source document, <b>TrimBox</b> is set to <b>MediaBox</b> with offsets. All numbers SHALL be greater than or equal to 0.0. The <b>TrimBox</b> will be completely inside <b>MediaBox</b> .
<b>FileSpec</b> (ReferenceOutputProfile) ?	element	An ICC profile.

### 8.107.8 Element: **ThinPDFParams**

**Table 8-217: ThinPDFParams Element**

Name	Data Type	Description
<i>FilePerPage ?= "false"</i>	boolean	If "true", the Process generates 1 PDF file per page.
<i>SidelineEPS ?= "false"</i> <i>New in JDF 1.2</i>	boolean	If "true", embedded EPS files in PostScript source documents are not converted but are stored in external files in the same location as the PDF itself. (PostScript source only)
<i>SidelineFonts ?= "false"</i>	boolean	If "true", font data are stored in external files during PDF generation.
<i>SidelineImages ?= "false"</i>	boolean	If "true", image data are stored in an external stream during the PDF Generation phase. This prevents large amounts of image data from having to be passed through all phases of the code generation Process.

## 8.108 PDLResourceAlias

This Resource provides a mechanism for referencing Resources that occur in files, or that are expected to be provided by Devices. Prepress and printing Processes have traditionally used the word “Resource” to refer to reusable data structures that are needed to perform Processes. Examples of such Resources include fonts, halftones and functions. The formats of these Resources are defined within PDLs, and instances of these Resources can occur within PDL files or can be provided by Devices.

JDF does not provide a syntax for defining such Resources directly within a Job. Instead, Resources continue to occur within PDL files and continue to be provided by Devices. However, since it is necessary to be able to refer to these Resources from JDF Jobs, the **PDLResourceAlias** Resource is provided to fulfill this need.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	<b>ColorantControl/ColorSpaceSubstitute</b>
Example Partition:	
Input of Processes:	<b>Interpreting</b>
Output of Processes:	

**Table 8-218: PDLResourceAlias Resource**

Name	Data Type	Description
<i>ResourceType</i>	string	The type of PDL Resource that is referenced. The semantic of this Attribute is defined by the PDL.
<i>SourceName</i> ?	string	The name of the Resource in the file referenced by the <b>FileSpec</b> or by the Device.
<i>FileSpec</i> ?	referencetelement	Location of the file containing the PDL Resource. If <b>FileSpec</b> is absent, the Device is expected to provide the Resource defined by this <b>PDLResourceAlias</b> Resource.

## 8.109 PerforatingParams

*New in JDF 1.1*

**PerforatingParams** define the parameters for perforating a Sheet.

## Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	FoldingIntent
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	Perforating
<b>Output of Processes:</b>	—

Table 8-219: PerforatingParams Resource

Name	Data Type	Description
Perforate *	element	Defines one or more Perforate lines.

## 8.110 PlaceHolderResource

Deprecated in JDF 1.5

See Section P.6.18, “PlaceHolderResource” on page 1361 for details of this deprecated Resource.

## 8.111 PlasticCombBindingParams

This Resource describes the details of the **PlasticCombBinding** Process.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	BindingIntent
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	PlasticCombBinding
<b>Output of Processes:</b>	—

Table 8-220: PlasticCombBindingParams Resource (Sheet 1 of 2)

Name	Data Type	Description
Brand ?	string	The name of the comb manufacturer and the name of the specific item.
Color ?	Named-Color	Determines the color of the plastic comb.
ColorDetails ? <u>New in JDF 1.4</u>	string	A more specific, specialized or site-defined name for the color. If @ColorDetails is supplied, @Color SHOULD also be supplied.
Diameter ?	double	The comb diameter is determined by the height of the block of Sheets to be bound.
Thickness ?	double	The material thickness of the comb.

**Table 8-220: PlasticCombBindingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
Type ? <a href="#">Modified in JDF 1.1</a> <a href="#">Deprecated in JDF 1.2</a>	enumeration	<p>The distance between the “teeth” and the distance between the holes of the prepunched Sheets SHALL be the same. The following values from the hole type catalog in Appendix M, “JDF XJDF/CIP4 Hole Pattern Catalog” on page 1239 exist:</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li>P12m-rect-02 – Distance = 12 mm; Holes = 7 mm x 3 mm</li> <li>P16-9i-rect-0t – Distance = 14.28 mm; Holes = 8 mm x 3 mm</li> <li>Euro – (Distance = 12 mm; Holes = 7 mm x 3 mm) <a href="#">Deprecated in JDF 1.1</a></li> <li>USA1 – (Distance = 14.28 mm; Holes = 8 mm x 3 mm) <a href="#">Deprecated in JDF 1.1</a></li> </ul> <p><b>Deprecation note:</b> starting with JDF 1.2, use the value implied by <b>HoleMakingParams/@HoleType</b>.</p>
<b>HoleMakingParams</b> ?	refelement	Details of the holes to be made. Note that <b>HoleMakingParams/@Shape</b> is always rectangular by design of the plastic combs.

## 8.112 PlateCopyParams

[Deprecated in JDF 1.1](#)

See Section P.6.19, “PlateCopyParams” on page 1362 for details of this deprecated Resource.

## 8.113 PreflightAnalysis

[Deprecated in JDF 1.2](#)

This Resource was deprecated as a result of a major revision to the **Preflight** Process and its associated Resources. For details of this deprecated Resource see Section P.4.7, “PreflightAnalysis” on page 1326.

## 8.114 PreflightInventory

[Deprecated in JDF 1.2](#)

This Resource was deprecated as a result of a major revision to the **Preflight** Process and its associated Resources. For details of this deprecated Resource see Section P.4.8, “PreflightInventory” on page 1328.

## 8.115 PreflightParams

[New in JDF 1.2](#)

The **PreflightParams** Resource specifies the tests for the **Preflight** Process to run. These tests are defined using Section 9.1.2, “ActionPool” on page 953, which defines a list of reporting actions to have for given document object tests defined into a **Test**. (See Section 9.1.12, “TestPool” on page 992). This section makes use of Elements and Attributes defined in Section 9, “Device Capabilities” on page 949. It is suggested that readers familiarize themselves with that section and Section 9.2, “Concept of the Preflight Process” on page 1013. Currently, only references to proprietary preflight profiles are supported.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	<b>PreflightReport</b>
<b>Example Partition:</b>	
<b>Input of Processes:</b>	<b>Preflight</b>

**Output of Processes:****Table 8-221: PreflightParams Resource**

Name	Data Type	Description
ActionPool * <a href="#">Modified in JDF 1.4</a>	element	A set of ActionPool Elements. Multiple ActionPool Elements are equivalent to one ActionPool that contains all Action Elements of the individual ActionPool Elements. ActionPool and TestPool SHALL both be supplied or both be absent. <b>Modification note:</b> starting with JDF 1.4, ActionPool becomes optional.
FileSpec ? <a href="#">New in JDF 1.4</a>	refelelement	File that describes the preflight actions in a computer-readable, non-JDF XJDF format.
PreflightTest *	element	Description of an individual test.
TestPool ? <a href="#">New in JDF 1.3</a> <a href="#">Modified in JDF 1.4</a>	element	Container for zero or more Test Elements that are referenced from Action Elements in the ActionPool. ActionPool and TestPool SHALL both be supplied or both be absent. <b>Modification note:</b> starting with JDF 1.4, TestPool becomes optional. It was REQUIRED when it was added in JDF 1.3 because ActionPool implicitly requires a parallel TestPool as a container for the referenced Test Elements that are defined in Action/@TestRef.

The ActionPool, as defined in Section 9.1.2, “ActionPool” on page 953, has Action Subelements, which can reference a Test with a given action type. The Action Element includes a PreflightAction Subelement, defined below, which can be used to define how tests are to be applied in **Preflight** Processes.

**8.115.1 Element: PreflightTest**

PreflightTest describes an individual preflight test.

**Table 8-222: PreflightTest Element (Sheet 1 of 2)**

Name	Data Type	Description
Action ?	enumeration	Action that should be taken whenever this test fails. <b>Allowed values are:</b> <i>Abort</i> – Abort preflight and stop further checks. <i>Continue</i> – Log the condition and continue checking. <i>Repair</i> – Repair the condition in a system specified manner, Log the condition and continue checking.
DescriptiveName ?	element	Human readable preflight test description.
Severity ?	enumeration	Severity of a failure of the test in order of most severe to least severe are: <b>Allowed values are:</b> <i>Fatal</i> <i>Error</i> <i>Warning</i> <i>Information</i> <b>Note:</b> if not specified, an implementation MAY generate PreflightCheck/@Severity based on the details of test.

**Table 8-222: PreflightTest Element (Sheet 2 of 2)**

Name	Data Type	Description
TestClass ?	NMTOKEN	General area of the preflight test. <b>Values include:</b> <i>Resolution</i> – Tests that check low resolution graphics <i>Font</i> – Tests that check font integrity. <i>Colorspace</i> – Tests that check color space violations. <i>PageFormat</i> – Tests that detect invalid page sizes or page boxes <i>FileFormat</i> – Tests that detect incorrect file format compliancy.
TestID ?	NMTOKEN	System dependent preflight test identifier
GeneralID *	element	Detailed individual s of the PreflightTest. The values of GeneralID/ @IDUsage and GeneralID/@IDValue are system dependent.

**8.115.2 Element: PreflightAction****Table 8-223: PreflightAction Element**

Name	Data Type	Description
SetRef ?	IDREF	A reference to a preflight Test ID used to filter a set of objects before applying the tests referenced by preflight Action. When @SetRef is not defined, the Test is applied to all the objects.
SetSplitBy ?= "RunList"	enumeration	This is used to group objects in different ways. <b>Allowed values are:</b> <i>Page</i> – Tests are applied on objects page per page. <i>Document</i> – Tests are applied on objects document per document. <i>RunList</i> – All objects of all pages included in all documents are processed together. <b>Note:</b> @SetSplitBy is only used when @SetRef is defined in order to create sets on a page-per-page or document-per-document basis. For instance, if you want to get the list of separations per page, @SetSplitBy is set to "Page". In such a case, the report's content (as long as the @PRIItem is defined properly for the Action) will be grouped by page.

Test Elements make use of Evaluation Subelements that define various basic preflight testing functions that can be combined together in order to build preflight test. In order to specify basic preflight tests using Evaluation, the Sub-element BasicPreflightTest is used. **Note:** The BasicPreflightTest includes a PreflightArgument Subelement that is defined below.

**8.115.3 Element: BasicPreflightTest**

The BasicPreflightTest Element defines a named preflight test that can be evaluated by a preflight application. The result of the test can be compared with the values defined in the explicit Evaluation Elements in order to filter the objects within the file to be tested. The following table describes the BasicPreflightTest Element.

**Table 8-224: BasicPreflightTest Element (Sheet 1 of 2)**

Name	Data Type	Description
Classes ? New in JDF 1.4	NMTOKENS	List of object classes that the test SHALL be applied to. It is strongly recommended to supply @Classes.

**Table 8-224: BasicPreflightTest Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>ClassName</i> ? <a href="#">New in JDF 1.4</a>	NMTOKEN	This tag can be used to directly command the test to specifically apply on a given class of object. The two purposes of this change are 1) to simply preflight engine processors, and 2) to simplify Test rules. <b>Allowed values are from:</b> <a href="#">Table 9-70, “Object Classes for a Document” on page 1014.</a>
<i>DevNS</i> ?= " <a href="http://www.CIP4.org/JDFSchema_1_1">http://www.CIP4.org/JDFSchema_1_1</a> "	URI	Namespace of the test that is described by <i>@Name</i> in this BasicPreflightTest Element.
<i>ListType</i> ?= " <a href="#">SingleValue</a> " <a href="#">Modified in JDF 1.4</a>	enumeration	Specifies what type of list or object the basic preflight test describes. <b>Allowed values are from:</b> <a href="#">State/@ListType (Table 9-11, “ListType Attribute Values” on page 964).</a> <b>Modification note:</b> starting with JDF 1.4, <i>@ListType</i> has a specified default value.
<i>MaxOccurs</i> ?= "1"	integer	Maximum number of elements in the list described by this BasicPreflightTest (e.g., the maximum number of integers in an integer list). If <i>@MaxOccurs</i> is not "1", the BasicPreflightTest Element refers to a list or RangeList of values (e.g., a NameEvaluation will allow a list of NMTOKENS).
<i>MinOccurs</i> ?= "1"	integer	Minimum number of elements in the list described by this BasicPreflightTest. Default = "1" (i.e., it is an individual value). If <i>MinOccurs</i> is not "1", the BasicPreflightTest Element refers to a list or RangeList of values (e.g., a NameEvaluation will allow a list of NMTOKENS).
<i>Name</i> <a href="#">Modified in JDF 1.4</a>	NMTOKEN	Local name of the preflight constraint that is evaluated by this BasicPreflightTest. A valid <i>@Name</i> value for the <b>JDF XJDF</b> namespace is any property name defined in any of the Properties tables in <a href="#">Section 9.2.2, “Properties” on page 1017</a> . Preflight tests are defined through the use of constraints. <b>Modification note:</b> starting with JDF 1.4, <i>@Name</i> is no longer optional.
PreflightArgument ?	element	Additional arguments for the preflight test. For details see Section 8.115, “PreflightParams” on page 832 for the definition of PreflightArgument and constraints upon which preflight tests are defined.

#### 8.115.4 Element: **PreflightArgument**

This Subelement is used by BasicPreflightTest when additional data are needed to determine object property.

**Table 8-225: PreflightArgument Element**

Name	Data Type	Description
<i>BoxArgument</i> ?	element	Used if BasicPreflightTest/ <i>@Name</i> has a value of either "InsideBox" and "OutsideBox". Used for tests with the same two names.
<i>BoxToBoxDifference</i> ?	element	Used by the BoxToBoxDifference test.

### 8.115.5 Element: **BoxArgument**

**Table 8-226: BoxArgument Element**

Name	Data Type	Description
<i>Box</i>	enumeration	The box type used to verify inclusion or exclusion. <b>Allowed values are from:</b> Table 8-227, “Box Attribute Values” on page 836.
<i>MirrorMargins ?</i>	enumeration	The <i>@MirrorMargins</i> Attribute allows the flip of the <i>@Offset</i> value depending on the <i>RunList</i> index. When the index is even, the original <i>@Offset</i> value is preserved. When the index is odd, the <i>@Offset</i> value is flipped. <b>Default behavior:</b> the value of <i>@Offset</i> is not changed (if unspecified). <b>Allowed values are:</b> <i>Vertical</i> – turns [l b r t] into [r b l t]. <i>Horizontal</i> – turns [l b r t] into [l t r b].
<i>Offset ?</i>	rectangle	The offset to build real rectangle to which test is made.
<i>Overlap ?= "false"</i>	boolean	Explains if overlap is allowed to check inclusion or exclusion.

### — Attribute: **Box**

**Table 8-227: Box Attribute Values**

Box Type	Description
<i>ArtBox</i>	Defines the extent of the page’s meaningful content (including potential white space) as intended by the page’s creator.
<i>BleedBox</i>	Defines the region to which the contents of the page is to be clipped when output in a production environment. This might include any extra “bleed area” needed to accommodate the physical limitations of cutting, folding and trimming equipment. The actual printed page might include printing marks that fall outside the bleed box.
<i>CropBox</i>	Defines the region to which the contents of the page are to be clipped (cropped) when displayed or printed. Unlike the other boxes, the crop box has no defined meaning in terms of physical page geometry or intended use — it merely imposes clipping on the page contents. However, in the absence of additional information, the crop box will determine how the page’s contents are to be positioned on the output medium.
<i>MarginsBox</i>	Defines the trim box minus the margins.
<i>MediaBox</i>	Defines the boundaries of the physical medium on which the page is to be printed. It might include any extended area surrounding the finished page for bleed, printing marks or other such purposes. It might also include areas close to the edges of the medium that cannot be marked because of physical limitations of the output Device. Content falling outside this boundary can safely be discarded without affecting the meaning of the file.
<i>SlugBox</i>	Defines an area where document related information and objects that will not be on the final document could be printed.
<i>TrimBox</i>	Defines the intended dimensions of the finished page after trimming. It can be smaller than the media box, to allow for production-related content such as printing instructions, cut marks or color bars. In another type of document than PDF, this box represents the page size.

### 8.115.6 Element: BoxToBoxDifference

**Table 8-228: BoxToBoxDifference Element**

Name	Data Type	Description
FromBox ?	enumeration	The “From” box used for BoxToBoxDifference calculation. Allowed values are from: BoxArgument/@Box.
ToBox ?	enumeration	The “To” box used for BoxToBoxDifference calculation. Allowed values are from: BoxArgument/@Box.

#### Example 8-39: Test with InsideBox and a BoxArgument Subelement

The following is an example of Test using @InsideBox and a BoxArgument Subelement:

```
<PreflightParams Class="Parameter" ID="PP001" Status="Available">
    <TestPool>
        <Test ID="PT01">
            <BooleanEvaluation ValueList="true">
                <BasicPreflightTest Name="InsideBox">
                    <PreflightArgument>
                        <BoxArgument Box="TrimBox" Overlap="true"/>
                    </PreflightArgument>
                </BasicPreflightTest>
            </BooleanEvaluation>
        </Test>
    </TestPool>
    <ActionPool/>
</PreflightParams>
```

## 8.116 PreflightProfile

Deprecated in JDF 1.2

This Resource was deprecated as a result of a major revision to the **Preflight** Process and its associated Resources. For details of this deprecated Resource see Section P.4.9, “PreflightProfile” on page 1329.

## 8.117 PreflightReport

New in JDF 1.2

The **PreflightReport** Resource describes the results of the preflight tests specified in **PreflightParams**. This section makes use of Elements and Attributes defined in Section 9, “Device Capabilities” on page 949. It is suggested that reader’s familiarize themselves with that section and Section 9.2, “Concept of the Preflight Process” on page 1013.

### Resource Properties

**Resource Class:** Parameter

**Resource referenced by:** —

**Example Partition:** —

**Input of Processes:** Any Process Preflight

**Output of Processes:** Preflight

**Table 8-229: PreflightReport Resource**

Name	Data Type	Description
<i>ErrorCount</i> ? <a href="#">Modified in JDF 1.4</a>	integer	The count of errors that were encountered while preflighting the Job.  <b>Modification note:</b> starting with JDF 1.4, @ <i>ErrorCount</i> becomes optional.
<i>ErrorState</i> ?	enumerations	Describes the type of errors that occurred during preflighting when the <b>Preflight</b> Process does not understand certain pre-flight tests or cannot apply them to the given objects.  <b>Default behavior:</b> no errors occurred (if not specified).  <b>Allowed values are:</b> <i>TestNotSupported</i> <i>TestWrongPDL</i>
<i>WarningCount</i> ? <a href="#">Modified in JDF 1.4</a>	integer	The count of warnings that were encountered while preflighting the Job.  <b>Modification note:</b> starting with JDF 1.4, @ <i>WarningCount</i> becomes optional.
<b>FileSpec</b> ? <a href="#">New in JDF 1.4</a>	refelement element	References a <b>human</b> readable preflight report
<b>PreflightCheck</b> *	element	List of individual preflight results.
<b>PreflightParams</b> <b>PreflightParamsRef</b>	refelementI-DREF	References the <b>PreflightParams</b> that was used to create this report.
<b>PreflightReportRulePool</b> ? <b>PreflightReportRulePoolRef</b> <a href="#">?Modified in JDF 1.4</a>	refelementI-DREF	References the <b>PreflightReportRulePool</b> that was used to create this report. This Resource SHALL be provided if the containing <b>PreflightReport</b> is an input Resource.  <b>Modification note:</b> starting with JDF 1.4, <b>PreflightReportRulePool</b> becomes optional.
<b>PRItem</b> *	element	Describes the Action Elements that produced an error or a warning.
<b>RunList</b> <b>RunListRef</b>	refelementI-DREF	References the <b>RunList</b> of documents that were used to create this report.

### 8.117.1 Element: **PreflightCheck**

**PreflightCheck** describes an individual preflight occurrence or set of similar occurrences. These occurrences MAY be distributed over multiple pages of the document that was preflighted.

**Table 8-230: PreflightCheck Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Action</i> ?	enumeration	Action that has been taken.  <b>Allowed values are from</b> <i>PreflightTest/@Action</i>
<i>Count</i> ?	integer	The total number of occurrences of this <b>PreflightCheck</b> .
<i>Pages</i> ?	IntegerList	A 0-based index of Pages in the document where one or more errors of the type specified by this <b>PreflightCheck</b> occurred.

**Table 8-230: PreflightCheck Element (Sheet 2 of 2)**

Name	Data Type	Description
Severity ?	enumeration	Severity of the PreflightCheck. If the <b>Preflight</b> process is described in detail with PreflightTest elements that include PreflightTest/@Severity, then this SHALL be a copy of the appropriate PreflightTest/@Severity. <b>Allowed value are from:</b> PreflightTest/@Severity.
TestID ?	NMTOKEN	System dependent error identifier. If the <b>Preflight</b> process is described in detail with PreflightTest elements, then this SHALL be a copy of the appropriate PreflightTest/@TestID.
TestClass ?	NMTOKEN	General area of the preflight check. If the <b>Preflight</b> process is described in detail with PreflightTest elements, then this SHALL be a copy of the appropriate PreflightTest/@TestClass. <b>Allowed values are from</b> PreflightTest/@TestClass
Comment ?	element	Human readable preflight check description.
GeneralID *	element	Detailed individual parameters of the PreflightTest. The values of GeneralID/@IDUsage and GeneralID/@IDValue are system dependent.

### 8.117.2 Element: PRItem

The PRItem structure is used to describe the errors that occurred during the execution of one Action. When a Test could not be evaluated during the **Preflight** Process, this is reported as a PRError.

Objects that fail the preflight test are grouped together as described by a @PRRule. During the **Preflight** Process, the number of objects and groups that are reported are limited to the maximum numbers defined in the @PRRule.

When a **PreflightReport** is copied from one JDF document to another (e.g., a JDF writer might reduce the size of the **PreflightReport** by removing PRGroup and PROccurrence items within a PRGroup), this will not invalidate the **PreflightReport**.

**Table 8-231: PRItem Element**

Name	Data Type	Description
ActionRef	IDREF	References the PreflightParams/ActionPool/Action that triggered this PRItem.
Occurrences	integer	The number of occurrences of objects that failed the Action. When the Action describes a set-test, this is the number of set-objects that failed the test.
PageSet ?	IntegerRangeList	All run indices where there is an object that gives an error on that page.
PRError *	element	Describes the errors that were found while running this preflight test.
PRGroup *	element	Describes the Action Elements that produced an error or a warning.

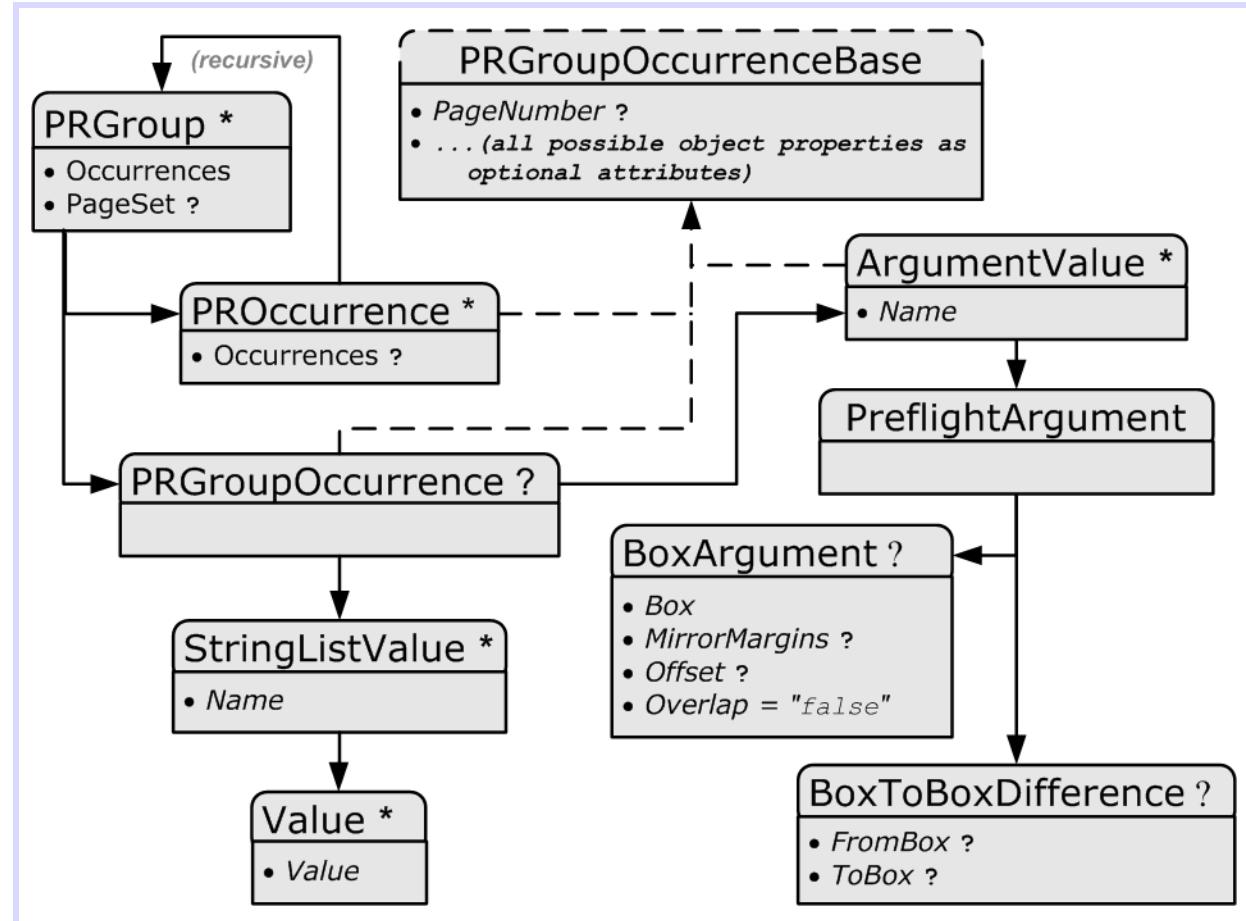
### 8.117.3 Element: PRError

The PRError structure is used to describe generic errors that occurred while evaluating an object property while executing a Test.

Table 8-232: PRError Element

Name	Data Type	Description
ErrorType	enumeration	Allowed values are: <i>TestWrongPDL</i> <i>TestNotSupported</i>
Value	NMTOKEN	The name of the object property that was being tested when the Process error occurred.

Figure 8-53: PRGroup – a diagram of its structure



#### 8.117.4 Element: PRGroup

The PRGroup structure is used to describe a group of document objects that share common properties and that failed the Action.

Table 8-233: PRGroup Element (Sheet 1 of 2)

Name	Data Type	Description
Occurrences	integer	The number of occurrences of objects of this group that failed the Action. When the Action Elements describes a set-test, this is the number of set-objects.
PageSet ?	IntegerRangeList	All run indices where there is an object of this group that gives an error on that page.

**Table 8-233: PRGroup Element (Sheet 2 of 2)**

Name	Data Type	Description
PRGroupOccurrence ?	element	The properties that are shared by all Elements of the group as defined by <b>PreflightReportRulePool/PRRule/@GroupBy</b> .
PROccurrence *	element	An object that failed the Action.

Depending on the test in the Action, the PRGroup is used in two different ways:

- When the test is not a set-test, there will be one level of PRGroup and PROccurrence Elements. These are used to describe all the document objects that failed the preflight test. The PROccurrence describes the actual object while PRGroup is used to group those objects that share common properties.
- When the test is a set-test, there will be two levels of PRGroup and PROccurrence Elements whereby the second level occurs as a child Element of PROccurrence.
  - The top level describes the set objects that failed the preflight test. Just as in the non-set-test case, PROccurrence describes the actual set-objects while PRGroup is used to group those sets that share common properties. In the example below there are four page sets that failed the test (e.g., pages 1, 4, 8 and 12).
  - The second level, which is a child Element of the top level PROccurrence, describes the document objects that are part of the set. These document objects are grouped as well. In the example below page one consists of 20 objects: five text objects and 15 image objects.

#### Example 8-40: PRItem

```
<PreflightReport Class="Parameter" ID="PP001" Status="Available"
  ErrorCount="0" WarningCount ="0" >
  <PRItem Occurrences="4" ActionRef="A001">
    <PRGroup Occurrences="1">
      <PRGroupOccurrence PageNumber="1"/>
      <PROccurrence Occurrences="20">
        <PRGroup Occurrences="5">
          <PRGroupOccurrence/>
          <PROccurrence TextSize="12"/>
        </PRGroup>
        <PRGroup Occurrences="15">
          <PRGroupOccurrence/>
          <PROccurrence EffectiveResolution="300 300"/>
        </PRGroup>
      </PROccurrence>
    </PRGroup>
    <PRGroup Occurrences="1">
      <PRGroupOccurrence PageNumber="4"/>
      <PROccurrence Occurrences="20">
        <PRGroup Occurrences="7">
          <PRGroupOccurrence/>
          <PROccurrence NumberOfPathPoints="4"/>
        </PRGroup>
        <PRGroup Occurrences="13">
          <PRGroupOccurrence/>
          <PROccurrence EffectiveResolution="300 300"/>
        </PRGroup>
      </PROccurrence>
    </PRGroup>
    <PRGroup Occurrences="1">
      <PRGroupOccurrence PageNumber="8"/>
    </PRGroup>
  <PRGroup Occurrences="1">
```

```

<PRGroupOccurrence PageNumber="12"/>
</PRGroup>
</PRIItem>
<PreflightParams>
<TestPool>
<Test ID="T001">
<BooleanEvaluation ValueList="true"/>
</Test>
</TestPool>
<ActionPool>
<Action ID="A001" TestRef="T001"/>
</ActionPool>
</PreflightParams>
<PreflightReportRulePool/>
<RunList/>
</PreflightReport>

```

### 8.117.5 Element: Abstract PRGroupOccurrenceBase

Abstract PRGroupOccurrenceBase is an Abstract Element that serves as container for properties that were evaluated during the **Preflight** Process.

**Table 8-234: Abstract PRGroupOccurrenceBase Element**

Name	Data Type	Description
All possible object properties as OPTIONAL Attributes.	As defined by the object property.	An example is given above. See also section <a href="#">Section 9.2.2, “Properties” on page 1017</a> and following.
PageNumber ?	integer	Example of an integer Attribute. The same format applies to boolean, Number, Name, NameList, enumeration, enumerations and string data types.

### 8.117.6 Element: PRGroupOccurrenceBase

The following Elements are derived from the Abstract PRGroupOccurrenceBase Element

**Table 8-235: List of PRGroupOccurrenceBase Elements**

Name	Page	Description
ArgumentValue	page 842	For additional arguments for a PRGroupOccurrence.
PRGroupOccurrence	page 843	Specifies shared Properties of all PROccurrence Elements in a PRGroup
PROccurrence	page 843	Describes an individual occurrence of a preflight action failure

### 8.117.7 Element: ArgumentValue

ArgumentValue specifies a value that is specified with additional arguments. ArgumentValue is derived from Abstract PRGroupOccurrenceBase:

**Table 8-236: ArgumentValue Element**

Name	Data Type	Description
Name	NMTOKEN	The name of the subject property.
PreflightArgument	element	The argument that was used to evaluate this property. This is a PreflightArgument Element. See Section 8.115.4, “PreflightArgument” on page 835.

### 8.117.8 Element: PRGroupOccurrence

PRGroupOccurrence specifies the shared properties of all PROccurrence Elements in a PRGroup. When the object does not support a certain property, the corresponding Attribute SHALL NOT be specified in PRGroupOccurrence. PRGroupOccurrence is derived from Abstract PRGroupOccurrenceBase.

**Table 8-237: PRGroupOccurrence Element**

Name	Data Type	Description
ArgumentValue *	element	Describes the value of a property that is enhanced with additional arguments.
StringListValue *	element	Describes the values of a StringList property.

### 8.117.9 Element: StringListValue

StringListValue specifies a type that returns a set of strings.

**Table 8-238: StringListValue Element**

Name	Data Type	Description
Name	NMTOKEN	The name of the subject property.
Value *	element	Element of type StringEvaluation/Value. See Section 9.1.13.8.2.13, “StringEvaluation” on page 1004.

### 8.117.10 Element: PROccurrence

PROccurrence describes an individual occurrence of a preflight action failure. When the object does not support a certain property, the corresponding Attribute SHALL NOT be specified in PROccurrence. PROccurrence is derived from Abstract PRGroupOccurrenceBase.

**Table 8-239: PROccurrence Element**

Name	Data Type	Description
Occurrences ?	integer	Only used when the subject occurrence is a set-object. It describes the number of objects in the set.
PRGroup *	element	When this occurrence describes a set-object, the PRGroup Elements describe the objects that are part of the set.

## 8.118 PreflightReportRulePool

New in JDF 1.2

The **PreflightReportRulePool** Resource specifies how the **PreflightReport** is to log the errors that were found during the **Preflight** Process. This section makes use of Elements and Attributes defined in Section 9, “Device Capabilities” on page 949. It is suggested that reader’s familiarize themselves with that section and Section 9.2, “Concept of the Preflight Process” on page 1013.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	<b>PreflightReport</b>
Example Partition:	
Input of Processes:	<b>Preflight</b>
Output of Processes:	

**Table 8-240: PreflightReportRulePool Resource**

Name	Data Type	Description
ActionPools <i>Deprecated in JDF 1.3</i>	IDREFS	References the ActionPool whose reporting are defined by this rule. <b>Deprecation note:</b> starting with JDF 1.3 Errata, @ActionPools is deprecated because PRRule/@ActionRefs has the same role.
MaxOccurrences ?	integer	An upper bound to the maximum number of PROccurrence Elements that are to be logged in the PreflightReport.
PRRule *	element	A list of available PRRule Elements.
PRRuleAttr ?	element	Defines the default behavior of all PRRule when not defined inside of a PRRule Subelement.

**8.118.1 Element: PRRule**

The PRRule structure is used to define how the **PreflightReport** is to log the events that were found during the execution of one Action.

**Table 8-241: PRRule Element**

Name	Data Type	Description
ActionRefs	IDREFS	References the action for which the report behavior is defined in PRRule.
PRRuleAttr	element	Defines the way to report this specific rule(s).

The format of the **PreflightReport** is defined by specifying PRRule Elements for specific Action Elements. Because @ActionRefs can refer to multiple Action Elements, a single rule applies to all referenced Action Elements (e.g., all color-related Action Elements will use similar reporting).

**8.118.2 Element: PRRuleAttr****Table 8-242: PRRuleAttr Element (Sheet 1 of 2)**

Name	Data Type	Description
GroupBy ?= "Tested"	NMTOKENS	Group objects having the same N-pair of Attributes listed here. <b>Values include those from:</b> @ReportAttr.
LogErrors ?	integer	When the <b>Preflight</b> Process does not understand or cannot apply certain tests, that error SHALL be logged when the associated type is logged here. The value is the sum of "TestWrongPDL" and "TestNotSupported" (these two returned values are explained in Section 9.2, "Concept of the Preflight Process" on page 1013).
MaxGroups ?	integer	The maximum number of groups allowed in the report for this problem. When an object is encountered that fails the preflight test and it belongs to none of the existing groups and there are already @MaxGroups, that occurrence is no longer reported individually and no new group is created, although it is added to the @Occurrences count and the @PageSet.
MaxPerGroup ?	integer	The maximum number of individual occurrences reported per group for this problem. When an object is encountered that fails the preflight test and it belongs to a group that already contains @MaxPerGroup Elements, that occurrence is no longer reported individually, although it is added to the @Occurrences count and the @PageSet.

**Table 8-242: PRRuleAttr Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>ReportAttr ?= "Tested Filename PageNumber"</i>	NMTOKENS	When individual items are reported, these Attributes are also reported. Attributes which are also being referred by <i>@GroupBy</i> are ignored. <b>Values include those from:</b> Table 8-243, “ReportAttr Attribute Values” on page 845.

**— Attribute: ReportAttr****Table 8-243: ReportAttr Attribute Values**

Value	Description
<i>&lt;Property Attribute&gt;</i>	An object-specific Attribute (e.g., <i>@ColorSpace</i> , <i>@FontName</i> , etc.). At the time that we define the <i>Test</i> , we will almost automatically define these Attributes.
<i>BriefAppSpecific</i>	Refers to a small list of Attributes that the preflight agent (with preflight agent-specific logic) finds interesting for the <i>Test</i> Element(s) used by the <i>Action</i> Element(s) listed in <i>@ActionRefs</i> .
<i>Tested</i>	Refers to all the Attributes that are referred to in the <i>Test</i> Element(s) used by the <i>Action</i> Element(s) listed in the <i>@ActionRefs</i> .
<i>TestRelated</i>	Refers to all the Attributes referred in the <i>Test</i> Element(s) used by the <i>Action</i> Element(s) listed in <i>@ActionRefs</i> and the ones that belong to the group of properties in which the tested property was found. For instance, if the <i>@Creator</i> basic test was made, then all other document properties will be reported as well.
<i>VerboseAppSpecific</i>	Refers to a large list of Attributes that the preflight agent (with preflight agent-specific logic) finds interesting for the <i>Test</i> Element(s) used by the <i>Action</i> Element(s) listed in <i>@ActionRefs</i> .

When the report is generated, the “*Tested*”, “*VerboseAppSpecific*” and “*BriefAppSpecific*” terms are expanded depending on the context (i.e., the specific test and the specific preflight agent) so that the list of Attributes only contain object specific Attributes.

**Note:** The “*VerboseAppSpecific*” and “*BriefAppSpecific*” tokens can be dependent on the context of a specific test. It is expected that a preflight agent will have a default list of tokens that will always be added (e.g., “*PageNumber*”). In addition it is expected that a preflight agent will define separate lists for specific domains (e.g., color, font). When a specific test covers some of these specific domains, the Attributes of these lists are also added. When *@ReportAttr = "Tested BriefAppSpecific PageNumber"*, the Attributes that are reported are dependent on the *Test* Element(s) used by the *Action* Element(s) and on the preflight agent as demonstrated in the table below.

**Table 8-244: Contingent Report Behavior (Sheet 1 of 2)**

Preflight Agent	For ColorSpace Test	For FontEmbedded Test	Behavior
Preflight agent 1	<i>@ColorSpace</i> <i>@PageNumber</i>	<i>@FontEmbedded</i> <i>@PageNumber</i> <i>@FontName</i>	<i>@PageNumber</i> is always added. For color-related tests, <i>@ColorSpace</i> is added. For font-related tests, <i>@FontName</i> is added

**Table 8-244: Contingent Report Behavior (Sheet 2 of 2)**

Preflight Agent	For ColorSpace Test	For FontEmbedded Test	Behavior
Preflight agent 2	@ColorSpace @PageNumber @BoundingBox	@FontEmbedded @PageNumber @BoundingBox @FontSubset	@PageNumber and @BoundingBox are always added. For color-related tests, @ColorSpace is added. For font-related tests, @FontName, @FontEmbedded and @FontSubset are added.

When such an Attribute is evaluated against an object and when the Attribute is a property of the object, value will be recorded as an Attribute of the PROccurrence and PRGroupOccurrence Elements. When the Attribute is not a property of the object, no Attribute will be added to the PROccurrence and PRGroupOccurrence Elements. For example: @TextSize on a text object would give <PROccurrence TextSize="12"/> (assuming @TextSize is defined as returning the size in points), but @TextSize on an image would correspond to <PROccurrence>.

## 8.119 Preview

The preview of the content of a surface. It can be used for the calculation of the ink coverage (@PreviewUsage = "Separation") or as a preview of what is currently processed in a Device (@PreviewUsage = "Viewable" or @PreviewUsage = "Thumbnail"). When the preview is of @PreviewUsage = "Separation" or @PreviewUsage = "SeparationRaw", a gray value of "0" represents full ink, while a value of "255" represents no ink (for more information, see DeviceGray color model chapter 4.8.2 of the *PostScript Language Reference Manual*) [PS].

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

Any Element (generic content), JDF, Product, ResourceSet, Resource, QueueEntry

**Example Partition:**

"PreviewType", "Separation", "SheetName", "Side", "TileID", "WebName", "RibbonName"

**Input of Processes:**

InkZoneCalculation, PreviewGeneration

**Output of Processes:**

PreviewGeneration

**Table 8-245: Preview Resource (Sheet 1 of 3)**

Name	Data Type	Description
<u>Compensation ?</u> <u>Modified in JDF 1.2</u>	enumeration	Compensation of the image to reflect the application of transfer curves to the image. <b>Allowed values are:</b> <u>Unknown – Deprecated in JDF 1.2</u> <i>None</i> – No compensation. <i>Film</i> – Compensated until film exposure. <i>Plate</i> – Compensated until plate exposure. <i>Press</i> – Compensated until press.
<u>CTM ?</u> <u>New in JDF 1.1</u> <u>Modified in JDF 1.3</u>	matrix	Orientation of the <b>Preview</b> with respect to the <b>Layout</b> coordinate system. CTM is applied after any transformation defined within the referenced image file (e.g., the transformation defined in the <b>CIP3PreviewImageMatrix</b> of a PPF file). In case of PPF, @CTM is applied to the native Postscript coordinate system of the preview. In case of PNG, the origin of the object is defined as the lower left corner of the image.

**Table 8-245: Preview Resource (Sheet 2 of 3)**

Name	Data Type	Description
<i>Directory</i> ? <a href="#">New in JDF 1.1</a>	URL	Defines a base URL for the files that represent this <b>Preview</b> . If <i>@Directory</i> is specified, it SHALL be an Absolute URI [RFC3986] that implicitly also specifies a Base URI which is used to resolve any relative URL of <b>Preview</b> . See Appendix K, “Resolving RunList/@Directory and FileSpec/@URL URI References” on page 1223 and [FileURL] for examples.
<i>MimeTypeDetails</i> ? <a href="#">New in JDF 1.4</a>	string	Specifies additional details of the preview's MIME type in case the value of <i>@PreviewFileType</i> is a MIME type.
<i>PreviewFileType</i> ?= "PNG" <a href="#">New in JDF 1.2</a> <a href="#">Modified in JDF 1.4</a>	stringN-MTOKEN	<p>The file type of the preview.</p> <p><b>Values include:</b></p> <p><i>PNG</i> – The Portable Network Graphics format.</p> <p><i>CIP3Multiple</i> – The format as defined in the CIP3 PPF specification. One or more previews per CIP3 file are supported.</p> <p><i>CIP3Single</i> – The format as defined in the CIP3 PPF specification. Only one preview per CIP3 file is supported.</p> <p><b>Values include also:</b> any MIME media type. See Appendix H, “MimeType and MimeTypeVersion Attributes” on page 1165. <a href="#">New in JDF 1.4</a></p> <p><b>Note:</b> The CIP3 formats were added in JDF 1.2 only for backwards compatibility since many systems only support CIP3 format. The CIP3 formats SHALL NOT be used except in <b>Preview</b> Resources that are used as Input Resources to <i>InkZoneCalculation</i>.</p> <p><b>Modification note:</b> starting with JDF 1.4, the Data Type is changed from enumeration to string because MIME media types are added as values.</p>
<i>PreviewType</i> ? <a href="#">Deprecated in JDF 1.2</a>	enumeration	<p>Type of the preview.</p> <p><b>Allowed values are:</b></p> <p><i>Separation</i> – Separated preview in medium resolution.</p> <p><i>SeparationRaw</i> – Separated preview in medium resolution.</p> <p><i>SeparatedThumbnail</i> – Very low resolution separated preview.</p> <p><i>Thumbnail</i> – Very low resolution RGB preview.</p> <p><i>Viewable</i> – RGB preview in medium resolution.</p> <p><b>Deprecation note:</b> starting with JDF 1.2, <i>@PreviewType</i> is still a Partition Key and SHALL be used only as such — as an Attribute of <b>Preview</b>, <i>@PreviewUsage</i> (below) replaces <i>@PreviewType</i>.</p>

**Table 8-245: Preview Resource (Sheet 3 of 3)**

Name	Data Type	Description
<a href="#">PreviewUsage</a> ?= <a href="#">"Separation"</a> <a href="#">New in JDF 1.2</a> <a href="#">Modified in JDF 1.5</a>	enumeration	<p>The kind of the preview.  <code>@PreviewUsage</code> defines the semantics of the preview.</p> <p><b>Constraint:</b> If both <code>@PreviewType</code> as a Partition Key and <code>@PreviewUsage</code> are specified, they SHALL match.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Animation</i> – animated previews for 3D display. <a href="#">New in JDF 1.4</a></li> <li><i>Identification</i> – <b>Preview</b> is used as a visual help to identify one or more products, e.g. on a gang form. <a href="#">New in JDF 1.5</a></li> <li><i>SeparatedThumbnail</i> – Very low resolution separated preview.</li> <li><i>Separation</i> – Separated preview in medium resolution. Separation is generally used in <b>TnkZoneCalculation</b>.</li> <li><i>SeparationRaw</i> – Separated preview in medium resolution. This is identical to "Separation" except that no compensation has been applied. "SeparationRaw" is generally used for closed loop color control.</li> <li><i>Static3D</i> – static 3D model <a href="#">New in JDF 1.4 Modified in JDF1.5</a></li> <li><i>Thumbnail</i> – Very low resolution RGB preview.</li> <li><i>Viewable</i> – RGB preview in medium resolution.</li> </ul> <p><b>Modification note:</b> starting with JDF 1.5, <i>3D</i> was renamed to <i>Static3D</i> because enumerations SHALL NOT begin with a number in XML</p>
<a href="#">URL</a> <a href="#">FileSpec</a> ? <a href="#">Modified in JDF 1.2</a>	URLelement	<p><code>@URL FileSpec</code> identifying any SHALL identify the preview file (e.g., the PNG image or CIP3 PPF file that represents this <b>Preview</b>).</p> <p>See [RFC3986] and Appendix K, “Resolving RunList/@Directory and FileSpec/@URL URI References” on page 1223 and Appendix N, “FileSpec Attributes and Container Subelement” on page 1249 for the syntax and examples. For the “file” URL scheme see also [RFC1738] and [FileURL].</p> <p><b>Note:</b> A preview will generally be Partitioned by separation, unless it represents an RGB viewable image or thumbnail. PPF files with multiple images can contain multiple Separations. In this case, the separation names defined in <b>CIP3ADMSeparationNames</b> define the separations and SHALL match the <code>@Separation</code> partition keys used in the <b>JDF</b>.</p>

## 8.120 PreviewGenerationParams

Parameters specifying the size and the type of the preview.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Example Partition:</b>	<code>"PreviewType", "Separation", "SheetName", "Side", "TileID", "WebName", "RibbonName"</code>
<b>Input of Processes:</b>	<b>PreviewGeneration</b>
<b>Output of Processes:</b>	—

**Table 8-246: PreviewGenerationParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>AspectRatio ?= "Ignore"</i> <a href="#">New in JDF 1.1</a>	enumeration	<p>Policy that defines how to define the preview size if the aspect ratio of the source and preview are different. Note that <i>@AspectRatio</i> only has an effect if <i>@Size</i> is specified.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>CenterMax</i> – Keep the aspect ratio and preview <i>@Size</i>, and center the image so that the preview has missing pixels at both sides of the larger dimension.</li> <li><i>CenterMin</i> – Keep the aspect ratio and preview <i>@Size</i>, and center the image so that the preview has blank pixels at both sides of the smaller dimension.</li> <li><i>Crop</i> – Keep the aspect ratio, and modify the preview size so that the image fits into a bounding rectangle defined by <i>@Size</i>.</li> <li><i>Expand</i> – Keep the aspect ratio, and modify the preview size so that the smaller image dimension is defined by <i>@Size</i>.</li> <li><i>Ignore</i> – Fill the preview completely, keeping <i>@Size</i>, even if this requires modifying the aspect ratio.</li> </ul>
<i>Compensation ?</i> <a href="#">Modified in JDF 1.2</a>	enumeration	<p>Compensation of the image to reflect the application of transfer curves to the image.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>None</i> – No compensation.</li> <li><i>Film</i> – Compensated until film exposure.</li> <li><i>Plate</i> – Compensated until plate exposure.</li> <li><i>Press</i> – Compensated until press.</li> </ul>
<i>PreviewFileType ?= "PNG"</i> <a href="#">New in JDF 1.2</a>	enumeration	<p>The file type of the preview to be generated.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>PNG</i> – The Portable Network Graphics format.</li> <li><i>CIP3Multiple</i> – The format as defined in the CIP3 PPF specification. One or more previews per CIP3 file are supported.</li> <li><i>CIP3Single</i> – The format as defined in the CIP3 PPF specification. Only one preview per CIP3 file is supported.</li> </ul> <p><b>Note:</b> The CIP3 formats were added in JDF 1.2 only for backwards compatibility since many systems only support CIP3 format. The CIP3 formats SHALL NOT be used except in <b>Preview</b> Resources that are used as Input Resources to <b>InkZoneCalculation</b>.</p>
<i>PreviewType ?</i> <a href="#">Deprecated in JDF 1.1</a>	enumeration	<p>The kind of preview to be generated.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Separation</i></li> <li><i>Viewable</i></li> </ul> <p><b>Deprecation note:</b> starting with JDF 1.1, <i>@PreviewType</i> is still a Partition Key and SHALL be used only as such — as an Attribute of <b>Preview</b>, <i>@PreviewUsage</i> (below) replaces <i>@PreviewType</i>.</p>

**Table 8-246: PreviewGenerationParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<a href="#">PreviewUsage</a> ?= "Separation" <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.2</a>	enumeration	The kind of preview to be generated. <b>Allowed values are:</b> Separation – Separated preview in medium resolution. SeparationRaw – Separated preview in medium resolution with no compensation. SeparatedThumbnail – Very low resolution separated preview. Thumbnail – Very low resolution RGB preview. Viewable – RGB preview in medium resolution. <b>Constraint:</b> @PreviewUsage defines the semantics of the preview. If both @PreviewType as a Partition Key and @PreviewUsage are specified, they SHALL match.
<a href="#">Resolution</a> ?	XYPair	Resolution of the preview, in dpi. If @PreviewUsage = "Separation", the default is "50.8 50.8".
<a href="#">Size</a> ?	XYPair	Size of the preview, in pixels. If this Attribute is present, the @Resolution Attribute evaluated according to the policy defined in @AspectRatio. If @Size is not specified, it SHALL be calculated using the @Resolution Attribute and the input image size.
<a href="#">ImageSetterParams</a> ? <a href="#">ImageSetterParamsRef</a> <a href="#">?New in JDF 1.1</a>	refelementI-DREF	Details of the <b>ImageSetting</b> Process. Needed for accessing information about coordinate transformations that are performed by the imagesetter hardware.

## 8.121 PrintCondition

[New in JDF 1.2](#)

**PrintCondition** is a Resource used to control the use of colorants when printing pages on a specific media. The Attributes and Elements of the **PrintCondition** Resource describe the aim values for a given printing Process.

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

—  
"SignatureName", "SheetName", "Side", "Separation"

**Example Partition:**

ConventionalPrinting, DigitalPrinting

**Input of Processes:**

—

**Output of Processes:**

—

**Table 8-247: PrintCondition Resource (Sheet 1 of 2)**

Name	Data Type	Description
<a href="#">AimCurve</a> ?	Transfer-Function	Describes the desired tone-value increase function. If not specified, it defaults to the media and printing machine-specific values
<a href="#">Density</a> ?	double	Density value of colorant (100% tint). Whereas <b>Color</b> / @NeutralDensity describes measurements of inks on substrate with wide-band filter functions, @Density is derived from measurements of inks on substrate with special small band filter functions according to ANSI and DIN. If not specified, it defaults to the value of <b>Color</b> / <b>PrintCondition</b> / @Density.

**Table 8-247: PrintCondition Resource (Sheet 2 of 2)**

Name	Data Type	Description
Name	string	Name of the <b>PrintCondition</b> . Used to reference a <b>PrintCondition</b> from a <b>Color</b> element
ColorMeasurementConditions ?	refelement	Describes measurement conditions for color measurement and density measurement. If not specified, it defaults to the value of <b>Color/ColorMeasurementConditions</b>
Device ?	refelement	Specifies the Device or Device group that this <b>PrintCondition</b> applies to.
FileSpec ( <i>TargetProfile</i> ) ?	refelement	A <b>FileSpec</b> Resource pointing to an ICC profile that defines the target output Device in case the object that uses the Color has been color space converted to a Device color space. If not specified, it defaults to the value of <b>Color/PrintCondition/FileSpec (<i>TargetProfile</i>)</b> .

**Example 8-41: PrintCondition****TBD 2.x Example.**

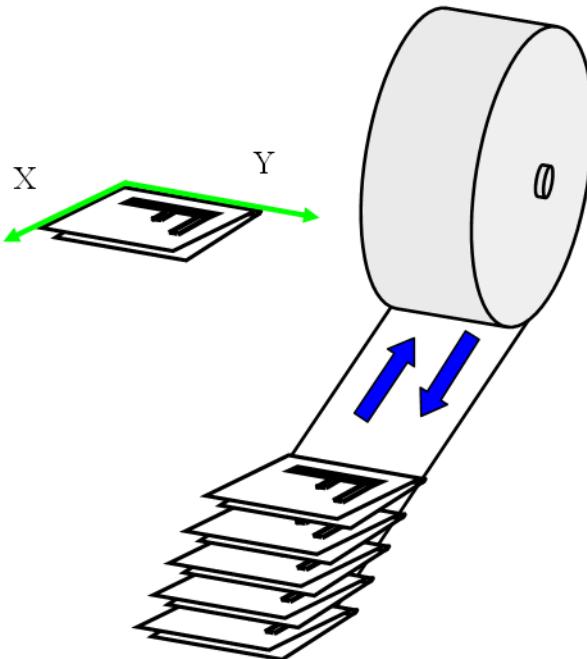
```
<ColorMeasurementConditions Class="Parameter" ID="MyColorMeasCond"
    Status="Available"/>
<PrintCondition Name="Standard" Class="Parameter" ID="PC"
    PartIDKeys="Side Separation" Status="Available">
    <ColorMeasurementConditionsRef rRef="MyColorMeasCond"/>
    <PrintCondition Side="Front">
        <PrintCondition AimCurve="0.0 0.0 0.5 0.66 1.0 1.0" Density="1.8"
            Separation="Black"/>
        <PrintCondition AimCurve="0.0 0.0 0.5 0.63 1.0 1.0" Density="1.4"
            Separation="Cyan"/>
    </PrintCondition>
</PrintCondition>
```

**8.122 PrintRollingParams**New in JDF 1.2**Resource Properties**

Resource Class:	Parameter
Resource referenced by:	
Example Partition:	
Input of Processes:	<b>PrintRolling</b>
Output of Processes:	

**Table 8-248: PrintRollingParams Resource**

Name	Data Type	Description
Copies ?	integer	Number of copies on the Roll. @Copies SHALL NOT be specified if @MaxDiameter is present.
MaxDiameter ?	double	Maximal allowed diameter of Roll. @MaxDiameter SHALL NOT be specified if @Copies is present.

**Figure 8-54: PrintRollingParams Coordinate System**

## 8.123 ProductionPath

[New in JDF 1.3](#)

**ProductionPath** describes the individual paper path through the different modules of a Web-Press Device, in order to produce a particular product.

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

**CylinderLayoutPreparationParams** —

**Example Partition:**

"*RibbonName*", "*WebName*"

**Input of Processes:**

*WebInlineFinishing*

**Output of Processes:**

—

**Table 8-249: ProductionPath Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>ProductionPathID</i> ?	stringN-MTOKEN	Identification of the entire production path. The @ <i>ProductionPathID</i> SHALL be unique within the machine. <i>If not specified, PrintingUnitWebPath SHALL be specified.</i>
<i>FolderSuperstructureWebPath</i> ?	element	Describes the path through the folder super-structure. The Web will generally be cut into ribbons in this area of the production path.

**Table 8-249: ProductionPath Resource (Sheet 2 of 2)**

Name	Data Type	Description
PostPressComponentPath *	element	Describes the path through the inline postpress equipment. Folded Sheets ( <b>Component</b> ) will be processed in this area of the production path.
PrintingUnitWebPath ?	element	Describes the path through the printing units. If not specified, <i>@ProductionPathID</i> SHALL be specified.

**8.123.1 Element: FolderSuperstructureWebPath**

This is a placeholder that might be filled with additional information in future versions of JDF. In JDF 1.3, paths are identified by ID only.

**Table 8-250: FolderSuperstructureWebPath Element**

Name	Data Type	Description
ProductionPathID ?	string	Unique identification of the part of the production path specified in this Element.

**8.123.2 Element: PostPressComponentPath**

This is a placeholder that might be filled with additional information in future versions of JDF. In JDF 1.3, paths are identified by ID only.

**Table 8-251: PostPressComponentPath Element**

Name	Data Type	Description
ProductionPathID ?	string	Unique identification of the part of the production path specified in this Element.

**8.123.3 Element: PrintingUnitWebPath**

This is a placeholder that might be filled with additional information in future versions of JDF. In JDF 1.3, paths are identified by ID only.

**Table 8-252: PrintingUnitWebPath Element**

Name	Data Type	Description
ProductionPathID ?	string	Unique identification of the part of the production path specified in this Element.

**Example 8-42: ProductionPath: on Path Level:**

This example and the next illustrate the different Web path description levels:

TBD 2.x Example.

```
<ProductionPath Class="Parameter" ID="F1" Status="Available"
    ProductionPathID="ID_2webproduction_64pages"/>
```

**Example 8-43: ProductionPath: on Part Path Level:**

This example and the previous illustrate the different Web path description levels:

```
<ProductionPath Class="Parameter" ID="F1" Status="Available"
    PartIDKeys="WebName">
    <ProductionPath WebName="1">
        <PrintingUnitWebPath ProductionPathID="ID_PrintingUnitWebPath"/>
```

```

<FolderSuperstructureWebPath ProductionPathID="abcd"/>
<PostPressComponentPath ProductionPathID="xyz"/>
</ProductionPath>
</ProductionPath>

```

## 8.124 ProofingParams

Deprecated in JDF 1.2

In JDF 1.2 and beyond, proofing is handled as a Combined Process. For detail of this deprecated Resource, see Section P.6.20, “ProofingParams” on page 1362.

## 8.125 PSToPDFConversionParams

This Resource contains the parameters that control the conversion any PDL to PDF documents. Prior to JDF 1.3, **PSToPDFConversionParams** was used only for converting PostScript streams to PDF. The name “**PSToPDFConversionParams**” was retained for backwards compatibility, although most parameters apply to PDF conversion from any source format.

Some descriptions below mention Attributes or structures in specific source formats, such as PostScript. Appropriate equivalent actions should be taken when converting from other source formats that have equivalent Attributes or structures. A small number of parameters apply only to PostScript sources.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	<b>PDLCreationParams</b>
<b>Example Partition:</b>	<i>"DocIndex", "RunIndex", "RunTags", "DocTags", "PageTags", "SetTags", "SheetName", "Side", "SignatureName"</i>
<b>Input of Processes:</b>	<b>PSToPDFConversion</b> —
<b>Output of Processes:</b>	—

Table 8-253: PSToPDFConversionParams Resource (Sheet 1 of 3)

Name	Data Type	Description
<i>AllowJBIG2Globals</i> <i>?=</i> <i>"false"</i>	boolean	This Resource allows JBIG2 compressed images to share a single global dictionary in the resulting PDF file instead of a dictionary per image.
<i>ASCII85EncodePages</i> <i>?=</i> <i>"false"</i>	boolean	If <i>"true"</i> , binary streams (e.g., page contents streams, sampled images, and embedded fonts) are ASCII85-encoded, resulting in a PDF file that is almost pure ASCII. If <i>"false"</i> , they are not, resulting in a PDF file that can contain substantial amounts of binary data.

**Table 8-253: PSToPDFConversionParams Resource (Sheet 2 of 3)**

Name	Data Type	Description
<i>AutoRotatePages</i> ?	enumeration	<p>Allows the Device to try to orient pages based on the predominant text orientation. If the source is PostScript, this Attribute is only used if the file does not contain “%%ViewingOrientation”, “%%PageOrientation” or “%%Orientation” DSC comments. If the file does contain such DSC comments, it honors them. “%%ViewingOrientation” takes precedence over others, then “%%PageOrientation”, then “%%Orientation”.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>None</i> – Turns <i>@AutoRotatePages</i> off.</li> <li><i>All</i> – Takes the predominant text orientation across all pages and rotates all pages the same way.</li> <li><i>PageByPage</i> – Does the rotation on a page-by-page basis, rotating each page individually. Useful for documents that use both portrait and landscape orientations.</li> </ul>
<i>Binding</i> ?= "Left"	enumeration	<p>Determines how the printed pages would be bound.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Left</i> – for left binding.</li> <li><i>Right</i> – for right binding.</li> </ul>
<i>CompressPages</i> ?	boolean	Enables compression of pages and other content streams like forms, patterns and Type 3 fonts. If "true", use Flate compression.
<i>DefaultRenderingIntent</i> ? <u>Modified in JDF 1.2</u>	enumeration	<p>Selects the rendering intent for the current Job.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Default</i> <u>Deprecated in JDF 1.2</u></li> <li><i>Perceptual</i></li> <li><i>Saturation</i></li> <li><i>RelativeColorimetric</i></li> <li><i>AbsoluteColorimetric</i></li> </ul> <p><b>Note:</b> See the <i>Portable Document Format Reference Manual</i> for more information on rendering intent.</p>
<i>DetectBlend</i> ?= "true"	boolean	Enables or disables blend detection. If "true" and if <i>@PDFVersion</i> is 1.3 or higher, then blends will be converted to smooth shadings.
<i>DoThumbnails</i> ?= "true"	boolean	If "true", thumbnails are created.
<i>EndPage</i> ? <u>Deprecated in JDF 1.3</u>	integer	Number that indicates the last page that is displayed when the PDF file is viewed. <i>@EndPage</i> SHALL be either "-1" or greater than or equal to <i>@StartPage</i> . When combined with <i>@StartPage</i> , <i>@EndPage</i> selects a range of pages to be displayed. The entire file MAY be converted, but only <i>@StartPage</i> to <i>@EndPage</i> pages, inclusive, are opened and viewed in a PDF viewing application.
<i>ImageMemory</i> ? <u>Deprecated in JDF 1.2</u>	integer	<p>Number of bytes in the buffer used in sample processing for color, grayscale and monochrome images. Its contents are written to disk when the buffer fills up.</p> <p>This Attribute was deprecated because it is an internal application setting and not a parameter setting.</p>

**Table 8-253: PSToPDFConversionParams Resource (Sheet 3 of 3)**

Name	Data Type	Description
<i>InitialPageSize</i> ? <a href="#">New in JDF 1.1</a>	XYPair	Defines the initial page dimensions, in points, that will be used to set MediaBox. This will be overridden by any page size Attribute found in the source document, such as the PostScript <b>PageSize</b> page Device parameter. The use of this Attribute is strongly encouraged when processing EPS files (%%BoundingBox comments do not override <i>@InitialPageSize</i> ).
<i>InitialResolution</i> ? <a href="#">New in JDF 1.1</a>	XYPair	Defines the initial horizontal and vertical resolution, in dpi. This will be overridden by any resolution Attribute found in the source document, such as the PostScript <b>HWResolution</b> page Device parameter. The use of this Attribute is strongly encouraged when processing EPS files.
<i>Optimize</i> ?= "true"	boolean	If "true", the PS-to-PDF converter optimizes the PDF file. See [PDF1.6] for more information on optimization.
<i>OverPrintMode</i> ?	integer	Controls the overprint mode strategy of the Job. Set to "0" for full overprint or "1" for non-zero overprint. For more information, see [Adb-TN5044].
<i>PDFVersion</i> ?	double	Specifies the version number of the PDF file produced. Values include all legal version designators (e.g., 1.2, 1.5).
<i>StartPage</i> ? <a href="#">Deprecated in JDF 1.3</a>	integer	Sets the first page that is be displayed when the PDF file is opened with a PDF viewing application. <i>@StartPage</i> SHALL be greater than or equal to 1. <i>@EndPage</i> SHALL be either "-1" or greater than or equal to <i>@StartPage</i> .
<i>AdvancedParams</i> ?	element	Advanced parameters which control how certain features of PDF are handled.
<i>PDFXParams</i> ? <a href="#">New in JDF 1.2</a>	element	PDF/X parameters.
<i>ThinPDFParams</i> ?	element	Parameters that control the optional content or form of PDF files that will be created.

### 8.125.1 Element: **AdvancedParams**

**Table 8-254: AdvancedParams Element (Sheet 1 of 3)**

Name	Data Type	Description
<i>AllowPSXObjects</i> ?= "true" <a href="#">New in JDF 1.2</a>	boolean	If "true", allows PostScript <b>XObjects</b> .
<i>AllowTransparency</i> ?= "false" <a href="#">New in JDF 1.2</a>	boolean	If "true", allows transparency in the PDF.
<i>AutoPositionEPSInfo</i> ?= "true" <a href="#">Modified in JDF 1.1A</a>	boolean	If "true", the Process automatically resizes and centers information from EPS source files on the page. (EPS source only)
<i>EmbedJobOptions</i> ?= "false" <a href="#">New in JDF 1.2</a>	boolean	If "true", the PDF settings used to create the PDF are embedded in the PDF.
<i>EmitDSCWarnings</i> ?= "false"	boolean	If "true", warning messages about questionable or incorrect DSC comments appear during the processing of the source PostScript file. (PostScript source only)

Table 8-254: AdvancedParams Element (Sheet 2 of 3)

Name	Data Type	Description
<code>LockDistillerParams ?= "true"</code>	boolean	If "true", any <b>PSToPDFConversionParams</b> settings configured by the source content (e.g., with <b>setdistiller-params</b> in a PostScript source document) are ignored. If "false", each parameter defined in the source document overrides that set in the <b>JDF XJDF</b> .
<code>ParseDSCCommentForDocInfo ?= "true"</code>	boolean	If "true", the Process parses the DSC comments in a Post-Script source file and extracts the document information. This information is recorded in the Info dictionary of the PDF file.
<code>ParseDSComments ?= "true"</code>	boolean	If "true", the Process parses the DSC comments in a Post-Script source document for any information that might be helpful for converting the file or for information that is to be stored in the PDF file. If "false", the Process treats the DSC comments as pure PS comments and ignores them. (PostScript source only)
<code>PassThroughJPEGImages ?= "false"</code> <u>New in JDF 1.2</u>	boolean	If "true", JPEG images are passed through without recompressing them.
<code>PreserveCopyPage ?= "true"</code>	boolean	If "true", the <b>copypage</b> operator of PostScript Level 2 is maintained. If "false", the PostScript Level 3 definition of <b>copypage</b> operator is used. In PostScript Levels 1 and 2, the <b>copypage</b> operator transmits the page contents to the current output Device (similar to <b>showpage</b> ). However, <b>copypage</b> does not perform many of the re-initializations that <b>showpage</b> does. Many PostScript Level 1 and 2 programs used the <b>copypage</b> operator to perform such operations as printing multiple copies and implementing forms. These programs produce incorrect results when interpreted using the Level 3 <b>copypage</b> semantics. This Attribute provides a mechanism to retain Level 2 compatibility for this operator. (PostScript source only)
<code>PreserveEPSInfo ?= "true"</code>	boolean	If "true", preserves the EPS information in a PostScript source file and stores it in the resulting PDF file. (PostScript source only)
<code>PreserveHalftoneInfo ?= "false"</code> <u>New in JDF 1.1</u>	boolean	If "true", passes halftone screen information (frequency, angle and spot function) into the PDF file. If "false", halftone information is not passed in.
<code>PreserveOPIComments ?= "true"</code>	boolean	If "true", encapsulates Open Prepress Interface (OPI) low resolution images as a form and preserves information for locating the high resolution images.
<code>PreserveOverprintSettings ?= "true"</code> <u>New in JDF 1.1</u>	boolean	If "true", passes the value of the <b>setoverprint</b> operator through to the PDF file. Otherwise, overprint is ignored.

**Table 8-254: AdvancedParams Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>TransferFunctionInfo</i> ?= "Preserve" <a href="#">New in JDF 1.1</a>	enumeration	Determines how transfer functions are handled. <b>Allowed values are:</b> <i>Preserve</i> – Transfer functions are passed into the PDF file. <i>Remove</i> – Transfer functions are ignored. They are neither applied to the color values nor passed into the PDF file. <i>Apply</i> – Transfer functions are used to modify the data that are written to the PDF file, instead of writing the transfer function itself to the file.
<i>UCRandBGInfo</i> ?= "Preserve" <a href="#">New in JDF 1.1</a>	enumeration	Determines whether the under-color removal and black-generation parameters from the source document (e.g., the arguments to the PostScript commands <b>setundercolorremoval</b> and <b>setblackgeneration</b> ) are passed into the PDF file. <b>Allowed values are:</b> <i>Preserve</i> – The arguments are passed into the PDF file. <i>Remove</i> – The arguments are ignored.
<i>UsePrologue</i> ?= "false"	boolean	If "true", the Process SHALL append a PostScript prologue file before beginning of the Job and append a PostScript epilog file after the end the Job. Such files are used to control the PostScript environment for the conversion Process. The expected location and allowable contents for these files is defined by the Process implementation. (PostScript source only)

**8.125.2 Element: PDFXParams**[New in JDF 1.2](#)

Parameters for generating PDF/X files. Note that TrimBox, BleedBox, output intent and the Trapped state may be provided by the use of the **pdfmark** operator in a PostScript source file.

**Table 8-255: PDFXParams Element (Sheet 1 of 3)**

Name	Data Type	Description
<i>PDFX1aCheck</i> ?= "false" <a href="#">Deprecated in JDF 1.5</a>	boolean	If "true", checks compliance with the PDF/X-1a standard [ISO15930-1:2001]. <b>Deprecation note:</b> use @PDFXCheck instead.
<i>PDFX3Check</i> ?= "false" <a href="#">Deprecated in JDF 1.5</a>	boolean	If "true", checks compliance with the PDF/X-3 standard [ISO15930-3:2002]. <b>Deprecation note:</b> use @PDFXCheck instead.
<i>PDFXBleedBoxToTrimBoxOffset</i> ?	rectangle	If the <b>BleedBox</b> entry is not specified in the page object of the source document, <b>BleedBox</b> is set to PDF <b>TrimBox</b> with offsets. All numbers SHALL be greater than or equal to 0.0. PDF <b>BleedBox</b> will be completely outside PDF <b>TrimBox</b> .

**Table 8-255: PDFXParams Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>PDFXCheck</i> ? <a href="#">New in JDF 1.5</a>	NMTOKENS	<p>List of PDF/X versions that the output SHALL be compliant with.</p> <p>Values include:</p> <ul style="list-style-type: none"> <li><i>X1a</i> – see the PDF/X-1a standard [ISO15930-1:2001].</li> <li><i>X3</i> – see the PDF/X-3 standard [ISO15930-3:2002].</li> <li><i>X4</i> – see the PDF/X-4 standard [ISO15930-7:2010].</li> <li><i>X5</i> – see the PDF/X-5 standard [ISO15930-8:2010].</li> </ul>
<i>PDFXCompliantPDFOnly</i> ?= "false"	boolean	If "true", produces a PDF document only if PDF/X compliance tests are passed.
<i>PDFXNoTrimBoxError</i> ?= "true"	boolean	If "true" and both <b>TrimBox</b> and <b>ArtBox</b> entries are not specified in the page object of the source document, the condition is reported as an error.
<i>PDFXOutputCondition</i> ?	string	The string is an optional comment which is added to the PDF file. It describes the intended printing condition in a form that ought to be meaningful to a human operator at the site receiving the PDF document.
<i>PDFXOutputIntentProfile</i> ?	string	If the source document does not specify an output intent name, then this value is used. <b>Values include those from:</b> Table 8-256, "PDFXOutputIntentProfile Attribute Values".
<i>PDFXRegistryName</i>	URL	Indicates a location at which more information regarding the registry that defines the <b>OutputConditionIdentifier</b> can be obtained.
<i>PDFXSetBleedBoxToMediaBox</i> ?= "true"	boolean	If "true" and the <b>BleedBox</b> entry is not specified in the page object of the source document, <b>BleedBox</b> is set to <b>MediaBox</b> .
<i>PDFXTrapped</i> ?	enumeration	<p>If a source document does not specify a <b>Trapped</b> state, then the value provided here is used. The value "Unknown" is to be used for workflows requiring 1) that the document specify a <b>Trapped</b> state and 2) that compliance checking fail if <b>Trapped</b> is not present in the document.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Unknown</i></li> <li><i>false</i></li> <li><i>true</i></li> </ul> <p><b>Note:</b> "Unknown" is prohibited in PDF/X files.</p>
<i>PDFXTrimBoxToMediaBoxOffset</i> ?	rectangle	If both the <b>TrimBox</b> and <b>ArtBox</b> entries are not specified in the page object of the source document, <b>TrimBox</b> is set to <b>MediaBox</b> with offsets. All numbers SHALL be greater than or equal to 0.0. The <b>TrimBox</b> will be completely inside <b>MediaBox</b> .

**Table 8-255: PDFXParams Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>PDFXVersion</i>	string	version to check against <b>Values include:</b> <i>PDF/X-1a</i> <i>PDF/X-3</i> <i>PDF/X-4</i> <i>PDF/X-5</i>

**— Attribute: PDFXOutputIntentProfile****Table 8-256: PDFXOutputIntentProfile Attribute Values**

Value	Description
<i>None</i>	Used when it is REQUIRED that the source document specifies an intent; allows compliance checking to fail
<i>Euroscale Coated v2</i>	
<i>Euroscale Uncoated v2</i>	
<i>Japan Color 2001 Coated</i>	
<i>Japan Color 2001 Uncoated</i>	
<i>Japan Standard v2</i>	
<i>Japan Web Coated (Ad)</i>	
<i>U.S. Sheetfed Coated v2</i>	
<i>U.S. Sheetfed Uncoated v2</i>	
<i>U.S. Web Coated (SWOP) v2</i>	
<i>U.S. Web Uncoated v2</i>	
<i>Photoshop 4 Default CMYK</i>	
<i>Photoshop 5 Default CMYK</i>	

**8.125.3 Element: ThinPDFParams****Table 8-257: ThinPDFParams Element**

Name	Data Type	Description
<i>FilePerPage ?= "false"</i>	boolean	If "true", the Process generates 1 PDF file per page.
<i>SidelineEPS ?= "false"</i> <i>New in JDF 1.2</i>	boolean	If "true", embedded EPS files in PostScript source documents are not converted but are stored in external files in the same location as the PDF itself. (PostScript source only)
<i>SidelineFonts ?= "false"</i>	boolean	If "true", font data are stored in external files during PDF generation.
<i>SidelineImages ?= "false"</i>	boolean	If "true", image data are stored in an external stream during the PDF Generation phase. This prevents large amounts of image data from having to be passed through all phases of the code generation Process.

## 8.126 QualityControlParams

[New in JDF 1.2](#)

This set of parameters identifies how the **QualityControl** Process is to operate. The **QualityControlParams** defines the generic set of parameters for the quality control Process. The specific measurement conditions are defined in specialized Subelements such as BindingQualityParams.

### Resource Properties

<b>Resource Class:</b>	Parameter
Resource referenced by:	—
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	<i>QualityControl</i>
<b>Output of Processes:</b>	—

**Table 8-258: QualityControlParams Resource**

Name	Data Type	Description
<i>SampleInterval</i> ?	integer	Interval in number of samples between tests.
<i>TimeInterval</i> ?	duration	Time interval between individual tests.
BindingQualityParams ?	element	Specification of the binding quality measurements..

### 8.126.1 Element: BindingQualityParams

The set of parameters in BindingQualityParams identifies how the quality of the binding is verified.

**Table 8-259: BindingQualityParams Element**

Name	Data Type	Description
<i>FlexValue</i> ?	double	Flex quality parameter measured in [N/cm].
<i>PullOutValue</i> ?	double	Pull out quality parameter measured in [N/cm].

## 8.127 QualityControlResult

[New in JDF 1.2](#)

This set of parameters returns results of a **QualityControl** Process. The **QualityControlResult** defines the generic set of results from the quality control Process. The specific measurements are returned in specialized Subelements such as BindingQualityParams. Additional detailed quality control result types are anticipated in future versions of the **JDF XJDF** specification.

### Resource Properties

<b>Resource Class:</b>	Parameter
Resource referenced by:	<a href="#">Abstract Resource</a>
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	—
<b>Output of Processes:</b>	<i>QualityControl</i>

**Table 8-260: QualityControlResult Resource**

Name	Data Type	Description
Condition ?	NMTOKEN	Condition of the tested <b>Component</b> . If the <b>Component</b> passed the test, but the test itself destroyed the <b>Component</b> , the value SHALL be set to " <i>destroyed</i> ". <b>Values include:</b> <i>destroyed</i>
End ?	dateTime	Date and time of the end of the measurement. If not specified, the value of @Start is applied.
Failed ?	integer	Total number of failed measurements.
Passed ?	integer	Total number of passed measurements.
Start ?	dateTime	Date and time of the start of the measurement. <b>If not specified, the measurement time is not known.</b>
BindingQualityParams ?	element	Reference to the measurement setup definition.
FileSpec ?	refeleme- ntlement	Location of an external file that contains details of the quality control measurement.
QualityMeasurement *	element	One individual measurement result.

**8.127.1 Element: QualityMeasurement**

QualityMeasurement Elements describe an individual measurement.

**Table 8-261: QualityMeasurement Element**

Name	Data Type	Description
Condition ?	NMTOKEN	Condition of the tested <b>Component</b> . If the <b>Component</b> passed the test, but the test itself destroyed the <b>Component</b> , the value SHALL be set to " <i>destroyed</i> ". <b>Values include:</b> <i>destroyed</i>
End ?	dateTime	Date and time of the end of the measurement. If not specified, the value of @Start is applied.
Failed ?	integer	Total number of failed measurements.
Passed ?	integer	Total number of passed measurements.
Start ?	dateTime	Date and time of the start of the measurement. <b>If not specified, the measurement time is not known.</b>
BindingQualityMeasurement ?	element	Details of the BindingQualityMeasurement.

**8.127.2 Element: BindingQualityMeasurement****Table 8-262: BindingQualityMeasurement Element**

Name	Data Type	Description
FlexValue ?	double	Flex quality parameter given in [N/cm].
PullOutValue ?	double	Pull out quality parameter given in [N/cm].

## 8.128 RasterReadingParams

[New in JDF 1.3](#)

This set of parameters specifies the details for **RasterReading**.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Example Partition:	—
Input of Processes:	<b>RasterReading</b>
Output of Processes:	—

**Table 8-263: RasterReadingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>Center</i> ?= "false"	boolean	Indicates whether or not the finished page image is to be centered within the imageable area of the media. The <i>@Center</i> is ignored if <i>FitPolicy</i> / <i>@SizePolicy</i> = "ClipToMaxPage" and clipping is requested.
<i>FilmRef</i> ?	IDREF	Reference to film <b>Media</b> . This Resource provides a description of the physical media which will be marked. The physical characteristics of the media MAY affect decisions made during <b>RasterReading</b> .
<i>MirrorAround</i> ?= "None"	enumeration	<p>This Attribute specifies the axis around which a raster reader is to mirror an image.</p> <p><b>Allowed values are:</b></p> <p><i>None</i> – The default.</p> <p><i>FeedDirection</i> – Image is mirrored around the feed-direction axis.</p> <p><i>MediaWidth</i> – Image is mirrored around the media-width axis.</p> <p><i>Both</i> – Image is mirrored around both possible axes.</p>
<i>PaperRef</i> ?	IDREF	Reference to final paper <b>Media</b> . This Resource provides a description of the physical media which will be marked. The physical characteristics of the media MAY affect decisions made during <b>RasterReading</b> .
<i>PlateRef</i> ?	IDREF	Reference to plate <b>Media</b> . This Resource provides a description of the physical media which will be marked. The physical characteristics of the media MAY affect decisions made during <b>RasterReading</b> .
<i>Polarity</i> ?= "Positive"	enumeration	<p>The image SHALL be RIPed in the polarity specified. Note that this is a polarity change in the RIP and not a polarity change in the hardware of the output Device.</p> <p><b>Allowed values are:</b></p> <p><i>Positive</i></p> <p><i>Negative</i></p>
<i>Poster</i> ? <a href="#">Deprecated in JDF 1.5</a>	XYPair	<p>Specifies whether the page contents is to be expanded such that each page covers X by Y pieces of media.</p> <p><b>Deprecation note:</b> starting with JDF 1.5, use <b>Tiling</b> (Section 6.4.40).</p>
<i>PosterOverlap</i> ? <a href="#">Deprecated in JDF 1.5</a>	XYPair	<p>This pair of real numbers identifies the amounts of overlap in points, that specify the poster tiles across the horizontal and vertical axes, respectively.</p> <p><b>Deprecation note:</b> starting with JDF 1.5, use <b>Tiling</b> (Section 6.4.40).</p>

**Table 8-263: RasterReadingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>ProofPaperRef</i> ?	IDREF	Reference to paper <b>Media</b> used for proofing. This Resource provides a description of the physical media which will be marked. The physical characteristics of the media MAY affect decisions made during <b>RasterReading</b> .
<i>Scaling</i> ?	XYPair	A pair of positive real values that indicates the scaling factor for the page contents. Values between 0 and 1 specify that the contents are to be reduced, while values greater than 1 specify that the contents are to be expanded. This Attribute is ignored if <i>@FitToPage</i> = "true" or if <i>@Poster</i> is present and has a value other than "1 1". Any scaling defined in <b>FitPolicy</b> SHALL be applied after the scaling defined by this Attribute.
<i>ScalingOrigin</i> ?	XYPair	A pair of real values that identify the point in the unscaled page that is to become the origin of the new, scaled page image. This point is defined in the coordinate system of the unscaled page. If not specified, and scaling is requested, the <i>@ScalingOrigin</i> defaults to "0 0"
<b>FitPolicy</b> ?  <a href="#">New in JDF 1.1</a>	element	Allows printing even if the size of the imageable area of the media does not match the requirements of the data. This replaces the deprecated <i>@FitToPage</i> Attribute. <b>This FitPolicy Resource SHALL be ignored in a Combined Process with LayoutPreparation.</b>
<b>Media</b> *  <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.2</a>	refelement	This Resource provides a description of the physical media which will be marked. The physical characteristics of the media MAY affect decisions made during <b>RasterReading</b> . The cardinality was changed to "*" in JDF 1.2 in order support description of multiple media types (e.g., Film, Plate and Paper). If multiple <b>Media</b> are specified, The <b>Media/@MediaType</b> defines the type of <b>Media</b> . If multiple <b>Media</b> with <b>Media/@MediaType</b> = "Paper" are specified in a proofing environment, the first <b>Media</b> is the proofer paper and the second <b>Media</b> is the final Device paper.

## 8.129 RegisterMark

Defines a register mark, which can be used for setting up and monitoring color registration in a printing Process. It can also be used to synchronize the Sheet position in a paper path. The position and rotation of each register mark can be specified with the help of the following Attributes. It is important that the register marks are defined in such a way that their centers are on the point of origin of the coordinate system, as otherwise they are not positioned properly.

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

**HoleMakingParams**, Layout/MarkObject

**Example Partition:**

—

**Input of Processes:**

—

**Output of Processes:**

—

**Table 8-264: RegisterMark Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>Center</i> ?	XYPair	Position of the center of the register mark in the coordinates of the <b>MarkObject</b> that contains this mark.

**Table 8-264: RegisterMark Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>MarkType ?</i> <a href="#">Modified in JDF 1.4</a>	NMTOKENS	Type of <b>RegisterMark</b> . <b>Values include:</b> <i>Arc</i> <i>Circle</i> <i>Cross</i> <b>Modification note:</b> starting with JDF 1.4, the data type changes from NMTOKEN to NMTOKENS.
<i>MarkUsage ?</i> <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.4</a>	enumerations	Specifies the usage of the <b>RegisterMark</b> . <b>Allowed values are:</b> <i>Color</i> – The mark is used for separation color registration. <i>PaperPath</i> – The mark is used for paper path synchronization. <i>Tile</i> – The mark is used to mark the position of tiles in Tiling. <a href="#">New in JDF 1.4</a>
<i>Rotation ?</i>	double	Rotation in degrees. Positive graduation figures indicate counter-clockwise rotation; negative figures indicate clockwise rotation.
<i>SeparationSpec *</i> <i>Separations ?</i> <a href="#">Modified in JDF 1.2</a>	elementN-MTOKENS	Set of separations to which the register mark is bound.

## 8.130 RenderingParams

This set of parameters identifies how the **Rendering** Process is to operate. Specifically, these parameters define the expected output of the **ByteMap** Resource that the **Rendering** Process creates.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	<b>ProofingIntentContentCheckIntent</b>
<b>Example Partition:</b>	<b>"DocIndex", "RunIndex", "RunTags", "DocTags", "PageTags", "SetTags", "SheetName", "Side", "SignatureName"</b>
<b>Input of Processes:</b>	<b>Rendering</b>
<b>Output of Processes:</b>	—

**Table 8-265: RenderingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>BandHeight ?</i>	integer	Height of output bands expressed in lines. For a frame Device, the band height is simply the full height of the frame.

**Table 8-265: RenderingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>BandOrdering</i> ?	enumeration	Indicates whether output buffers are generated in " <i>BandMajor</i> " or " <i>ColorMajor</i> " order. <b>Allowed values are:</b> <i>BandMajor</i> – The position of the bands on the page is prioritized over the color. <i>ColorMajor</i> – All bands of a single color are played in order before progressing to the next plane. This is only possible with non-interleaved data.
<i>BandWidth</i> ?	integer	Width of output bands, in pixels.
<i>ColorantDepth</i> ?	integer	Number of bits per colorant. Determines whether the output is bitmaps or bytemaps.
<i>Interleaved</i> ?	boolean	If " <i>true</i> ", the resulting colorant values are interleaved and @ <i>BandOrdering</i> is ignored.
<i>MimeType</i> ? <a href="#">New in JDF 1.5</a>	string	@ <i>MimeType</i> identifies the MIME type associated with this output file format. For example " <i>application/pdf</i> ".
<i>AutomatedOverPrintParams</i> ?	element	Controls for overprint substitutions. Defaults to no automated overprint generation.
<i>Media</i> ? <a href="#">New in JDF 1.1</a> <a href="#">Deprecated in JDF 1.2</a>	refelement	This Resource provides a description of the physical media which will be marked. The physical characteristics of the media MAY affect decisions made during <b>Rendering</b> . In JDF 1.2 and beyond, a RIP SHALL obtain <b>Media</b> information from <b>InterpretingParams/Media</b> .
<i>ObjectResolution</i> * <a href="#">Modified in JDF 1.2</a>	element	Elements which define the resolutions to render the contents at. More than one Element MAY be used to specify different resolutions for different @ <i>SourceObjects</i> types. If no <i>ObjectResolution</i> is specified, the value is implied from the input data.
<i>TIFFFormatParams</i> ? <a href="#">New in JDF 1.5</a>	element	Parameters specific to conversion of rasters to TIFF files.

**8.130.1 Element: TIFFFormatParams**[New in JDF 1.2](#)**Table 8-266: TIFFFormatParams Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>ByteOrder</i> ?	enumeration	Byte order of the TIFF file. <b>Allowed values are:</b> <i>II</i> – Low byte first. <i>MM</i> – high byte first. <b>Note:</b> the identifier values have been selected to match the identifier with the same purpose within the TIFF file itself.

**Table 8-266: TIFFFormatParams Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Interleaving</i> ?= "1"	integer	How the components of each pixel are stored. The values are taken from TIFF tag 284— <i>PlanarConfiguration</i> : <b>Allowed values are:</b> 1 – “Chunky” format, which is pixel interleaved. 2 – “Planar” format, which is strip interleaved.
<i>RowsPerStrip</i> ?	integer	The number of image scan lines per strip, encoded in the TIFF file as <i>RowsPerStrip</i> . This Attribute is ignored if <i>@Segmentation!</i> = "Stripped". The default, when not known, is set by the processing system with the exception that when converting from <b>ByteMap</b> to TIFF, <b>ByteMap</b> / <i>BandHeight</i> is the default.
<i>Segmentation</i> ?	enumeration	How the image data are segmented. <b>Allowed values are:</b> <i>SingleStrip</i> – all data are included in one segment. This is encoded in the TIFF file by setting <i>@RowsPerStrip</i> to a number equal to or larger than the number of pixel rows in the image. <i>Stripped</i> – Data are segmented into strips. <i>Tiled</i> – Data are segmented into tiles.
<i>SeparationNameTag</i> ?= "270"	integer	When color separations are stored in individual TIFF files it is often useful to mark each with the name of the colorant that it represents, but there is no universally accepted way to do this. In order to avoid the need for explicit Partitioning, the tag to be used to encode the separation name (as a string) can be entered here as the TIFF tag number. If the same TIFF tag number is also supplied as a TIFFtag Subelement, then the TIFFtag Element takes priority over <i>@SeparationNameTag</i> . The tag SHOULD only be put in the resulting TIFF files if the name of the separation is known. The default of "270" is the "TIFF" ImageDescription tag.
<i>TileSize</i> ?	XYPair	Two integers. The X value provides width of tiles, and the Y value provides height of tiles. This Attribute is ignored if <i>@Segmentation</i> is not "Tiled".
<i>WhiteIsZero</i> ?= "true"	boolean	When writing monochrome or grayscale files, this flag indicates whether the data is to be written as "WhiteIsZero" or "BlackIsZero."
<i>TIFFEmbeddedFile</i> *	element	Files to be embedded within the created TIFF file. These might include an ICC profile, XMP data, etc.
<i>TIFFtag</i> *	element	Specific tag values for inclusion in the TIFF file.

The number of channels SHOULD be derived from the raster data to be converted.

When the **PhotometricInterpretation** tag = 5 and the **InkSet** tag = 2, it is strongly RECOMMENDED that the **NumberOfInks** and **InkNames** tags be completed—separation names MAY be obtained from the **ColorPool Resource ResourceSet[@Name="Color"]**.

Flate and JPEG compression in resulting TIFF files SHOULD use Compression = 8 and Compression = 7 respectively, as documented in [TIFFPS]. In particular, the JPEG encoding using Compression = 6, as described in [TIFF6] SHOULD NOT be used.

### 8.130.2 Element: TIFFtag

[New in JDF 1.2](#)

**Table 8-267: TIFFtag Element**

Name	Data Type	Description
<i>BinaryValue</i> ?	hexBinary	If the type of the tag is UNDEFINED, then <i>@BinaryValue</i> is used to encode the data
<i>IntegerValue</i> ?	IntegerList	If the type of the tag is BYTE, SHORT, LONG, SBYTE, SSHORT or SLONG, then <i>@IntegerValue</i> is used to encode that data
<i>NumberValue</i> ?	DoubleList	If the type of the tag is RATIONAL, SRATIONAL, FLOAT or DOUBLE, then <i>@NumberValue</i> is used to encode that data
<i>StringValue</i> ?	string	If the type of the tag is ASCII, then <i>@StringValue</i> is used to encode the data.
<i>TagNumber</i>	integer	Tag number of the specified tag (e.g., 270 (decimal) for ImageDescription).
<i>TagType</i>	integer	The type of the tag as defined in [TIFF6] (1 = BYTE, 2 = SHORT, etc.).

Exactly one of *@IntegerValue*, *@NumberValue*, *@StringValue* or *@BinaryValue* SHALL be present, depending on the type of the TIFF tag to be carried. TIFFtag Elements SHALL NOT be used for any tags related to the image data and its encoding (ImageWidth, Compression, etc.). TIFFtag Elements MAY include informational tags such as OPIProxy, ImageID, Copyright, DateTime, ImageDescription, etc.

### 8.130.3 Element: TIFFEmbeddedFile

[New in JDF 1.2](#)

**Table 8-268: TIFFEmbeddedFile Element**

Name	Data Type	Description
<i>TagNumber</i>	integer	Tag number of the specified tag (e.g., 34675 (decimal) for an ICC profile or 700 for XMP).
<i>TagType</i>	integer	The type of the tag as defined in [TIFF6]. This will usually be 1 (BYTE) or 7 (UNDEFINED).
<i>FileSpec</i>	refelement	Reference to the file to be embedded.

## 8.131 ResourceDefinitionParams

This set of parameters identifies how the **ResourceDefinition** Process is to operate. Specifically, these parameters define how default parameters of applications and the Input Resource are to be combined.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	
<b>Example Partition:</b>	
<b>Input of Processes:</b>	<b>ResourceDefinition</b>
<b>Output of Processes:</b>	

**Table 8-269: ResourceDefinitionParams Resource**

Name	Data Type	Description
<i>DefaultID</i> ? <small>Deprecated in JDF 1.1</small>	NMTOKEN	JDF ID of the default Resource. If missing, it is assumed that the file specified by <i>@DefaultJDF</i> contains only a JDF Resource Element, not a complete JDF.
<i>DefaultJDF</i> ?	URL	Link to a JDF <a href="#">Resource</a> that defines preset values.
<i>DefaultPriority</i> ?= "DefaultJDF"	enumeration	Defines whether preset values of the application or of the Resource specified in <i>@DefaultJDF</i> have priority.  <b>Allowed values are:</b> <i>Application</i> – The application default settings are used to fill the Resource. <i>DefaultJDF</i> – The settings specified in <i>@DefaultJDF</i> are applied.
<i>ResourceParam</i> * <small>New in JDF 1.1</small> <small>Modified in JDF 1.3</small>	element	Specification of the definition parameters of one individual Resource.

**8.131.1 Element: [ResourceParam](#)**[New in JDF 1.1](#)**Table 8-270: ResourceParam Element**

Name	Data Type	Description
<i>DefaultID</i> ?	NMTOKEN	<a href="#">Resource</a> /@ <i>ID</i> of the default Resource. If missing, it is assumed that the file specified by <i>@DefaultJDF</i> contains only a JDF Resource Element, not a complete JDF.
<i>DefaultJDF</i> ?	URL	Link to a JDF Resource that defines preset values. Defaults to the <i>@DefaultJDF</i> specified in <a href="#">ResourceDefinitionParams</a> .
<i>DefaultPriority</i> ?	enumeration	Defines whether preset values of the application or of the Resource specified in <i>@DefaultJDF</i> have priority.  <b>Default value is from:</b> parent's <a href="#">ResourceDefinitionParams</a> / <i>@DefaultPriority</i> .  <b>Allowed values are:</b> <i>Application</i> <i>DefaultJDF</i>

**8.132 [RingBindingParams](#)**This Resource describes the details of the [RingBinding](#) Process.**Resource Properties****Resource Class:**[Parameter](#)**Resource referenced by:**[Parameter](#)**Intent Pairing:**[BindingIntent](#)**Example Partition:**[Parameter](#)**Input of Processes:**[RingBinding](#)**Output of Processes:**[Parameter](#)

Table 8-271: RingBindingParams Resource (Sheet 1 of 2)

Name	Data Type	Description
<i>BinderColor</i> ?	NamedColor	Color of the ring binder.
<i>BinderColorDetails</i> ? <a href="#">New in JDF 1.4</a>	string	A more specific, specialized or site-defined name for the color. If <i>@BinderColorDetails</i> is supplied, <i>@BinderColor</i> SHOULD also be supplied.
<i>BinderMaterial</i> ?	NMTOKEN	The following describe <b>RingBinding</b> binder materials used. <b>Values include:</b> <i>Cardboard</i> – Cardboard with no covering. <i>ClothCovered</i> – Cardboard with cloth covering. <i>PVC</i> – Solid PVC. <i>PVCCovered</i> – Cardboard with PVC covering.
<i>BinderName</i> ?	string	The name of the binder manufacturer and the name of the specific item.
<i>RingDiameter</i> ?	double	Diameter of the rings, in points.
<i>RingMechanic</i> ?	boolean	If "true", a hand lever is available for opening.
<i>RingShape</i> ?	NMTOKEN	<b>RingBinding</b> values: <b>Values include:</b> <i>Round</i> <i>Oval</i> <i>D-shape</i> <i>SlantD</i>
<i>RingSystem</i> ? <a href="#">Deprecated in JDF 1.1</a>	enumeration	Ring binding systems <b>Allowed values are:</b> <i>2HoleEuro</i> – In Europe <i>3HoleUS</i> – In North America <i>4HoleEuro</i> – In Europe <b>Deprecation note:</b> starting with JDF 1.2, use the value implied by <b>HoleMakingParams/@HoleType</b> .
<i>RivetsExposed</i> ?	boolean	The following <b>RingBinding</b> choice describes mounting of ring mechanism in binder case. If "true", the heads of the rivets are visible on the exterior of the binder. If "false", the binder covering material covers the rivet heads.
<i>SpineColor</i> ?	NamedColor	Color of the binders spine.
<i>SpineColorDetails</i> ? <a href="#">New in JDF 1.4</a>	string	A more specific, specialized or site-defined name for the color. If <i>@SpineColorDetails</i> is supplied, <i>@SpineColor</i> SHOULD also be supplied.
<i>SpineWidth</i> ?	double	The spine width is determined by the final height of the block of Sheets to be bound.

**Table 8-271: RingBindingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<b>ViewBinder ?</b>	NMTOKEN	For <b>RingBinding</b> clear vinyl outer-wrap types on top of a colored base wrap:  <b>Values include:</b> <i>Embedded</i> – Printed material is embedded by sealing between the colored and clear vinyl layers during the binder manufacturing. <i>Pocket</i> – Binder is designed so that printed material can be inserted between the color and clear vinyl layers after the binder is manufactured.
<b>HoleMakingParams ?</b> <b>HoleMakingParamsRef</b> ?New in JDF 1.2	refelement+ DREF	Details of the holes in <b>RingBinding</b> .

## 8.133 RollStand

New in JDF 1.2

### Resource Properties

Resource Class:	Handling
Resource referenced by:	
Example Partition:	
Input of Processes:	<b>PrintRolling</b>
Output of Processes:	

**Table 8-272: RollStand Resource**

Name	Data Type	Description
<b>MaxDiameter ?</b>	double	Maximal allowed diameter of the input component print Roll.
<b>MaxWidth ?</b>	double	Maximal allowed width of the rolled input components.
<b>Device ?DeviceRef?</b>	refelement+ DREF	Further details of the <b>RollStand</b> .

## 8.134 RunList

**RunList** Resources describe an ordered set of **LayoutElement** or **ByteMap** Elements. Ordering and structure are defined using the generic Partitioning mechanisms as described in Section 3.15.5, “Description of Partitioned Resources” .

**RunList** Resources are used whenever an ordered set of page descriptions Elements are specified. Depending on the Process usage of a **RunList**, only certain types of **LayoutElement** MAY be valid. For example, a pre-RIP **Imposition** Process requires **LayoutElement** Elements whose *@ElementType* is either “*Page*” or “*Document*”, whereas a post-RIP **Imposition** Process requires **ByteMap** Elements. The usage is detailed in the descriptions of the Processes that use the **RunList** Resource. **RunList** Resources allow structuring of multiple *Pages* into *Documents*. Multiple *Documents* that have a joint context MAY be grouped into *Sets*.

In essence, a **RunList** is a virtual document or set of documents. It allows a document to either be physically spread over multiple files, or multiple documents to be contained within a single file (e.g., PPML, PDF/VT). It retains the same properties as the original documents (e.g., the pages of a document that is described by a **RunList** are ordered).

**Note: RunList** Elements SHOULD NOT be partitioned by `@DocIndex`, `@DocRunIndex`, `@DocSheetIndex`, `@RunIndex`, `@SetDocIndex`, `@SetIndex`, `@SetRunIndex` or `@SetSheetIndex` unless `@Automation = "Dynamic"`.

A **RunList** defines one or more printable logical documents that MAY be defined in one or more external physical PDL or image files. It retains the properties of the original documents (e.g., the pages of a set of documents with ordered pages that is described by a **RunList** are ordered).

### 8.134.1 Referencing pages of a RunList from a Layout

The **Layout** resource in **Imposition** process references individual pages in a **RunList** by index. The index SHALL be calculated in the context of the current document and set of a **RunList**.

### 8.134.2 Filtering parts of a RunList

The partition keys: `Part@DocIndex`, `Part@RunIndex`, `Part@SetIndex` and `Part@SheetIndex` are provided to select subsets of a **RunList** without modifying the indexes of selected pages for purposes of calculating `@Ord` values in imposition. These keys SHALL be provided in the **NodeInfo** of the process that requires filtering, e.g. for selective reprint of a set of pages, sheets, documents or document sets. These keys SHOULD NOT be present in a **RunList** Resource unless `@Automation="Dynamic"`.

The following example illustrates how the second Page of RunList\_000004.1 and the first page of RunList\_000004.2 are mapped to the second and third position of a **RunList**.

#### Example 8-44: Filtering Parts of a RunList

```
<XJDF>
  <ResourceSet ID="NodeInfo_000003" Name="NodeInfo" Usage="Input">
    <Resource ID="NodeInfo_000003.1">
      <Part RunIndex="1 2"/>
      <NodeInfo/>
    </Resource>
  </ResourceSet>
  <ResourceSet ID="RunList_000004" Name="RunList" Usage="Input">
    <Resource ID="RunList_000004.1">
      <Part Run="r1"/>
      <RunList NPage="2"/>
    </Resource>
    <Resource ID="RunList_000004.2">
      <Part Run="r2"/>
      <RunList NPage="8"/>
    </Resource>
  </ResourceSet>
</XJDF>
```

## Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

**ArtDeliveryIntent/ArtDelivery**, **DigitalMedia**, **Layout/PageCondition**,  
**Layout/SheetCondition**, **PreflightReport**

**Example Partition:**

`"PartVersion", "Run", "RunPage", "RunSet", "Separation",  
"WebProduct"`

**Input of Processes:**

**AssetListCreation**, **ColorCorrection**, **ColorSpaceConversion**,  
**ContoneCalibration**, **CylinderLayoutPreparation**,  
**DigitalDelivery**, **DigitalPrinting**, **ImageReplacement**,  
**ImageSetting**, **Imposition**, **Interpreting**,  
**LayoutElementProduction**, **LayoutPreparation**, **LayoutShifting**,

**PageAssigning, PDFToPSConversion, PDLCreation, Preflight, PreviewGeneration, PSToPDFConversion, RasterReading, Rendering, Screening, Separation, ShapeDefProduction, Stripping, Tiling, Trapping**

**Output of Processes:**

**AssetListCreation, ColorCorrection, ColorSpaceConversion, ContoneCalibration, DigitalDelivery, ImageReplacement, Imposition, Interpreting, LayoutElementProduction, LayoutPreparation, LayoutShifting, PageAssigning, PDFToPSConversion, PDLCreation, PSToPDFConversion, RasterReading, Rendering, Scanning, Screening, Separation, Stripping, Tiling, Trapping**

**Table 8-273: RunList Resource (Sheet 1 of 9)**

Name	Data Type	Description
<i>Automation ?</i> <a href="#">New in JDF 1.5</a>	enumeration	<p>Identifies dynamic and static <b>RunList</b> Elements. The Structure of <i>@PartIDKey</i> generation for automated imposition is defined in detail in: Section 6.4.18.3, Execution Model for Automated Imposition. This structure SHALL be retained in the <b>RunList</b> description.</p> <p><b>Allowed values are:</b></p> <p><i>Static</i> – The <b>RunList</b> is static and completely qualified.</p> <p><i>Dynamic</i> – The <b>RunList</b> is a template. If <i>@PipeID</i> is also present, Details are specified in <b>JMF XJMF</b> Pipe messages. See <a href="#">Section 4.3.3.1, Dynamic Pipes</a><a href="#">Section 11.3.4.1, Dynamic Pipes</a>.</p>
<i>ClipPath ?</i> <a href="#">Modified in JDF 1.2</a>	PDFPath	<p>Path that describes the outline of the <b>LayoutElementRunList</b> in the coordinate space of the <b>LayoutElementRunList</b> of <i>@ElementType = "Page"</i> that results from the <b>LayoutElementProduction</b> Process. The default case is that there is no clip path. <i>@ClipPath</i>, <i>@SourceClipBox</i>, <b>PlacedObject PlacedObject</b>/<i>@SourceClipPath</i> and <b>PlacedObject PlacedObject</b>/<i>@ClipBox</i> if supplied, SHALL be concatenated.</p>

**Table 8-273: RunList Resource (Sheet 2 of 9)**

Name	Data Type	Description
<i>ComponentGranularity = "Document"</i> <a href="#">New in JDF 1.2</a> <a href="#">Deprecated in JDF 1.4</a>	enumeration	<p>Specifies which grouping of input <b>LayoutElement</b> PDL pages define the equivalent of an individual output <b>Component</b> instance for processing in a multi-document print Job (e.g., in a variable data Job). For instance, all pages defined between end-of-set markers would be stitched in a Combined Process Node with <b>DigitalPrinting</b> and <b>Stitching</b> Processes if <i>@ComponentGranularity = "Set"</i>.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>All</i> – The complete <b>RunList</b>, regardless of document or set breaks defines a new <b>Component</b>.</li> <li><i>BundleItem</i> – An implicit PDL-defined document break or an explicit <i>@EndOfBundleItem</i> defines a new <b>Component</b>.</li> <li><i>Document</i> – An implicit PDL-defined document break or an explicit <i>@EndOfDocument</i> defines a new <b>Component</b>.</li> <li><i>Page</i> – Each page in the <b>RunList</b> defines a new <b>Component</b>.</li> <li><i>Set</i> – Each set as defined by an implicit PDL-defined set break or an explicit <i>@EndOfSet</i> defines a new <b>Component</b>.</li> </ul>
<b>ContentRefs</b> ? <a href="#">New in JDF 1.4</a>	IDREFS	Ordered list of IDs of <b>ContentData Content</b> Elements in the referenced <b>ContentData</b> . <b>ContentData Content</b> elements provide Metadata related to the product to be published.
<i>Directory</i> ?	URL	Defines a directory where the files that are associated with this <b>RunList</b> are to be copied to or from. If <i>@Directory</i> is specified, it SHALL be an Absolute URI [RFC3986] that implicitly also specifies a Base URI which is used to resolve any relative URL of <b>RunList</b> . See Appendix K, “Resolving RunList/@Directory and FileSpec/@URL URI References” on page 1223 and [FileURL] for examples.

**Table 8-273: RunList Resource (Sheet 3 of 9)**

Name	Data Type	Description
<i>DocCopies = "1"</i> <u>New in JDF 1.1</u>	integer	<p>Number of Instance Document copies that this <b>RunList</b> represents. Specifying <i>@DocCopies</i> is equivalent to repeating the sequence of <b>RunList</b> leaves between <i>@EndOfDocument = "true"</i> for a total of <i>@DocCopies</i> times.</p> <p>If <i>@DocCopies</i> is &gt; 1 for an automated imposition job, the imposition engine places the equivalent <i>@DocCopies</i> Attribute into the <b>RunList</b> (<i>Surface</i>) Resource generated by the <b>Imposition</b> Process. An exception is cut-and-stack imposition, where <i>@DocCopies</i> is applied by the imposition engine itself, and not placed into the <b>RunList</b> (<i>Surface</i>). </p> <p><b>Note:</b> It is illegal to specify <i>@DocCopies</i> with different values of various leaves of a <b>RunList</b> representing the same Instance Document.</p>
<i>DocNames ?</i>	NameRangeList	A list of named documents in a multi-document file that supports named access to individual documents. The <i>@DocNames</i> defaults to all documents. If <i>@DocNames</i> occurs in the <b>RunList</b> , <i>@Docs</i> is ignored if it is also present.
<i>Docs ?</i>	NameRangeList <sub>RegExp</sub>	Zero-based list of document indices in a multi-document file specified by the <b>LayoutElementRunList</b> Resource.
<i>ElementType ?</i> <u>Modified in JDF 1.3</u>	enumeration	<p>Describes the content type for this <b>LayoutElementRunList</b>.</p> <p><b>Allowed values are from:</b> Table 8-276, “ElementType Attribute Values” on page 883.</p>
<i>EndOfBundleItem ?</i> <u>New in JDF 1.2</u>	boolean	<p>If “<i>true</i>”, the last page in the <b>RunList</b> is the last page of a BundleItem. The implied default value of <i>@EndOfBundleItem = "false"</i>, except for the last <b>RunList</b> Partition, which always has an implied default value of <i>@EndOfBundleItem = "true"</i>.</p> <p><b>Modification note:</b> starting with JDF 1.4, this Attribute no longer depends on the deprecated <i>@ComponentGranularity</i>.</p>
<i>EndOfDocument ?</i>	boolean	If “ <i>true</i> ”, the last finished page in the <b>RunList</b> is the last page of an Instance Document. The precise handling of Instance Document changes is defined in the <b>InsertSheet</b> Resource. If the <b>RunList</b> references a PDL that supports internal Instance Documents, <i>@EndOfDocument</i> MAY be implied from the PDL. The implied default value of <i>@EndOfDocument = "false"</i> , except for the last <b>RunList</b> Partition leaf, which always has an implied default value of <i>@EndOfDocument = "true"</i> .

**Table 8-273: RunList Resource (Sheet 4 of 9)**

Name	Data Type	Description
<i>EndOfSet</i> ? <a href="#">New in JDF 1.1</a>	boolean	If "true", the last finished page in the <b>RunList</b> is the last page of a set of Instance Documents. The precise handling of Instance Document boundaries is defined in the <b>InsertSheet</b> Resource. If the <b>RunList</b> references a PDL that supports internal sets, <i>@EndOfSet</i> MAY be implied from the PDL. The implied default value of <i>@EndOfSet</i> = "false", except for the last <b>RunList</b> Partition leaf, which always has an implied default value of <i>@EndOfSet</i> = "true".
<i>FinishedPages</i> ?	integer	Number of finished page surfaces that one PDL page of this <b>RunList</b> refers to. This attribute SHOULD be used when cover spreads or imposed sheets that contain more than one reader page per PDL page are provided.
<i>FirstPage</i> ?	integer	First finished page in the document that is described by this <b>RunList</b> . This Attribute is generally used to describe preseparated files.
<i>IgnoreContext</i> ? <a href="#">New in JDF 1.4</a>	enumerations	Specifies the <i>@PartIDKeys</i> values that do not affect the context in which this <b>RunList</b> is processed. Typically used when the <b>ResourceLink Resource</b> is Partitioned to re-order a content <b>RunList</b> . For the keys specified in this list, processing the <b>RunList</b> SHALL operate as if the identified parts represent the entire <b>RunList</b> . If Partition Keys are not specified, processing the <b>RunList</b> SHALL operate as if the entire <b>RunList</b> Resource was processed, and all results removed except for those identified by the <b>ResourceLink Resource</b> (e.g., for reprinting or recreating sheets with processing order-sensitive content - <i>@SheetIndex</i> has whatever value it would have had if sheets were generated using the entire, original <b>RunList</b> ). See example just below this table.
<i>IsPage</i> ?= "true"	boolean	If "true", the individual <b>RunList</b> Resource defines one or more page slots (e.g., for filling <b>PlacedObject</b> <b>PlacedObject</b> Elements). If "false", the first parent Partitioned <b>RunList</b> Resource with <i>@IsPage</i> = "true" defines the page level. In general, <i>@IsPage</i> = "false" for separations of a preseparated <b>RunList</b> .
<i>LogicalPage</i> ? <a href="#">Modified in JDF 1.1</a>	integer	The logical page number of the first finished page in a <b>RunList</b> . This Attribute MAY be used to retain logical page indices when a Partitioned <b>RunList</b> is spawned. It defaults to "1" plus the last finished page of the previous sibling <b>RunList</b> Partition. If the <b>RunList</b> Resource is the first Partition, <i>@LogicalPage</i> defaults to "0". Note that is an error to specify <i>@LogicalPage</i> to be less than the number of previously defined logical pages in the same Partition, since this defines overlapping finished pages within the <b>RunList</b> Partition.

**Table 8-273: RunList Resource (Sheet 5 of 9)**

Name	Data Type	Description
<i>NDoc</i> ?  <a href="#">New in JDF 1.1</a> <a href="#">Deprecated in JDF 1.2</a>	integer	Total number of Instance Documents that are defined by the <b>RunList</b> . If <i>@NDoc</i> is not specified, it defaults to all Instance Documents in the Partitioned <b>RunList</b> Elements that make up the <b>RunList</b> .  In JDF 1.2 and beyond, only <i>@Docs</i> is supported.
<i>NPage</i> ?	integer	Total number of pages (placed object slots or <b>RunList</b> Elements with <i>@IsPage</i> = "true") that are defined by the <b>RunList</b> . If <i>@NPage</i> is not specified, it defaults to all finished pages in the Partitioned <b>RunList</b> Elements that make up the <b>RunList</b> . If the <b>RunList</b> describes multiple Instance Documents or Document Sets, <i>@NPage</i> refers to the total number of finished pages in all Instance Documents and sets. A <b>RunList</b> with <i>@NPage</i> specified always refers to <i>@NPage</i> pages, regardless of the number of pages of the referenced PDL. If <i>@NPage</i> is not specified and no content is referenced, the <b>RunList</b> contains exactly one page.
<i>NSet</i> ?  <a href="#">New in JDF 1.1</a> <a href="#">Deprecated in JDF 1.2</a>	integer	Total number of Instance Document Sets that are defined by the <b>RunList</b> . If <i>@NSet</i> is not specified, it defaults to all Instance Document Sets in the Partitioned <b>RunList</b> Elements that make up the <b>RunList</b> .  In JDF 1.2 and beyond, only <i>@Sets</i> is supported.
<i>PageCopies</i> = "1"  <a href="#">New in JDF 1.1</a>	integer	Number of finished page copies that this <b>RunList</b> represents. Specifying <i>@PageCopies</i> is equivalent to repeating the <b>RunList</b> leaves representing each page for a total of <i>@PageCopies</i> times (e.g., a multiple represented by the value of <i>@PageCopies</i> ). Note that pages specified by <i>@PageCopies</i> are always assumed uncolated when calculating the index in the logical <b>RunList</b> (e.g., <i>@PageCopies</i> = "2" would result in a logical page sequence of 0 0 1 1 2 2, etc.).
<i>PageListIndex</i> ?  <a href="#">New in JDF 1.2</a>	IntegerRangeList	List of the indices of the <b>PageData</b> Elements of the <b>PageList</b> specified in this <b>RunList</b> . If not specified, the complete <i>@PageListIndex</i> specified in this <b>RunList</b> is applied.
<i>PageNames</i> ?	NameRangeList	A list of named pages in a multi-page file that supports named access to individual finished pages. The <i>@PageNames</i> defaults to all pages. If <i>@PageNames</i> is specified, then <i>@FirstPage</i> , <i>@NPage</i> , <i>@SkipPage</i> and <i>@Pages</i> SHALL all be ignored if any is specified.

**Table 8-273: RunList Resource (Sheet 6 of 9)**

Name	Data Type	Description
<i>Pages</i> ?  <a href="#">New in JDF 1.1</a>	<a href="#">IntegerRangeList</a> <a href="#">IntegerRange</a>	Zero-based list of indices in the documents specified by the <b>LayoutElementRunList</b> Resource and the <b>@Docs</b> , <b>@DocNames</b> , <b>@Sets</b> and <b>@SetNames</b> Attributes. The <b>@Pages</b> need not be in document order. If <b>@Pages</b> is specified, <b>@FirstPage</b> and <b>@SkipPage</b> SHALL be ignored. If none of <b>@Pages</b> , <b>@FirstPage</b> , <b>@NPage</b> , <b>@PageNames</b> or <b>@SkipPage</b> is specified, all pages (i.e., "0 ~ -1") referred to by the <b>RunList</b> are selected.  <b>Modification note:</b> before JDF 1.4, <b>LayoutElement</b> appeared in place of <b>RunList</b> in the preceding sentence.
<i>RunTag</i> ?  <a href="#">New in JDF 1.1</a>	NMTOKEN	Tag of a Partition of a <b>Resource</b> an <b>Asset</b> other than the <b>RunList</b> which is Partitioned by <b>@RunTags</b> . The Partition matches if any of the entries in the <b>@RunTags</b> list matches <b>@RunTag</b> . Multiple entries in a <b>RunList</b> MAY have the same <b>@RunTag</b> . If the <b>RunList</b> references a PDL that supports internal labels, <b>@RunTag</b> MAY be implied from the PDL.
<i>SetCopies</i> = "1"  <a href="#">New in JDF 1.1</a>	integer	Number of Instance Document Set copies that this <b>RunList</b> represents. Specifying <b>@SetCopies</b> is equivalent to repeating the sequence of <b>RunList</b> leaves between <b>@EndOfSet</b> = "true" for a total of <b>@SetCopies</b> times.  If <b>@SetCopies</b> is > 1 for an automated imposition Job, the imposition engine places the equivalent <b>@SetCopies</b> Attribute into the <b>RunList</b> ( <i>Surface</i> ) Resource generated by the <b>Imposition</b> Process. An exception is cut-and-stack imposition, where <b>@SetCopies</b> is applied by the imposition engine itself, and not placed into the <b>RunList</b> ( <i>Surface</i> ).  <b>Note:</b> it is illegal to specify <b>@SetCopies</b> with different values of various leaves of a <b>RunList</b> representing the same Instance Document.
<i>SetNames</i> ?  <a href="#">New in JDF 1.1</a>	NameRangeList	A list of named Document Sets in a multi-Document Set file that supports named access to individual documents. The <b>@SetNames</b> defaults to all Document Sets specified by <b>@Sets</b> . If <b>@SetNames</b> occurs in the <b>RunList</b> , <b>@Sets</b> is ignored if it is also present. <b>@SetNames</b> is only valid if <b>LayoutElement</b> / <b>@ElementType</b> = "MultiSet".
<i>Sets</i> ?  <a href="#">New in JDF 1.1</a>	<a href="#">IntegerRangeList</a> <a href="#">IntegerRange</a>	Zero-based list of Document Set indices in a multi-Document Sets file specified by the <b>LayoutElementRunList</b> Resource. If not present, all Document Sets are selected.  <b>@Sets</b> is only valid if <b>LayoutElementRunList</b> / <b>@ElementType</b> = "MultiSet".

**Table 8-273: RunList Resource (Sheet 7 of 9)**

Name	Data Type	Description
<i>SheetSides</i> ? <a href="#">New in JDF 1.4</a>	enumeration	<p>Specifies the binding of surfaces referenced by this <b>RunList</b> to sheets. SHALL only be specified in <b>RunList</b> (<i>Surface</i>).</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Front</i> – all surfaces referenced from a <b>RunList</b> leaf Partition describe one or more front sides of successive sheets, with implicit back blank sides.</li> <li><i>Back</i> – all surfaces referenced from a <b>RunList</b> leaf Partition describe one or more back sides of successive sheets, with implicit front blank sides.</li> <li><i>FrontBack</i> – all surfaces referenced from a <b>RunList</b> leaf Partition describe a succession of sheets, where for each sheet a front is followed by a back surface.</li> <li><i>BackFront</i> – all surfaces referenced from a <b>RunList</b> leaf Partition describe a succession of sheets , where for each sheet a back is followed by a front surface.</li> </ul>
<i>SkipPage</i> ?	integer	Used when the <b>RunList</b> comprises every Nth page of the file. <i>@SkipPage</i> indicates the number of finished pages to be skipped between each of the pages that comprise the <b>RunList</b> Resource. This is generally used to describe preseparated files, or to select only even or odd pages. Note that <i>@SkipPage</i> is, therefore, 3 (4 Separations -> skip 3) in a CMYK separated file.
<i>Sorted</i> ?	boolean	Specifies whether the Elements in the <b>RunList</b> are sorted in the document reader order.
<i>SourceBleedBox</i> ? <a href="#">Modified in JDF 1.2</a>	rectangle	A rectangle that describes the bleed area of the element to be included. This rectangle is expressed in the source coordinate system of the object.
<i>SourceClipBox</i> ? <a href="#">Modified in JDF 1.2</a>	rectangle	A rectangle that defines the region of the element to be included. This rectangle is expressed in the source coordinate system of the object.
<i>SourceMediaBox</i> ? <a href="#">New in JDF 1.4</a>	rectangle	The MediaBox of the <b>LayoutElementRunList</b> .
<i>SourceTrimBox</i> ? <a href="#">Modified in JDF 1.2</a>	rectangle	A rectangle that describes the intended trimmed size of the element to be included. This rectangle is expressed in the source coordinate system of the object.
<b>ByteMap</b> ? <b>ByteMap</b> ? <a href="#">Modified in JDF 1.2</a>	refelement	Describes the page or stream of pages. At most one of <b>ByteMap</b> , <b>InterpretedPDLData</b> or <b>LayoutElementFileSpecRef</b> SHALL be specified. If none of <b>ByteMap</b> , <b>InterpretedPDLData</b> or <b>LayoutElementFileSpecRef</b> are specified, the <b>RunList</b> specifies empty content.

**Table 8-273: RunList Resource (Sheet 8 of 9)**

Name	Data Type	Description
Disposition ?  <a href="#">Deprecated in JDF 1.4</a>	element	Indicates what the Device SHOULD do with the file when the Process that uses this Resource completes. If not specified, the file specified by this <b>RunList</b> is retained indefinitely. <b>RunList/LayoutElementRunList/FileSpec/Disposition</b> takes precedence over <b>RunList/Disposition</b> . <b>Modification note:</b> starting with JDF 1.4, “this <b>RunList</b> ” above replaces “this <b>FileSpec</b> ”.
DynamicInput *  <a href="#">Deprecated in JDF 1.4</a>	element	Replacement text for a <b>DynamicField</b> Element. This information defines the contents of a dynamic mark on the automated page layout (see Section 8.87.17.1, “Dynamic Marks”). The mark SHALL be filled using information from the document <b>RunList</b> (e.g., the bar code of the recipient). This information varies with the document content. <b>DynamicInput</b> Elements have one OPTIONAL <b>@Name</b> Attribute that, when linked to the <b>@ReplaceField</b> Attribute of the <b>DynamicField</b> Element, defines the string that is to be replaced. <b>Deprecation note:</b> starting with JDF 1.4, metadata should be extracted from the PDL itself or from other sources, but not from the <b>RunList</b> . <b>DynamicInput</b> was designed to associate metadata with <b>RunList</b> Elements.
FileSpec ?  <a href="#">Modified in JDF 1.2</a>	refelementelement	URL plus metadata about the physical characteristics of a file representing the <b>LayoutElementRunList</b> . If not present, then only metadata is known but not the content file.
FileSpec (Font Image PDL) *  	refelementelement	Reference to dependent references such as fonts, external images, etc. <b>FileSpec/@ResourceUsage</b> SHOULD be one of the following values: <i>Font</i> – The file references a font. <i>Image</i> – The file references Image data. <i>PDL</i> – The file references a page definition such as a PDF.
InsertSheet *  	element	Describes how Sheets and Surfaces are to be completed and OPTIONAL media which how media MAY be inserted at the beginning or end of this <b>RunList</b> Resource.
InterpretedPDLData ?  <a href="#">New in JDF 1.2</a>	refelementelement	Represents the results of the PDL interpretation Process. At most one of <b>ByteMap</b> , <b>InterpretedPDLData</b> or <b>LayoutElement</b> SHALL be specified. If none of <b>ByteMap</b> , <b>InterpretedPDLData</b> or <b>LayoutElement</b> are specified, the <b>RunList</b> specifies empty content.
LayoutElement ?  <a href="#">Modified in JDF 1.2</a>	refelementelement	Describes the document, finished page or image. At most one of <b>ByteMap</b> , <b>InterpretedPDLData</b> or <b>LayoutElement</b> SHALL be specified. If none of <b>ByteMap</b> , <b>InterpretedPDLData</b> or <b>LayoutElement</b> are specified, the <b>RunList</b> specifies empty content.

**Table 8-273: RunList Resource (Sheet 9 of 9)**

Name	Data Type	Description
MetadataMap *	element	Describes the mapping of Metadata in a <b>RunList</b> to <b>@PartIDKeys</b> .  New in JDF 1.4
<b>PageList</b> ? <b>PageListRef</b> ?	refelementIDREF	Specification of page metadata for pages described by this <b>RunList</b> .

### 8.134.3 Reordering the Processing of Resources

Resource Partitioning may also be used to reorder the processing order of content described by a **RunList**. This is done by using the **RunList/@IgnoreContext** Attribute, which specifies which **Part** Element Partition Keys' Job context should be ignored during processing. For more information and an example of this, see **RunList/@IgnoreContext** in Section 8.134, “RunList” on page 871 and following the **RunList** table, see Example 10-5, “RunList/MetadataMap” on page 1077.

#### Example 8-45: Marks and Reordering of Content using RunList/@IgnoreContext

New in JDF 1.4

Assume that a VDP job consists of sets where each set contains a Cover Letter, Brochure, and Postcard document types. Production needs all of each document type for all sets printed first, and the imposition includes dynamic marks where some of the marking uses **@SheetIndex**. The **RunListLink** parameterizes the processing such that all Cover Letter sheets for all sets are processed first, followed by the Brochure sheets for all sets, and finally, the Postcard sheets for all sets. The **RunList** then specifies **@IgnoreContext = "SheetIndex"**, which forces the **@SheetIndex** to be calculated in the order in which sheets are produced by the processing of the reordered “virtual” **RunList**.

TBD 2.x Example.

```
<ResourcePool>
  <RunList Class="Parameter" ID="MyVDPRunList" Status="Available"
    PartIDKeys="DocTags" IgnoreContext="SheetIndex" >
    <!-- additional attributes and elements -->
    <RunList DocTags="CoverLetter"/>
    <RunList DocTags="Brochure"/>
    <RunList DocTags="Postcard"/>
  </RunList>
</ResourcePool>
<ResourceLinkPool>
  <RunListLink Usage="Input" rRef="MyVDPRunList" >
    <Part DocTags="CoverLetter"/>
    <Part DocTags="Brochure"/>
    <Part DocTags="Postcard"/>
  </RunListLink>
</ResourceLinkPool>
```

To enable later reprinting of part of the **RunList**, the **RunList** then might also specify a **MetadataMap** Element that extracts the value of a RecordNumber metadata key and assigns the value to **@Metadata0**. Subsequently, if record # 12 needs reprinting, the **RunListLink** can be modified to appear as:

TBD 2.x Example.

```
<RunListLink Usage="Input" rRef="MyVDPRunList" ProcessUsage="Document">
  <Part DocTags="CoverLetter" Metadata0="12"/>
  <Part DocTags="Brochure" Metadata0="12"/>
  <Part DocTags="Postcard" Metadata0="12"/>
</RunListLink>
```

#### 8.134.4 Element: **ByteMap**

A **ByteMap** represents a raster of image data. This data MAY have multiple bits per pixel, MAY represent a varying set of color planes, and MAY be interleaved. A Bitmap is a special case of a **ByteMap** in which each pixel is represented by a single bit per color.

**Table 8-274: ByteMap Element**

Name	Data Type	Description
<i>BandOrdering</i> ?	enumeration	<p>Identifies the precedence given when ordering the produced bands. <i>@BandOrdering</i> SHALL be specified for non-interleaved data and SHALL be ignored for interleaved data if specified.</p> <p><b>Allowed values</b> are:</p> <ul style="list-style-type: none"> <li><i>BandMajor</i> – The position of the bands on the page is prioritized over the color.</li> <li><i>ColorMajor</i> – All bands of a single color are played in order before progressing to the next plane. This is only possible with non-interleaved data.</li> </ul>
<i>ElementType</i> ?	enumeration	<p><b>Allowed values are from:</b> Table 8-179, “ElementType Attribute Values” on page 753.</p> <p><b>Note:</b> values are the same as <b>LayoutElement@ElementType</b>.</p>
<i>FrameHeight</i> ?	integer	Height of the overall image that MAY be broken into multiple bands.
<i>FrameWidth</i> ?	integer	Width of overall image that MAY be broken into multiple columns.
<i>Halftoned</i> ?	boolean	Indicates whether or not the data has been halftoned.
<i>Interleaved</i> ?	boolean	If “true”, the data are interleaved or chunky. Otherwise the data are non-interleaved or planar.
<i>PixelColorants</i> ?	NMTOCKENS	Ordered list of separation names containing information about which colorants are represented.
<i>PixelDepth</i> ?	integer	Number of bits per pixel for each colorant.
<i>PixelSkip</i> ?	integer	Number of bits to skip between pixels of interleaved data.
<i>RasterFileLocationRef</i> ?	IDREF	A <b>FileSpec</b> pointing to a location where the raster is stored or is to be stored shortly
<i>Resolution</i> ?	XYPair	Output resolution.
<i>Band</i> ?	element	Description of the structure of the bands containing raster data. Multiple bands MAY be referenced by partitioning the parent <b>RunList</b> .

#### 8.134.5 Element: **Band**

**Table 8-275: Band Element**

Name	Data Type	Description
<i>Height</i> ?	integer	Height in pixels of the band.
<i>WasMarked</i> ?	boolean	Indicates whether any rendering marks were made in this band. This Attribute allows a band to be skipped if no marks were made in the band.
<i>Width</i> ?	integer	Width in pixels of the band

### 8.134.6 Element: **DynamicInput**

Deprecated in JDF 1.4

See Section P.6.21.1, “DynamicInput” on page 1364 for details of this deprecated Parameter subelement.

#### — Attribute: **ElementType**

**Table 8-276: ElementType Attribute Values**

Value	Description
<i>Auxiliary</i>	Any type of file that is needed to complete a layout but not explicitly displayed (e.g., ICC profiles or fonts).
<i>Barcode</i>	A barcode.
<i>Composed</i>	Combination of elements that define an element that is not bound to a document page.
<i>Document</i>	An ordered set of one or more pages.
<i>Graphic</i>	Line art.
<i>IdentificationField</i>	A general identification field excluding bar codes.
<i>Image</i>	Bitmap image.
<i>MultiDocument</i>	An ordered set of one or more Documents including document breaks (e.g., PPML, PPML/VDX).
<i>MultiSet</i>	An ordered set of one or more document sets, including document set breaks, document breaks and sub document breaks (e.g., PPML, PPML/VDX, ISO 16612-2 PDF/VT)
<i>Page</i>	Representation of one document page.
<i>Reservation</i>	Empty element. Content for this area of the page might be provided by a subsequent Process.
<i>Surface</i>	Representation of an imposed surface.
<i>Text</i>	Formatted or unformatted text.
<i>Tile</i>	Representation of the contents of one tile.
<i>Unknown</i>	
<u>Deprecated in JDF 1.2</u>	

### Example 8-46: RunList: Unstructured Single-File RunList

The following five examples illustrate how a **RunList** can be structured using Partitioning mechanisms. Note that the Partitioning of a **RunList** often generates the values necessary to evaluate the Partitioning of other Resources (e.g., the **@RunIndex** into the **RunList**). Thus, the order in which the **RunList** Elements appear in the XML document is significant. Note that the **@Run** Partition Key has a string value, which MAY be non-numeric. Below is an example of simple unstructured single-file **RunList**. This example specifies all pages contained in “/in/colortest.pdf”.

TBD 2.x Example.

```
<RunList Class="Parameter" ID="Link0003" Pages="0 ~ -1" status="Available">
  <LayoutElement>
    <FileSpec URL="File:///in/colortest.pdf"/>
  </LayoutElement>
</RunList>
```

**Example 8-47: RunList: Multi-File Unseparated RunList**

Example of simple multi-file unseparated **RunList** using **RunList/@Directory**. This example specifies all pages contained in File1.pdf and File2.pdf, which are located in the directory "///Dir/" that is specified in **RunList/@Directory**.

**TBD 2.x Example.**

```
<RunList Class="Parameter" Directory="File:///Dir/" ID="Link0003"
    PartIDKeys="Run" Status="Available">
    <RunList Pages="0 ~ -1" Run="1">
        <LayoutElement>
            <FileSpec URL="File1.pdf"/>
        </LayoutElement>
    </RunList>
    <RunList Pages="0 ~ -1" Run="2">
        <LayoutElement>
            <FileSpec URL="File2.pdf"/>
        </LayoutElement>
    </RunList>
</RunList>
```

**Example 8-48: RunList: Multi-File Unseparated RunList with Spawning**

Example of simple multi-file unseparated **RunList** with independent spawning. This example specifies the first five pages contained in File1.pdf and File2.pdf. File2.pdf has been spawned and is being processed individually.

**TBD 2.x Example.**

```
<RunList Class="Parameter" ID="Link0003" PartIDKeys="Run" Status="Available">
    <RunList Pages="0 ~ 4" Run="1">
        <LayoutElement>
            <FileSpec URL="File:///File1.pdf"/>
        </LayoutElement>
    </RunList>
    <RunList Pages="0 ~ -1" Run="2" SpawnStatus="SpawnedRW">
        <LayoutElement>
            <FileSpec URL="File:///File2.pdf"/>
        </LayoutElement>
    </RunList>
</RunList>
```

**Example 8-49: RunList: Spawner RunList**

This is the corresponding spawner **RunList**. Note the **@LogicalPage** Attribute, which specifies the number of skipped pages.

**TBD 2.x Example.**

```
<RunList Class="Parameter" ID="Link0003" LogicalPage="5" Pages="0 ~ -1"
    PartIDKeys="Run" Status="Available">
    <RunList Run="2">
        <LayoutElement>
            <FileSpec URL="File:///File2.pdf"/>
        </LayoutElement>
    </RunList>
</RunList>
```

**Example 8-50: RunList: Multi-File Separated RunList**

This example specifies all pages contained in Presep.pdf and following that, pages 1, 3 and 5 of each preseparated file.

**TBD 2.x Example.**

```

<RunList Class="Parameter" ID="Link0003" PartIDKeys="Run Separation"
    Status="Available">
    <RunList Run="1" SkipPage="3">
        <LayoutElement>
            <FileSpec URL="File:///Presep.pdf"/>
        </LayoutElement>
        <RunList FirstPage="0" IsPage="false" Separation="Cyan"/>
        <RunList FirstPage="1" IsPage="false" Separation="Magenta"/>
        <RunList FirstPage="2" IsPage="false" Separation="Yellow"/>
        <RunList FirstPage="3" IsPage="false" Separation="Black"/>
    </RunList>
    <RunList IsPage="true" Pages="1 3 5" Run="2">
        <RunList IsPage="false" Separation="Cyan">
            <LayoutElement>
                <FileSpec URL="File:///Cyan2.pdf"/>
            </LayoutElement>
        </RunList>
        <RunList IsPage="false" Separation="Magenta">
            <LayoutElement>
                <FileSpec URL="File:///Magenta2.pdf"/>
            </LayoutElement>
        </RunList>
        <RunList IsPage="false" Separation="Yellow">
            <LayoutElement>
                <FileSpec URL="File:///Yellow2.pdf"/>
            </LayoutElement>
        </RunList>
        <RunList IsPage="false" Separation="Black">
            <LayoutElement>
                <FileSpec URL="File:///Black2.pdf"/>
            </LayoutElement>
        </RunList>
    </RunList>
</RunList>

```

## 8.135 SaddleStitchingParams

Deprecated in JDF 1.1

See Section P.6.22, “SaddleStitchingParams” on page 1364 for details of this deprecated Resource.

## 8.136 ScanParams

This Resource provides the parameters for the **Scanning** Process.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	<b>ArtDeliveryIntent/ArtDelivery</b>
Example Partition:	<b>"RunIndex"</b>
Input of Processes:	<b>Scanning</b>
Output of Processes:	—

**Table 8-277: ScanParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>BitDepth</i>	integer	Bit depth of a one-color separation.
<i>CompressionFilter</i> ?	enumeration	<p>Specifies the compression filter to be used.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>CCITTFaxEncode</i> – Used to select CCITT Group 3 or 4 facsimile encoding.</li> <li><i>DCTEncode</i> – Used to select JPEG compression.</li> <li><i>FlateEncode</i> – Used to select Zip compression.</li> <li><i>WaveletEncode</i> – Used to select Wavelet compression.</li> <li><i>JBIG2Encode</i> – Used to select JBIG2 monochrome compression.</li> </ul>
<i>DCTQuality</i> ?	double	A value between 0 and 1 that indicates “how much” the Process is to compress images. 0.0 means “do as loss-less compression as possible.” 1.0 means “do the maximum compression possible.”
<i>InputBox</i> ?	rectangle	Rectangle that describes the image section to be scanned, in points. The origin of the coordinate system is the lower left corner of the physical item to be scanned.
<i>Magnification</i> ?= <i>"1 1"</i>	XYPair	Size of the output/size of the input for each dimension.
<i>MountID</i> ?	string	ID of the drum or other mounting Device upon which the media is to be mounted.
<i>Mounting</i> ?	enumeration	<p>Specifies how to mount originals.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Unfixed</i> – Original lies unfixed on the scanner tray/drum.</li> <li><i>Fixed</i> – Original is fixed on the scanner tray/drum with transparent tape.</li> <li><i>Wet</i> – Original is put in gel or oil and fixed on the scanner tray/drum.</li> <li><i>Registered</i> – Original is fixed with registration holes. This value is used for copy dot scans.</li> </ul>
<i>OutputColorSpace</i>	enumeration	<p>Color space of the output images.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>LAB</i></li> <li><i>RGB</i></li> <li><i>CMYK</i></li> <li><i>GrayScale</i></li> </ul>
<i>OutputResolution</i>	XYPair	X and Y resolution of the output bitmap, in dpi.
<i>OutputSize</i> ?	XYPair	X and Y dimension of the intended output image, in points.
<i>SplitDocuments</i> ?	integer	A number representing how many images are scanned before a new file is created.
<i>FileSpec</i> ( <i>CorrectionProfile</i> ) ?	refelement	A <b>FileSpec</b> Resource pointing to an ICC profile that describes color corrections.
<i>FileSpec</i> ( <i>ScanProfile</i> ) ? <i>?ScanProfileRef</i> ?	refelementI-DREF	A <b>FileSpec</b> Resource pointing to an ICC profile that describes the scanner.

**Table 8-277: ScanParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
FileSpec ( <i>TargetProfile</i> ) ?	refelement	A <b>FileSpec</b> Resource pointing to an ICC profile that defines the target output Device for a Device specific scan (e.g., the profile of a CMYK press).

## 8.137 ScavengerArea

[New in JDF 1.1](#)

This Resource describes a scavenger area for removing excess ink from printed Sheets. It is defined within a **MarkObject** of a surface.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	Layout/MarkObject
Example Partition:	
Input of Processes:	—
Output of Processes:	—

**Table 8-278: ScavengerArea Resource**

Name	Data Type	Description
Center	XYPair	Position of the center of the scavenger area in the coordinates of the <b>MarkObject</b> that contains this mark.
Rotation ?	double	Rotation in degrees. Positive graduation figures indicate counter-clockwise rotation; negative figures indicate clockwise rotation.
SeparationSpec * <i>Separations</i> ?Modified in JDF 1.2	elementN-MTOKENS	Set of separations to which the scavenger area is bound.
Size ?	XYPair	Size of the scavenger area.
SeparationSpec * <i>Separations</i> ?Modified in JDF 1.2	elementN-MTOKENS	Set of separations to which the scavenger area is bound.

## 8.138 ScreeningParams

This Resource specifies the parameter of the **Screening** Process. Since screening is, in most cases, very OEM specific, the following parameters are generic enough that they can be mapped onto a number of OEM controls.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	ContactCopyParams, ContentContentList/ContentData, ExposedMedia, LayoutElement, PageList, PageList/PageData, RunList
Intent Pairing:	ProofingIntentContentCheckIntent, ScreeningIntent
Example Partition:	"Separation", "SheetName", "Side", "SignatureName"
Input of Processes:	ContoneCalibration, Screening
Output of Processes:	—

**Table 8-279: ScreeningParams Resource**

Name	Data Type	Description
<i>AbortJobWhenScreenMatchingFails</i> ?  <a href="#">Deprecated in JDF 1.2</a>	boolean	Specifies what happens when the Device can not fulfill the screening requests. If " <i>true</i> ", it flushes the Job. If " <i>false</i> ", it ignores matching errors using the default screening. Use <i>@SettingsPolicy</i> in JDF 1.2 and beyond.
<i>IgnoreSourceFile</i> ?= " <i>true</i> "	boolean	Specifies whether to ignore the screen settings (e.g., setscreen, setcolorscreen and sethalftone) specified in the source files. Note that in some cases, halftones are used to create patterns. In these cases, the halftone in the source PDL file will not be overridden.
<i>ScreenSelector</i> *	element	List of screen selectors. A screen selector is included for each separation, including a default specification. ScreenSelector SHALL contain the complete set of Parameters for a given screening operation. For instance, it is invalid to specify one ScreenSelector for a given <i>@ObjectTags</i> and another ScreenSelector for a given <i>@SourceObjects</i> .

## 8.139 SeparationControlParams

This Resource provides the controls needed to separate composite color files.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	<a href="#">ProofingIntent</a> <a href="#">ContentCheckIntent</a> , <a href="#">ScreeningIntent</a>
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	<i>Separation</i>
<b>Output of Processes:</b>	—

**Table 8-280: SeparationControlParams Resource**

Name	Data Type	Description
<i>AutomatedOverPrintParams</i> ?	element	Controls for overprint substitutions. The default case is that no automated overprint generation is used.
<i>TransferFunctionControl</i> ?	refelement	Controls whether the Device performs transfer functions and what values are used when doing so.

## 8.140 Shape

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	<a href="#">ShapeCuttingParams</a> , <a href="#">ShapeDef</a>
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	—
<b>Output of Processes:</b>	—

**Table 8-281: Shape Resource**

Name	Data Type	Description
<i>CutBox</i> ?	rectangle	Specification of a rectangular window.
<i>CutOut</i> ?= "false"	boolean	If "true", the inside of a specified shape will be removed. If "false", the outside of a specified shape will be removed. An example of an inside shape is a window. An example of an outside shape is a shaped greeting card.
<i>CutPath</i> ?	PDFPath	Specification of a complex path. This MAY be an open path in the case of a single line.
<i>CutType</i> = "Cut" <a href="#">Deprecated in JDF 1.4</a>	enumeration	Type of cut or perforation used. <b>Allowed values are:</b> <i>Cut</i> – Full cut. <i>Perforate</i> – Interrupted perforation that does not span the entire Sheet
<i>DDESCutType</i> ?= "101" <a href="#">New in JDF 1.4</a>	integer	Type of cut or perforation used. <b>Values include:</b> a number between "0" and "999" corresponding to a line type as defined in DDES3 standard (ANSI® IT8.6-2002). <b>Note:</b> the default value A value of 101 corresponds to a cut line.
<i>Material</i> ?	string	Transparent material that fills a shape (e.g., an envelope window) that was cut out when @ <i>CutOut</i> = "true".
<i>ShapeDepth</i> ?	double	Depth of the shape cut, measured in microns [ $\mu\text{m}$ ]. If not specified, the shape is completely cut.
<i>ShapeType</i>	enumeration	Describes any precision cutting other than hole making. <b>Allowed values are:</b> <i>Path</i> <i>Rectangular</i> <i>Round</i> <i>RoundedRectangle</i> – Rectangle with rounded corners. <a href="#">New in JDF 1.3</a>
<i>StationName</i> ? <a href="#">New in JDF 1.3</a> <a href="#">Deprecated in JDF 1.4</a>	string	The name of the 1-up design in the die layout. Used to match <b>DieLayout/Station</b> Elements with <b>Shape</b> Elements.
<i>TeethPerDimension</i> ?	double	Number of teeth in a given perforation extent, in teeth/point. MicroPerforation is defined by specifying a large number of teeth ( $n > 1000$ ).

## 8.141 ShapeCuttingParams

[New in JDF 1.1](#)

**ShapeCuttingParams** defines the details of the **ShapeCutting** Process.

### Resource Properties

**Resource Class:** Parameter

**Resource referenced by:** —

**Intent Pairing:** **ShapeCuttingIntent**

**Example Partition:** —

**Input of Processes:*****ShapeCutting*****Output of Processes:****Table 8-282: ShapeCuttingParams Resource**

Name	Data Type	Description
<i>DeliveryMode</i> ? <a href="#">New in JDF 1.3</a>	enumeration	<b>Allowed values are:</b> <i>FullSheet</i> – The output of the die-cutter are complete Sheets. The blanks are kept in place with nicks. Front waste (gripper margin) has not been removed. <i>RemoveGripperMargin</i> – The output of the die-cutter are complete Sheets. The blanks are kept in place with nicks. Front waste (gripper margin) has been removed. <i>SeparateBlanks</i> – The output of the die-cutter are blanks that have been removed from the Sheets.
<b>DieLayout</b> ? <b>DieLayoutRef</b> ? <a href="#">New in JDF 1.3</a>	refelement-DREF	A Resource containing the reference of an external file describing the cutting and other paths.
<b>ModuleIndex</b> ? <b>ModuleID</b> ? <a href="#">New in JDF 1.4</a>	integerN-MTOKEN	Index Identifier of the shape-cutting Module in the Press. See <b>ConventionalPrintingParams</b> . In a Combined Process, all modules of the Device, including press modules, finishing modules and varnishing modules are counted to calculate <b>@ModuleIndex</b> .
<i>SheetLay</i> ? <a href="#">New in JDF 1.3</a>	enumeration	Lay of input media. Reference edge of where paper is placed in the feeder. <b>Allowed values are:</b> <i>Center</i> <i>Left</i> <i>Right</i>
<b>DieLayout</b> ? <b>DieLayoutRef</b> ? <a href="#">New in JDF 1.3</a>	refelement-DREF	A Resource containing the reference of an external file describing the cutting and other paths.
<b>Shape</b> *	refelement	Details of each individual cut shape

## 8.142 ShapeDef

[New in JDF 1.4](#)

A structural design describing a 2D surface with paths that describe different finishing operations like cutting, creasing, perforation, etc. In the case of box production this Resource is a description of the unprinted blank box as it will be available after die cutting and blanking and before folding. A **ShapeDef** is defined either by an external file (**FileSpec**) describing the structural design or a collection of PDFPaths contained in Shape elements. In case this description is stored in a file, the format of this file may be a vendor specific format, a standard DDES3 file (ANSI® IT8.6-2002), or less well specified but commonly used formats like CFF2 or DXF or even a PDF or EPS file.

### Resource Properties

**Resource Class:****Parameter****Resource referenced by:****DieLayout/Station, LayoutElementProductionParams****Example Partition:****Input of Processes:*****DieLayoutProduction*****Output of Processes:*****ShapeDefProduction***

**Table 8-283: ShapeDef Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>Area</i> ?	double	The net area of the shape after cutting. (m <sup>2</sup> )
<i>CutBox</i> ?	rectangle	A rectangle describing the bounding box of all cut lines. This is sometimes referred to as the knife to knife dimensions of the <b>BlankBox</b> . This Attribute is usually only valid after the generation of the structural design.
<i>Dimensions</i> ?	shape	Width <i>x</i> , height <i>y</i> and depth <i>z</i> coordinates of the open 3D shape. For a box, these are the outer dimensions of the opened and potentially filled box (e.g., for palletizing of the final products). <b>Note:</b> compare with <i>@FlatDimensions</i> .
<i>FlatDimensions</i> ? <u>New in JDF 1.5</u>	shape	Width <i>x</i> , height <i>y</i> and depth <i>z</i> coordinates of the flat 3D shape. For a box, these are the outer dimensions of the glued flat box (e.g., for palletizing of the boxes prior to filling). This corresponds to the Dimensions of the output component of the <b>BoxFolding</b> process. Note: compare with <i>@Dimensions</i> .
<i>FluteDirection</i> ?	enumeration	Intended direction of the flute for this design in the coordinate system defined by <i>@CutBox</i> . This information needs to be taken into account by the <b>DieLayoutProduction</b> Process to give the <b>ShapeDef</b> the correct orientation on the <b>Media</b> . <b>Allowed values are:</b> <i>XDirection</i> – Along the X-axis of the <i>@CutBox</i> coordinate system. <i>YDirection</i> – Along the Y-axis of the <i>@CutBox</i> coordinate system.
<i>GrainDirection</i> ?	enumeration	Intended direction of the grain for this design in the coordinate system defined by <i>@CutBox</i> . This information needs to be taken into account by the <b>DieLayoutProduction</b> Process to give the <b>ShapeDef</b> the correct orientation on the <b>Media</b> . <b>Allowed values are:</b> <i>XDirection</i> – Along the X-axis of the <i>@CutBox</i> coordinate system. <i>YDirection</i> – Along the Y-axis of the <i>@CutBox</i> coordinate system. <i>Both</i> – Both orientations are acceptable.
<b>Media</b> ? <b>MediaRef</b> ?	refelement-DREF	<b>Media</b> for which this structural design was intended for. The <b>Media</b> description defines important design parameters as the type of <b>Media</b> , thickness, inside loss, outside gain, etc. <b>Media</b> / <i>@GrainDirection</i> and <b>Media</b> / <i>@FluteDirection</i> do not have any significance.
<i>MediaSide</i> ?	enumeration	Determines the printing side for which the structural design is made. <b>Allowed values are:</b> <i>Front</i> – for a box this corresponds to the outside of a box. <i>Back</i> - for a box this corresponds to the inside of a box. <b>Note:</b> folding carton is usually cut from the outside (Front), corrugated from the inside (Back).
<i>ResourceWeight</i> ?	double	The weight of the shape after cutting (g).

**Table 8-283: ShapeDef Resource (Sheet 2 of 2)**

Name	Data Type	Description
<a href="#">ColorPool ?</a> <a href="#">ColorRef ?</a> <a href="#">New in JDF 1.5</a>	<a href="#">refelementI-DREF</a>	The <b>ColorPool</b> that SHOULD contain names and further details of the separations used in <b>CutLines</b> . Reference to a <a href="#">ResourceSet[@Name="Color"]</a> that contains details and names of the separations used in <b>CutLines</b> .
<a href="#">CutLines ?</a> <a href="#">CutLines</a> <a href="#">?</a> <a href="#">New in JDF 1.5</a>	<a href="#">elementN-MTOKENS</a>	Selects the die line separations from the file referenced by <b>FileSpec</b> . Additional details of the usage of the Separations MAY be specified in the respective <a href="#">ColorPool/Color elements</a> <a href="#">ResourceSet[@Name="Color"]</a> .
<a href="#">FileSpec ?</a>	<a href="#">refelementI-lement</a>	The <b>FileSpec</b> of the structural design file. The format of this file may be a vendor specific format, a standard DDES3 file (ANSI® IT8.6-2002), less well specified but commonly used formats like CFF2 or DXF or even a PDF or EPS file. <b>FileSpec</b> and <b>Shape</b> are mutually exclusive
<a href="#">Media ?</a> <a href="#">MediaRef ?</a>	<a href="#">refelementI-DREF</a>	<b>Media</b> for which this structural design was intended for. The <b>Media</b> description defines important design parameters as the type of <b>Media</b> , thickness, inside loss, outside gain, etc. <b>Media/@GrainDirection</b> and <b>Media/@FluteDirection</b> do not have any significance.
<a href="#">Shape *</a>	<a href="#">refelementI-lement</a>	The shape is defined by a collection of <b>Shape</b> Elements. <b>Shape</b> and <b>FileSpec</b> are mutually exclusive.

### 8.142.1 Element: **CutLines**

[New in JDF 1.5](#)**Table 8-284: CutLines Element**

Name	Data Type	Description
<a href="#">SeparationSpec *</a>	<a href="#">element</a>	

## 8.143 ShapeDefProductionParams

[New in JDF 1.4](#)

Parameters for the structural design.

### Resource Properties

**Resource Class:** [Parameter](#)**Resource referenced by:** —**Example Partition:** —**Input of Processes:** [ShapeDefProduction](#)**Output of Processes:** —**Table 8-285: ShapeDefProductionParams Resource**

Name	Data Type	Description
<a href="#">ObjectModel *</a>	<a href="#">element</a>	A 3D model of the objects that need to be packed.
<a href="#">ShapeTemplate ?</a>	<a href="#">element</a>	A structural template sometimes called a parametric structural design. Given a set of parametric values a structural template can be instantiated to an actual structural design.

### 8.143.1 Element: ObjectModel

[New in JDF 1.4](#)

Table 8-286: ObjectModel Element

Name	Data Type	Description
<i>Dimensions</i> ?	shape	Width <i>x</i> , height <i>y</i> and depth <i>z</i> values for the bounding box of the object.
<i>FileSpec</i> ?	refelement	The <b>FileSpec</b> of the 3D model of the objects that needs to be packed. The format of this file may be a vendor specific format or a standard 3D format like VRML or PDF (U3D).

### 8.143.2 Element: ShapeTemplate

[New in JDF 1.4](#)

Additional parametric values SHALL be specified with GeneralID Elements. GeneralID/@IDUsage SHALL be set to the name of the Parameter. GeneralID/@DataType SHALL be set to "double". GeneralID/@IDValue SHALL be set to value of the Parameter.

ShapeTemplate describes a structural template which is also referred to as a parametric structural design.

Table 8-287: ShapeTemplate Element

Name	Data Type	Description
<i>InnerDimensions</i> ?	shape	Width <i>x</i> , height <i>y</i> and depth <i>z</i> coordinates of the 3D shape. For a box these are the inner dimensions.
<i>Name</i> ?	string	The name of a parametric structural design or CAD template.
<i>Standard</i> ?	stringN-MTOKEN	The name of the standard this template belongs to (e.g., FEFCO, ECMA or the name of a company internal standard).
<i>FileSpec</i> ?	refelement	The <b>FileSpec</b> of the parametric structural design.
<i>ShapeDimension</i> *	element	ShapeDimension elements define additional parametric values of the ShapeTemplate.

The three Figures below show shapes specified by a ShapeTemplate with each named variable represented by a GeneralID that specifies the name and value of the variable. The ShapeTemplate for the diagram below might be: ShapeDimension element Example 8-51 below illustrates the encoding of L,D and W using ShapeDimension:

### 8.143.3 Element: ShapeDimension

Table 8-288: ShapeDimension Element

Name	Data Type	Description
<i>Usage</i>	string	@Usage specifies the name of the ShapeDimension. Values Include: <i>D</i> - Depth <i>L</i> - Length <i>W</i> - Width
<i>Value</i>	double	@Value specifies the length of the ShapeDimension in points.

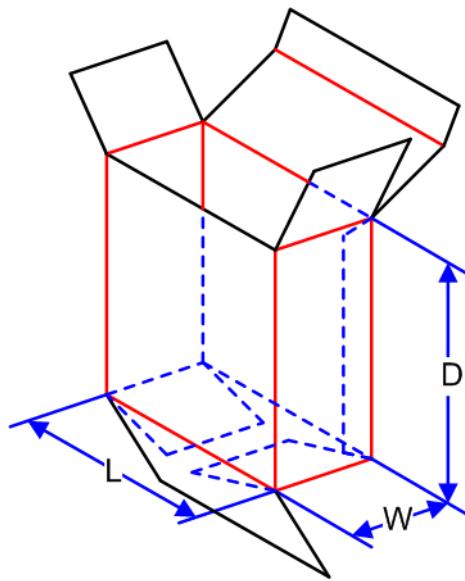
#### Example 8-51: ShapeTemplate for Figure 8-55

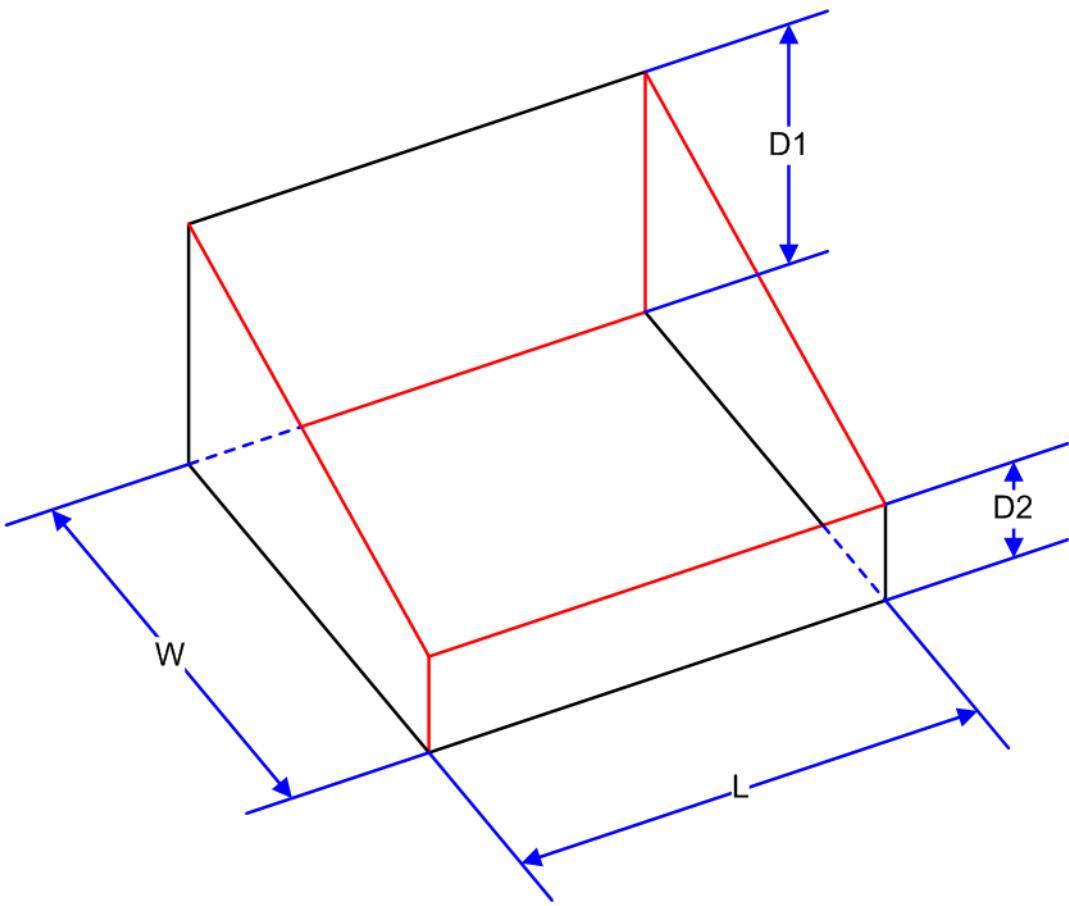
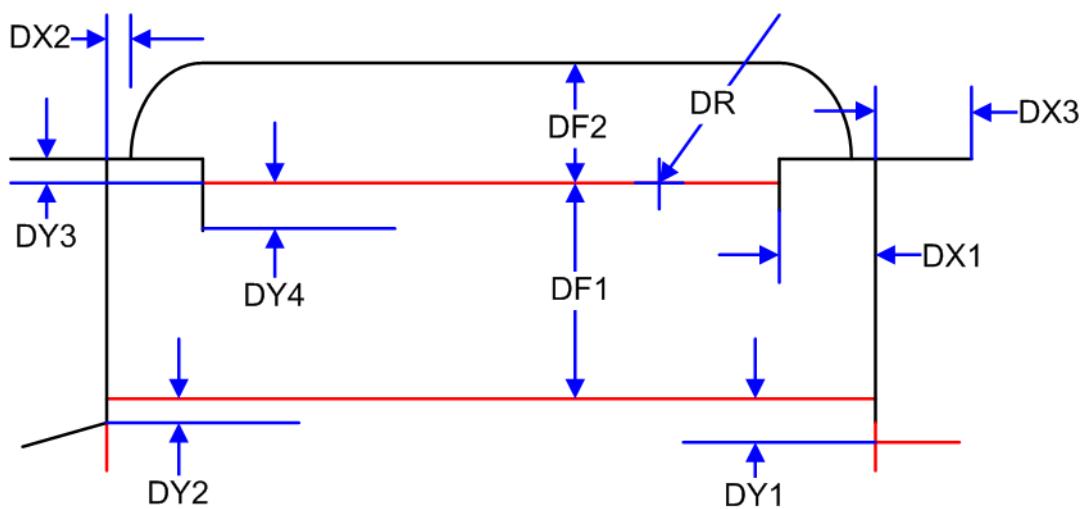
TBD 2.x Example.

<ShapeDefProductionParams Class="Parameter" ID="Link0003"

```
    Status="Available">
<ShapeTemplate>
  <GeneralID IDUsage="L" DataType="double" IDValue="1440.0"/>
  <GeneralID IDUsage="W" DataType="double" IDValue="720.0"/>
  <GeneralID IDUsage="D" DataType="double" IDValue="1440.0"/>
</ShapeTemplate>
</ShapeDefProductionParams>
```

Figure 8-55: ShapeTemplate Example 1



**Figure 8-56: ShapeTemplate Example 2****Figure 8-57: ShapeTemplate Example 3**

## 8.144 Sheet

[Deprecated in JDF 1.3](#)

This Resource provides a description of a Sheet, as well as the marks on that Sheet. In JDF 1.3 and beyond, a Sheet is represented as a **Layout** Partition, namely **Layout[@SheetName]**. For details, see Section 8.87, “Layout” on page 709.

## 8.145 SheetOptimizingParams

[New in JDF 1.5](#)

Parameter resource that parametrizes the **SheetOptimizing** process.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Example Partition:	—
Input of Processes:	<b>SheetOptimizing</b>
Output of Processes:	—

Table 8-289: SheetOptimizingParams Resource

Name	Data Type	Description
ConvertingConfig +	element	Specification of the device configurations for destination sheet sizes.
GangElement +	element	Each GangElement describes an individual product or product part that SHALL be placed completely on a gang form. If an individual Product MAY be distributed over multiple separate gangs (e.g., cover and body with different paper), it SHALL be represented as multiple gang elements.

### 8.145.1 Element: GangElement

[New in JDF 1.5](#)

A GangElement describes an individual product or product part (e.g., product cover) that is a candidate for placement on a printed sheet.

Table 8-290: GangElement Element (Sheet 1 of 4)

Name	Data Type	Description
<i>AssemblyIDs</i> ?BinderySignatureIDs ?	NMTOKENS	The @AssemblyIDs of the <b>StrippingParams</b> partitions that may be ganged. Any <b>StrippingParams</b> partitions in the GangElement that have an Assembly ID that is not in this list SHALL NOT be ganged. If not specified all partitions are selected. If specified, @BinderySignatureIDs SHALL list the BinderySignature/@BinderySignatureID of all BinderySignatures that are candidates for this GangElement.
<i>CollapseBleeds</i> ?	boolean	If single page GangElement that has a bleed in a solid color is ganged in block pattern, the bleed between the GangElement elements may not be required. If "true", the bleed margin between the instances of GangElement elements SHOULD be removed.
<i>Dimension</i> ?	XYPair	The GangElement block size including trims and bleeds of the element to be ganged. SHALL NOT be specified if @NPage is specified. If GangElement/StrippingParams is specified @Dimension SHALL NOT be specified.

Table 8-290: GangElement Element (Sheet 2 of 4)

Name	Data Type	Description
DueDate ?	dateTime	The latest date and time the GangElement needs to be included on a gang. The gang engine SHOULD use a combination of @DueDate and @Priority to decide which GangElement Elements to place on a gang.
ProductID ?ExternalID ?	stringNMTO-KEN	The product ID in (e.g., a web to print system).
FillPriority ?	integer	If non-zero the ganging engine is requested to fill any left over space on the sheet with this GangElement Elements even if this would lead to over production of the GangElement Elements. GangElement Elements with a higher priority take precedence over GangElement Elements with a lower priority.
GangElementID	IDNMTO-KEN	The ID An identifier of the GangElement that is unique within the context of the Workflow. @GangElementID SHALL be copied from the Input Layout that is referenced by this GangElement/ StrippingParams @LayoutRef partitions to the Output StrippingParams Layout partitions to indicate which GangElements have been included in the results of the SheetOptimizing process.
GrainDirection ?	enumeration	The allowed grain direction of the paper with respect to the GangElement. @GrainDirection is specified in the context of the page. If no page context exists, then @GrainDirection references the entire rectangle. <b>Allowed values are from:</b> MediaIntent/@GrainDirection. See Table 7.15, “MediaIntent” on page 486.
GroupCode ?	stringNMTO-KEN	Code specifying a group of products. GangElement elements with the same group code MAY be ganged together in a vertical column on the sheet, whereas GangElement elements with different @GroupCode values SHOULD NOT be grouped. This attribute MAY be used to prevent GangElement elements with different colors, ink densities or other incompatible properties to be placed in vertical columns when doing offset printing.
JobID ?	stringNMTO-KEN	The original @JobID of the element to be ganged.
StrippingParams ?LayoutRef ?	refelementI-DREF	Layout that describes the list of FOLDING sheets outside of a sheet context for this GangElement. Only partition by BinderySignature.
MaxQuantity ?	integer	The maximum number of printed (fold) sheets that may be produced by the gang (including finishing waste).
Media ?MediaRef ?	refelementI-DREF	The characteristics of the target Media that SHALL be met in the gang.
MinQuantity ?	integer	The minimum number of printed (fold) sheets that SHALL be produced by the gang (including finishing waste).

**Table 8-290: GangElement Element (Sheet 3 of 4)**

Name	Data Type	Description
<i>NPage</i> ?	integer	The total number of pages of the GangElement. If GangElement/StrippingParams is specified, then @NPage SHALL NOT be specified. If @NPage is specified, the number and size of the fold sheets / BinderySignature elements is decided by the ganging engine.
<i>NumberUp</i> ?	XYPair	The number up that is to be placed on the gang in a single block. If Y is zero, that other number sets the total number-up requested without specifying a specific number in X or Y direction.
<i>NumColors</i> ?	XYPair	The first value specifies the number of colors on the front side. The second value specifies the number of colors on the back side. The value 0 implies no print on the respective side. The value 1 implies Black. The value 4 implies CMYK. If both SeparationListFront or SeparationListBack and @NumColors are specified. The implied values from @NumColors SHALL be added to the respective SeparationListFront or SeparationListBack when evaluating.
<i>OneSheet</i> ?	NMTOKEN	Control how this GangElement SHOULD be placed on ganged sheets. Values include: <i>Any</i> – Place on any sheet that is generated. <i>GangElementID</i> – Keep all blocks with this @GangElementID on one sheet. <i>JobID</i> – Keep all GangElement Elements with the same JobID on the same sheet.
<i>OrderQuantity</i>	integer	The number of printed (fold) sheets to produce (including finishing waste).
<i>PageDimension</i> ?	XYPair	The GangElement page size or page size (including trims and bleeds?) of the element to be ganged. MAY be specified if @NPage is specified. If GangElement/StrippingParams is specified @PageDimension SHALL NOT be specified.
<i>Priority</i> ?	integer	All GangElement elements with a @Priority = "100" SHALL be included in the gang. GangElement elements with a @Priority less than 100 MAY be included in the gang, and SHOULD be in descending @Priority order.
<i>ProductID</i> ? <i>ExternalID</i> ?	string	The product ID in (e.g., a web to print system).
<i>RotationPolicy</i> ?	enumeration	Specifies the level of freedom when applying the values specified in @GrainDirection <b>Allowed values are:</b> <i>Exact</i> – A 180 degree rotation is not allowed <i>Free</i> – A 180 degree rotation is allowed.

**Table 8-290: GangElement Element (Sheet 4 of 4)**

Name	Data Type	Description
RunList ?RunListRef ?	refelementI-DREF	Reference to the content data for this GangElement. If this RunList refers to a structured PDL with multiple document instances such as recipient records in PDF/VT, then this GangElement represents multiple individual sections. These sections SHALL be positioned using the same rules that would apply if each document instance were referenced by an individual GangElement. All Document instances referenced by an individual GangElement SHALL be processed in one gang.
Media ?MediaRef ?	refelementI-DREF	The characteristics of the target Media that SHALL be met in the gang.
RunList ?RunListRef ?	refelementI-DREF	Reference to the content data for this GangElement. If this RunList refers to a structured PDL with multiple document instances such as recipient records in PDF/VT, then this GangElement represents multiple individual sections. These sections SHALL be positioned using the same rules that would apply if each document instance were referenced by an individual GangElement. All Document instances referenced by an individual GangElement SHALL be processed in one gang.
SeparationListBack ?SeparationListBack ?	elementN-MTOKENS	The colors printed on the back of the GangElement. List of separations that are printed on the back side of the product. MAY include varnish.
SeparationListFront ?SeparationListFront ?	elementN-MTOKENS	The colors printed on the front of the GangElement. List of separations that are printed on the front side of the sheet. MAY include varnish.
StrippingParams ?LayoutRef ?	refelementI-DREF	StrippingParams that describe the list of FOLDING sheets outside of a sheet context for this GangElement. StrippingParams SHALL be partitioned by @BinderySignatureName and MAY be partitioned by @PartVersion.

### 8.145.2 Element: SeparationListBack

[New in JDF 1.5](#)

Separation List for Back.

**Table 8-291: SeparationListBack Element**

Name	Data Type	Description
SeparationSpec +Separations	elementN-MTOKENS	Description of the separations used.

### 8.145.3 Element: SeparationListFront

[New in JDF 1.5](#)

Separation List for Front.

**Table 8-292: SeparationListFront Element**

Name	Data Type	Description
SeparationSpec +Separations	elementN-MTOKENS	Description of the separations used.

## 8.146 ShrinkingParams

[New in JDF 1.1](#)

This Resource provides the parameters for the **Shrinking** Process in shrink wrapping.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Intent Pairing:	<b>PackingIntent</b>
Example Partition:	—
Input of Processes:	<b>Shrinking</b>
Output of Processes:	—

**Table 8-293: ShrinkingParams Resource**

Name	Data Type	Description
<i>Duration</i> ?	duration	Shrinking time.
<i>ShrinkingMethod</i> ?= "ShrinkHot"	enumeration	Specifies of the shrinking method for shrink wrapping. <b>Allowed values are:</b> <i>ShrinkCool</i> <i>ShrinkHot</i>
<i>Temperature</i> ?	double	Oven temperature in ° Centigrade.

## 8.147 SideSewingParams

[Deprecated in JDF 1.1](#)

See Section P.6.24, “SideSewingParams” on page 1366 for details of this deprecated Resource.

## 8.148 SpinePreparationParams

[New in JDF 1.1](#)

**SpinePreparationParams** describes the preparation of the spine of book blocks for hard and soft cover book production (e.g., milling and notching).

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Intent Pairing:	<b>BindingIntent</b>
Example Partition:	—
Input of Processes:	<b>SpinePreparation</b>
Output of Processes:	—

**Table 8-294: SpinePreparationParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>FlexValue</i> ? <a href="#">Deprecated in JDF 1.2</a>	double	Flex quality parameter, in [N/cm]. In JDF 1.2 and beyond, @FlexValue is defined in <b>QualityControlParams/BindingQualityParams</b> . See Section 8.126, “QualityControlParams” on page 861 for details.
<i>MillingDepth</i> ? <a href="#">Modified in JDF 1.2</a>	double	Milling depth, in points. This describes the total cut-off of the spine, regardless of the technology used to achieve this goal.

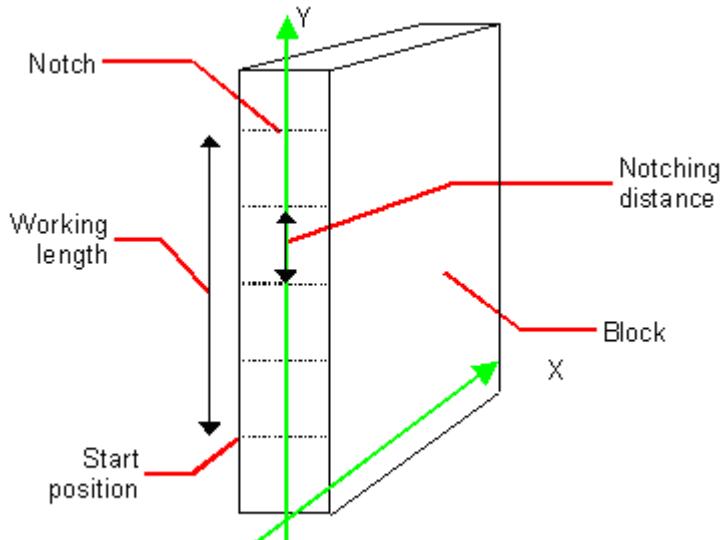
**Table 8-294: SpinePreparationParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>NotchingDepth</i> ?	double	Notching depth relative to the leveled spine, in points. If not specified, there is no notching.
<i>NotchingDistance</i> ?	double	Notching distance, in points.
<i>Operations</i> ?	NMTOKENS	List of operations to be applied to the spine. Duplicate entries are allowed to specify a sequence of identical operations. The order of operations is significant. <b>Values include those from:</b> Table 8-295, “Operations Attribute Values”.
<i>PullOutValue</i> ? <i>Deprecated in JDF 1.2</i>	double	Pull out quality parameter, in [N/cm]. In JDF 1.2 and beyond, <i>@PullOutValue</i> is defined in <b>QualityControlParams</b> /BindingQualityParams. See Section 8.126, “QualityControlParams” on page 861 for details.
<i>StartPosition</i> ?= "0"	double	Starting position of milling tool along the Y-axis of the operation coordinate system.
<i>WorkingLength</i> ?	double	Working length of milling operation. If specified larger than the spine length, the complete spine is prepared. If not specified, the complete spine is prepared.

### — Attribute: Operations

**Table 8-295: Operations Attribute Values**

Value	Description
<i>Brushing</i>	Brushes away dust from the spine to improve the binding quality.
<i>FiberRoughing</i>	The fibers of the paper on the spine are exposed without the risk of glazing the paper coating. This optimizes the spine preparation considering paper and adhesive types.
<i>Leveling</i>	After milling the spine, any uneven areas are leveled to achieve an even surface.
<i>Milling</i>	Cuts off part of the spine so the spine is not too even. A rough texture of the fibers is assured. This creates ideal conditions for stable anchoring of the Sheets in the glue.
<i>Notching</i>	This gives a clamping effect on the spine which is desirable for some products.
<i>Sanding</i>	Is used for voluminous book papers.
<i>Shredding</i>	Produces a relatively smooth surface. Further operations like " <i>Notching</i> ", " <i>Leveling</i> ", " <i>FiberRoughing</i> ", " <i>Sanding</i> " or " <i>Brushing</i> " are necessary.

**Figure 8-58: Parameters and coordinate systems for the SpinePreparation Process**

## 8.149 SpineTapingParams

[New in JDF 1.1](#)

**SpineTapingParams** define the parameters for taping a strip tape or kraft paper to the spine of a book block.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	BindingIntent
<b>Example Partition:</b>	<a href="#">SpineTaping</a>
<b>Input of Processes:</b>	SpineTaping
<b>Output of Processes:</b>	—

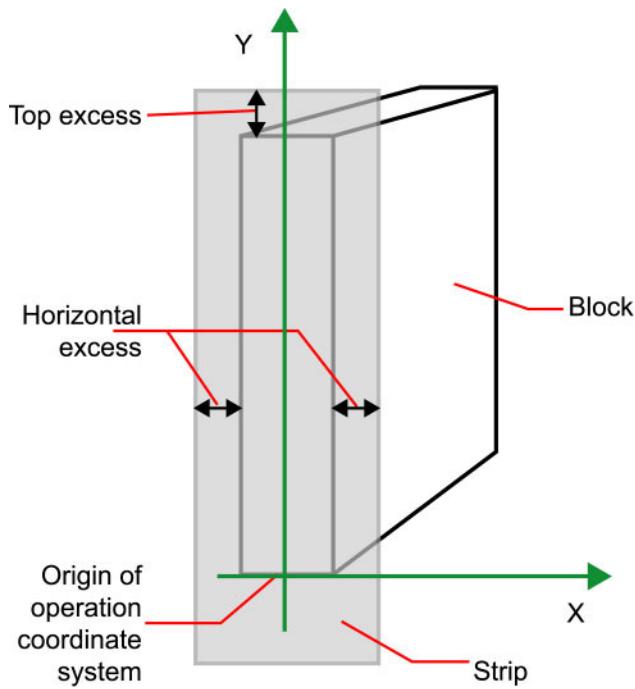
**Table 8-296: SpineTapingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>HorizontalExcess</i> ?	double	Taping spine excess on each side. The tape is assumed to be centered between left and right.
<i>HorizontalExcessBack</i> ? <a href="#">New in JDF 1.4</a>	double	Horizontal excess of back if tape is not centered
<i>StripBrand</i> ?	string	Strip brand.
<i>StripColor</i> ?	NamedColor	Color of the strip.
<i>StripColorDetails</i> ? <a href="#">New in JDF 1.4</a>	string	A more specific, specialized or site-defined name for the color. If <i>@StripColorDetails</i> is supplied, <i>@StripColor</i> SHOULD also be supplied.
<i>StripLength</i> ?	double	Length of strip material along binding edge. If not defined, the default case is that the <i>@StripLength</i> be equivalent to the length of the spine.

Table 8-296: SpineTapingParams Resource (Sheet 2 of 2)

Name	Data Type	Description
<i>StripMaterial</i> ?	enumeration	Strip material. <b>Allowed values are:</b> <i>Calico</i> <i>Cardboard</i> <i>CrepePaper</i> <i>Gauze</i> <i>Paper</i> <i>PaperlinedMules</i> <i>Tape</i>
<i>TopExcess</i> ? = "0.0"	double	Top spine taping excess. This value MAY be negative.
<b>GlueApplication</b> *	refelement	Describes where and how to apply glue to the book block.

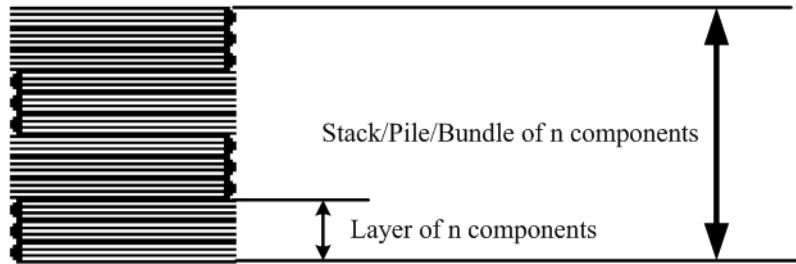
Figure 8-59: Parameters and coordinate system for the SpineTaping Process



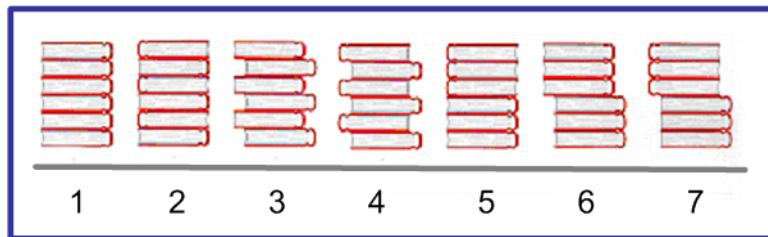
## 8.150 StackingParams

[New in JDF 1.1](#)

Settings for the **Stacking** Process. A stack of components might be uneven and unstable, due to variations in thickness across each component. The thickness variations might be caused by folding, binding or inserted components. A stack might be split into layers, with successive layers rotated by 180° to compensate for the unevenness (Figure 8-60).

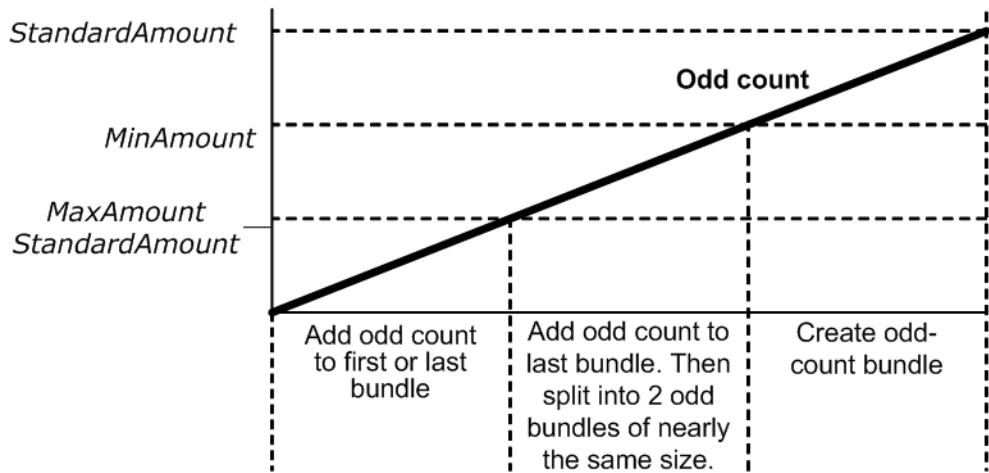
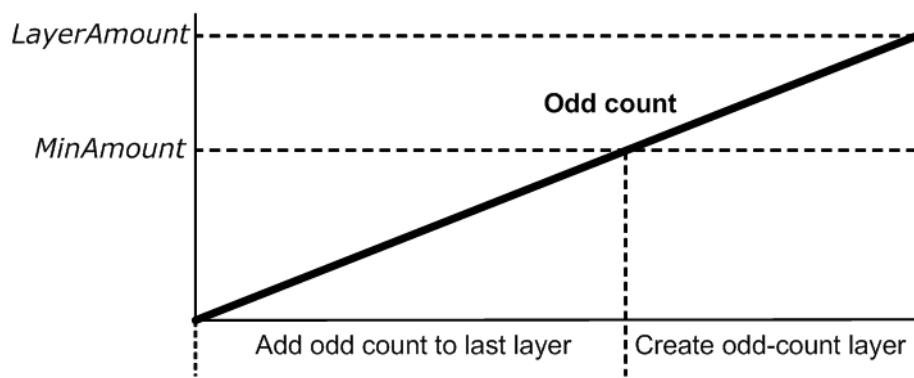
**Figure 8-60: Stacking Layers**

If the thickest part is on an edge (e.g., a book binding), the components might be offset to separate the thick parts. Layer compensation and offsetting can be combined as in the following examples of pile patterns (Figure 8-61).

**Figure 8-61: Pile Patterns****Table 8-297: Parameters in Stacking**

Pile Pattern	StandardAmount	LayerAmount (Default = StandardAmount)	Compensate (Default = true)	Disjoining/ @Offset
1	"6"	"6"	"true"	"0 0"
2	"6"	"1"	"true"	"0 0"
3	"6"	"1"	"false"	"x 0"
4	"6"	"1"	"true"	"x 0"
5	"6"	"3"	"true"	"0 0"
6	"6"	"3"	"false"	"x 0"
7	"6"	"3"	"true"	"x 0"

If the number of components is not evenly divisible by standard stack size (@StandardAmount) or the number of components in a bundle is not evenly divisible by layer size (@LayerAmount), there will be a remainder, yielding one or more odd-count stacks or layers. By default, the odd-count stack or layer size can contain as few as one component. This might exceed equipment cycle times, and flimsy components (newspapers) might cause problems with downstream equipment such as strappers. The @MinAmount and @MaxAmount control the minimum and maximum size of odd-count stacks and layers. The following figures show the odd count handling for bundles and layers.

**Figure 8-62: Odd count handling for a Bundle****Figure 8-63: Odd count handling for a Layer**

## Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	
<b>Intent Pairing:</b>	<b>PackingIntent</b>
<b>Example Partition:</b>	
<b>Input of Processes:</b>	<b>Stacking</b>
<b>Output of Processes:</b>	—

**Table 8-298: StackingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>BundleDepth ?= "0"</i> <a href="#">New in JDF 1.4</a>	integer	In case of nested bundles with <i>@BundleType = "Stack"</i> , this parameter addresses the Element to be consumed within the “tree” of such bundles to allow a level of de-stacking. If the real bundle depth level ( <i>@BundleType = "Stack"</i> ) is smaller than the value of <i>@BundleDepth</i> , individual stack items (i.e., the smallest available level) shall be consumed. If the Input <b>Component</b> referenced does not contain bundles, then this parameter is ignored. <i>@BundleDepth = "0"</i> addresses the entire <b>Component</b> , <i>@BundleDepth = "1"</i> addresses the bundle in the <b>Component</b> and so on.
<i>Compensate ?= "true"</i>	boolean	180 degree rotation applied to successive layers to compensate for uneven stacking. If <i>@LayerAmount = @StandardAmount</i> , there is one layer, and effectively no compensation.
<i>LayerAmount ?</i> <a href="#">Modified in JDF 1.2</a>	IntegerList	Ordered number of products in a layer. The first number is the first <i>@LayerAmount</i> , etc. If there are more layers than entries in the list, counting restarts at the first entry. The sum of all entries is typically an even divisor of <i>@StandardAmount</i> . When not known, the default case is that the value of <i>@LayerAmount</i> be equivalent to the value of <i>@StandardAmount</i> .
<i>LayerCompression ?</i> <a href="#">New in JDF 1.4</a>	boolean	If true layer is compressed before next layer is started.
<i>LayerLift ?</i> <a href="#">New in JDF 1.4</a>	boolean	If true layer is lifted to reduce height.
<i>MaxAmount ?</i>	integer	Maximum number of products in a stack, <i>@MaxAmount &gt;= @StandardAmount</i> . When not known, the default case is that the value of <i>@MaxAmount</i> be equivalent to the value of <i>@StandardAmount</i> .
<i>MaxHeight ?</i> <a href="#">New in JDF 1.4</a>	integer	Max height of the stack
<i>MaxWeight ?</i>	double	Maximum weight of a stack in grams.
<i>MinAmount ?</i>	integer	Minimum number of products in a stack or layer, <i>(@MaxAmount - @StandardAmount) &lt;= @MinAmount &lt; @StandardAmount</i> and <i>@MinAmount &lt; @LayerAmount</i> . Where not known, the default case is to use a value equivalent to <i>@MaxAmount - @StandardAmount</i> .
<i>Offset ?</i> <a href="#">Deprecated in JDF 1.2</a>	boolean	Offset or shift applied to successive layers to separate the thicker portions of components, for example, offsetting the spines of hardcover books. Replaced with <b>Disjoining</b> in JDF 1.2 and beyond.
<i>PreStackAmount ?</i> <a href="#">New in JDF 1.4</a>	integer	Amount that is gathered at first
<i>PreStackMethod ?</i> <a href="#">New in JDF 1.4</a>	enumeration	<b>Allowed values are:</b> <i>All</i> – all layers are pre-stacked <i>First</i> – only first layer is pre-stacked <i>None</i> – no pre-stacking
<i>StackCompression ?</i> <a href="#">New in JDF 1.4</a>	boolean	If true stack is compressed before push out

**Table 8-298: StackingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<u><a href="#">StandardAmount ?</a></u> <u><a href="#">Modified in JDF 1.2</a></u>	integer	Number of products in a standard stack.
<u><a href="#">UnderLays ?</a></u> <u><a href="#">New in JDF 1.3</a></u>	IntegerList	Number of underlay Sheets at each layer. The first value is underneath the bottom layer, the next value above the bottom layer and so forth. If more layers than values are specified, counting restarts at the 0 position of <code>@UnderLays</code> . If less layers than values are specified, all underlay Sheets that are not adjacent to a layer are ignored.
<u><a href="#">Disjointing ?</a></u> <u><a href="#">New in JDF 1.2</a></u>	element	Details of the offset or shift applied to successive layers to separate the thicker portions of components, for example, offsetting the spines of hard-cover books.

## 8.151 StaticBlockingParams

[New in JDF 1.4](#)

**StaticBlockingParams** defines the details of **StaticBlocking**.

### Resource Properties

<b>Resource Class:</b>	<a href="#">Parameter</a>
<b>Resource referenced by:</b>	
<b>Example Partition:</b>	
<b>Input of Processes:</b>	<a href="#">StaticBlocking</a>
<b>Output of Processes:</b>	—

**Table 8-299: StaticBlockingParams Resource**

Name	Data Type	Description
		No attributes defined

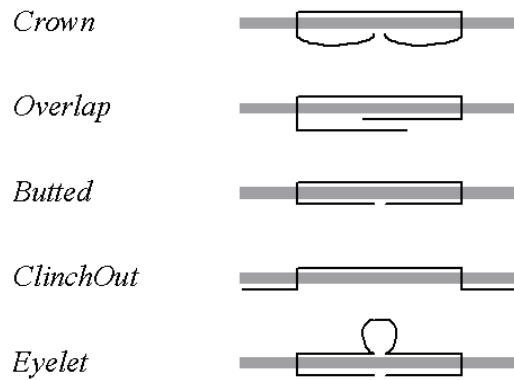
## 8.152 StitchingParams

This Resource provides the parameters for the **Stitching** Process. The process coordinate system is defined as follows:

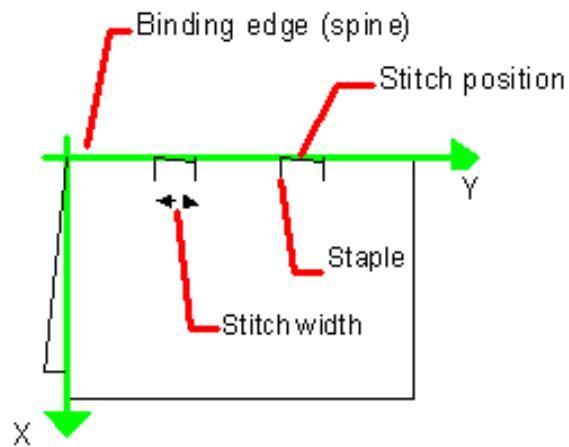
- The Y-axis increases from the (first) registered edge to the edge opposite to the registered edge.
- The X-axis is aligned with the (second) registered edge, and it increases from the binding edge (or first registered edge) to the edge opposite to the binding edge (or first registered edge).

Note that the stitches are applied from the front in the figures describing the stitching coordinate system.

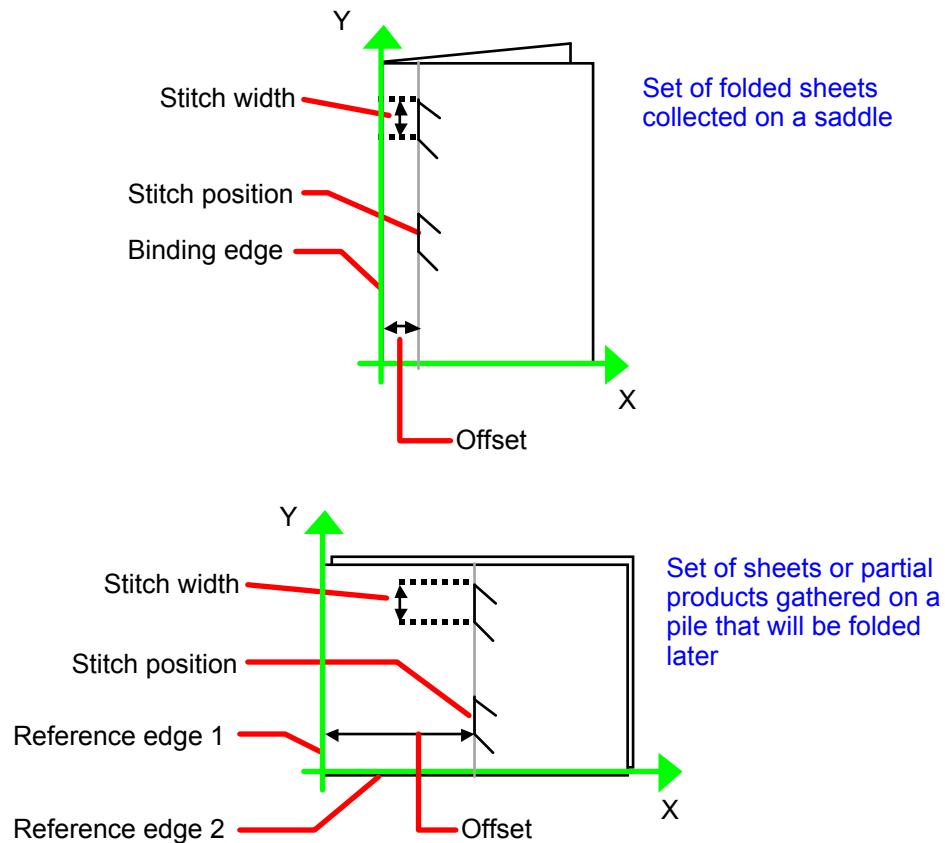
**Figure 8-64: Staple shapes**



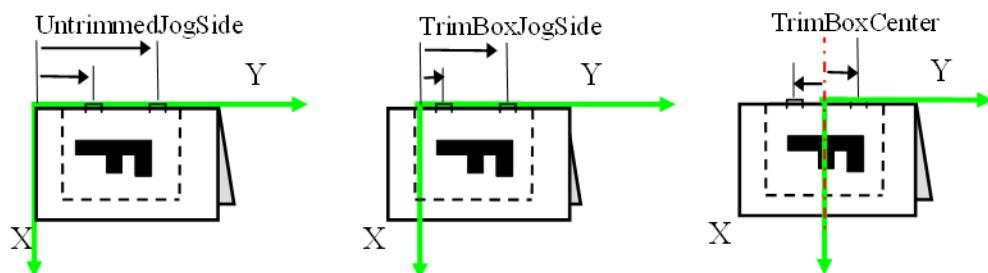
**Figure 8-65: Parameters and coordinate system used for saddle stitching**



**Figure 8-66: Parameters and coordinate system used for Stitching**



**Figure 8-67: Stitching Coordinate System for StitchOrigin Values**



### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

—

**Intent Pairing:**

BindingIntent

**Example Partition:**

"SubRun", "WebProduct"

**Input of Processes:*****Stitching*****Output of Processes:**

—

**Table 8-300: StitchingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>Angle</i> ?	double	Angle of stitch in degree. The angle increases in a counterclockwise direction. Horizontal = "0", which means that it is parallel to the X-axis of the operation coordinate system. Defaults to the system-specified value which MAY vary depending on other Attributes set in this Resource. If @ <i>StitchType</i> = "Saddle", @ <i>Angle</i> SHALL be ignored
<i>NumberOfStitches</i> ? <a href="#">Modified in JDF 1.2</a>	integer	Number of stitches. If not specified, use the system-specified number of stitches which MAY vary depending on other Attributes set in this Resource. Use a "0" value to use the stitcher without inserting any stitches. Use "NoOp" to bypass the stitcher altogether.
<i>Offset</i> ?	double	Distance between stitch and binding edge. If @ <i>StitchType</i> = "Saddle", @ <i>Offset</i> SHALL be ignored. Note that it is possible to describe saddle stitching with an offset by defining @ <i>StitchType</i> = "Side" with a large @ <i>Offset</i> value.
<i>ReferenceEdge</i> ? <a href="#">New in JDF 1.1</a> <a href="#">Deprecated in JDF 1.2</a>	enumeration	<p>The edge or corner of the component to be stitched for the process coordinate system (see description above). This Attribute is intended for use when the <b><i>Stitching</i></b> Process is part of a Combined Process with other Processes (e.g., <b><i>DigitalPrinting</i></b>) where, when combined, there is no input <b>Component</b> to be stitched.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Top</i></li> <li><i>Left</i></li> <li><i>Right</i></li> <li><i>Bottom</i></li> </ul> <p><b>Deprecation note:</b> starting with JDF 1.2, use an explicit @<i>Transformation</i> or @<i>Orientation</i> of the input <b>Component</b>. If both @<i>Transformation</i>/@<i>Orientation</i> and @<i>ReferenceEdge</i> are specified, the result is the matrix product of both transformations. @<i>Transformation</i>/@<i>Orientation</i> SHALL be applied first.</p>
<i>StapleShape</i> ?	enumeration	<p>Specifies the shape of the staples to be used.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Crown</i></li> <li><i>Overlap</i></li> <li><i>Butted</i></li> <li><i>ClinchOut</i></li> <li><i>Eyelet</i></li> </ul> <p><b>Note:</b> representations of the values are displayed in Figure 8-64.</p>
<i>StitchFromFront</i> ? <a href="#">Deprecated in JDF 1.2</a>	boolean	If "true", <b><i>Stitching</i></b> is done from front to back. Otherwise it is done from back to front. The @ <i>StitchFromFront</i> has been replaced with an explicit @ <i>Transformation</i> or @ <i>Orientation</i> of the input <b>Component</b> .

**Table 8-300: StitchingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>StitchOrigin</i> ?= "UntrimmedJogSide" <a href="#">New in JDF 1.4</a>	enumeration	Defines the origin of @ <i>StitchPositions</i> . For an illustration of the values, see Figure 8-67. <b>Allowed values are:</b> <i>TrimBoxCenter</i> <i>TrimBoxJogSide</i> <i>UntrimmedJogSide</i>
<i>StitchPositions</i> ?	DoubleList	Array containing the stitch positions. The center of the stitch SHALL be specified, and the number of entries SHALL match the number given in @ <i>NumberOfStitches</i> .
<i>StitchType</i> ? <a href="#">Modified in JDF 1.2</a>	enumeration	Specifies the type of the <b><i>Stitching</i></b> operation. <b>Allowed values are:</b> <i>Corner</i> – Stitch in the corner that is at the clockwise end of the reference edge. For example, to stitch in the upper right corner set <i>ComponentLink/@Orientation</i> = "Rotate90". <i>Saddle</i> – Stitch on the middle fold which is on the saddle. <i>Side</i> – Stitch along the reference edge.
<i>StitchWidth</i> ?	double	Width of the stitch to be used. If not present or "0", means use the system-specified width of stitches which MAY vary depending on other Attributes set in this Resource.
<i>TightBacking</i> ? <a href="#">New in JDF 1.5</a>	enumeration	Definition of the geometry of the back of the product. See <b>BlockPreparationParams/@TightBacking</b> in Section 8.10, "BlockPreparationParams" on page 526 for details. <b>Allowed values in order of increasing pressure are:</b> <i>Round</i> – no tight backing is applied <i>RoundBacked</i> – rounding way, backing way <i>Flat</i> <i>FlatBacked</i> – backing way
<i>WireBrand</i> ?	string	Brand of the wire to be used.
<i>WireGauge</i> ?	double	Gauge of the wire to be used. If not present or "0", means use the system-specified wire gauge which MAY vary depending on other Attributes set in this Resource.
<i>FileSpec</i> (CIP3) ? <a href="#">New in JDF 1.5</a>	refelement	Reference to a CIP3 file that contains stitching instructions in the CIP3 format.

## 8.153 Strap

[New in JDF 1.1](#)

### Resource Properties

Resource Class:	Consumable
Resource referenced by:	
Example Partition:	
Input of Processes:	<b>Strapping</b>
Output of Processes:	

**Table 8-301: Strap Resource**

Name	Data Type	Description
<i>Material</i>	enumeration	Strap material. <b>Allowed values are:</b> <i>AdhesiveTape</i> <i>Strap</i> <i>String</i>
<i>StrapColor?</i>	NamedColor	Color of the string or strap.
<i>StrapColorDetails?</i> <small>New in JDF 1.4</small>	string	A more specific, specialized or site-defined name for the color. If <i>@StrapColorDetails</i> is supplied, <i>@StrapColor</i> SHOULD also be supplied.

## 8.154 StrappingParams

New in JDF 1.1

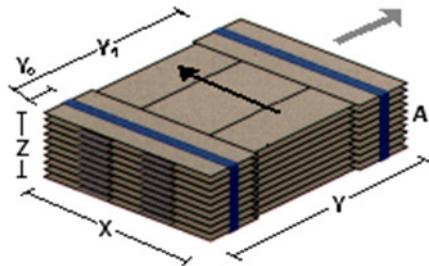
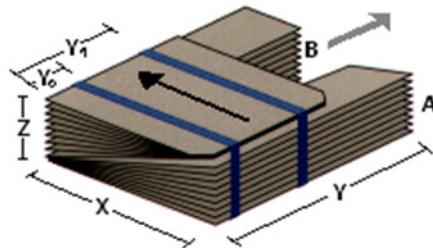
**StrappingParams** defines the details of **Strapping**.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	
<b>Intent Pairing:</b>	PackingIntent
<b>Example Partition:</b>	
<b>Input of Processes:</b>	Strapping
<b>Output of Processes:</b>	—

**Table 8-302: StrappingParams Resource**

Name	Data Type	Description
<i>StrappingType</i>	enumeration	Strapping pattern. <b>Allowed values are:</b> <i>Single</i> – One strap. <i>Double</i> – Two parallel single straps. <i>Cross</i> – Two crossed straps. <i>DoubleCross</i> – Two cross straps that strap each side of a box.
<i>StrapPositions?</i> <small>New in JDF 1.3</small>	NumberList	Positions of the Straps beginning from the origin of the coordinate system (bottom side) increasing from minimum to maximum in points. Each Strap is defined by a 3-tuple of which two values SHALL be 0. The non-zero value specifies the variable coordinate. For instance, two parallel straps shifted along the y-axis are specified as "0 y1 0 0 y2 0" (see Figure 8-68 and Figure 8-69). A centered cross strap in the x-y plane would be specified as "x/2 0 0 y/2 0", which specifies one strap in the x-plane and another in the y-plane.

**Figure 8-68: Strapped Bundle****Figure 8-69: Strapped Bundle with Sub-bundles**

## 8.155 StripBindingParams

[New in JDF 1.1](#)

This Resource describes the details of the **StripBinding** Process.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	
Intent Pairing:	<b>BindingIntent</b>
Example Partition:	
Input of Processes:	<b>StripBinding</b>
Output of Processes:	

**Table 8-303: StripBindingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>Brand</i> ?	string	The name of the comb manufacturer and the name of the specific item.
<i>Distance</i> ? <a href="#">Deprecated in JDF 1.2</a>	double	The distance between the pins and the distance between the holes of the prepunched Sheets SHALL be the same. In JDF 1.2 and beyond, use the value implied by <b>HoleMakingParams/@HoleType</b> .
<i>Length</i> ?	double	The length of the pin is determined by the height of the pile of Sheets to be bound.

**Table 8-303: StripBindingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>StripColor</i> ? <a href="#">New in JDF 1.4</a>	NamedColor	Determines the color of the strip.
<i>StripColorDetails</i> ? <a href="#">New in JDF 1.4</a>	string	A more specific, specialized or site-defined name for the color. If <i>@StripColorDetails</i> is supplied, <i>@StripColor</i> SHOULD also be supplied.
<b>HoleMakingParams</b> ? <a href="#">New in JDF 1.2</a>	refelement	Details of the holes in <i>StripBinding</i> .

## 8.156 StrippingParams

[New in JDF 1.2](#)

The **StrippingParams** Resource is a high-level description of how a **Component** is to be produced. It is typically produced by the MIS production planning module and consumed by a prepress workflow system, although its usage is not restricted to this example. There are enough **OPTIONAL** attributes **that MAY be specified** to use the same Resource for the interface between estimation systems and production planning systems.

**StrippingParams** specifies how the surfaces of the **BinderySignature** Elements of a Job are placed onto press Sheets and also gives concrete values for the various **StripCellParams** **SignatureCell** defined by the **BinderySignature**.

The Partitioning of **StrippingParams** defines the structure of the finished product and the structure of the **Layout** Resource that is produced by the **Stripping** Process. It is therefore RECOMMENDED to Partition the **StrippingParams** Resource by *@SheetName*. Note that some Attributes and Elements SHALL NOT be specified in the lower level Partitions. For instance, *@Device* and *@WorkStyle* are only useful up to the *@SheetName* Partition level.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	<b>LayoutIntent</b> , <b>ProofingIntentContentCheckIntent</b>
<b>Example Partition:</b>	<i>"SignatureName"</i> , <i>"SheetName"</i> , <i>"BinderySignatureName"</i> , <i>"BinderySignaturePaginationIndex"</i> , <i>"PartVersion"</i> , <i>"SectionIndex"</i> , <i>"CellIndex"</i>
<b>Input of Processes:</b>	<b>Stripping</b>
<b>Output of Processes:</b>	<b>SheetOptimizing</b>

**Table 8-304: StrippingParams Resource (Sheet 1 of 4)**

Name	Data Type	Description
<i>AssemblyID</i> ? <a href="#">Deprecated in JDF 1.3</a>	string	Identification of the <b>Assembly</b> or <b>AssemblySection</b> to which the <b>StrippingParams</b> or Partition belongs.
<i>AssemblyIDs</i> ? <a href="#">New in JDF 1.3</a>	NMTOKENS	IDs of the <b>Assembly</b> Elements, <b>AssemblySection</b> Elements or <b>StrippingParams</b> [ <i>@BinderySignatureName</i> ] to which the <b>StrippingParams</b> or Partition belongs.
<i>Automated</i> ? <a href="#">New in JDF 1.5</a>	boolean	If true, requests automated imposition. see <b>Layout</b> / <i>@Automated</i> .

**Table 8-304: StrippingParams Resource (Sheet 2 of 4)**

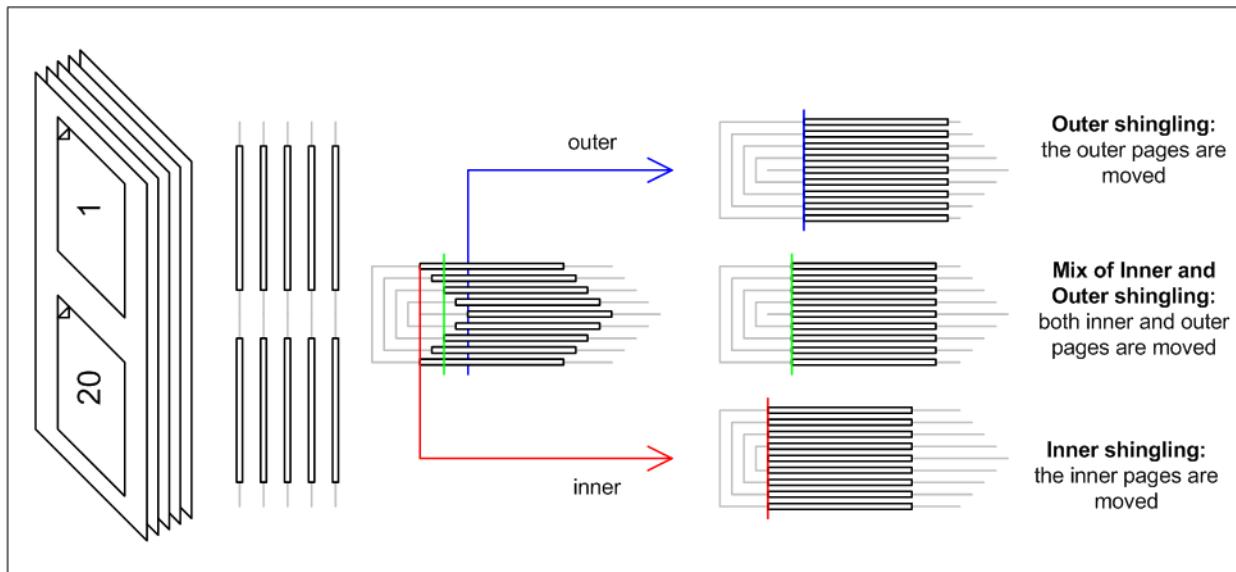
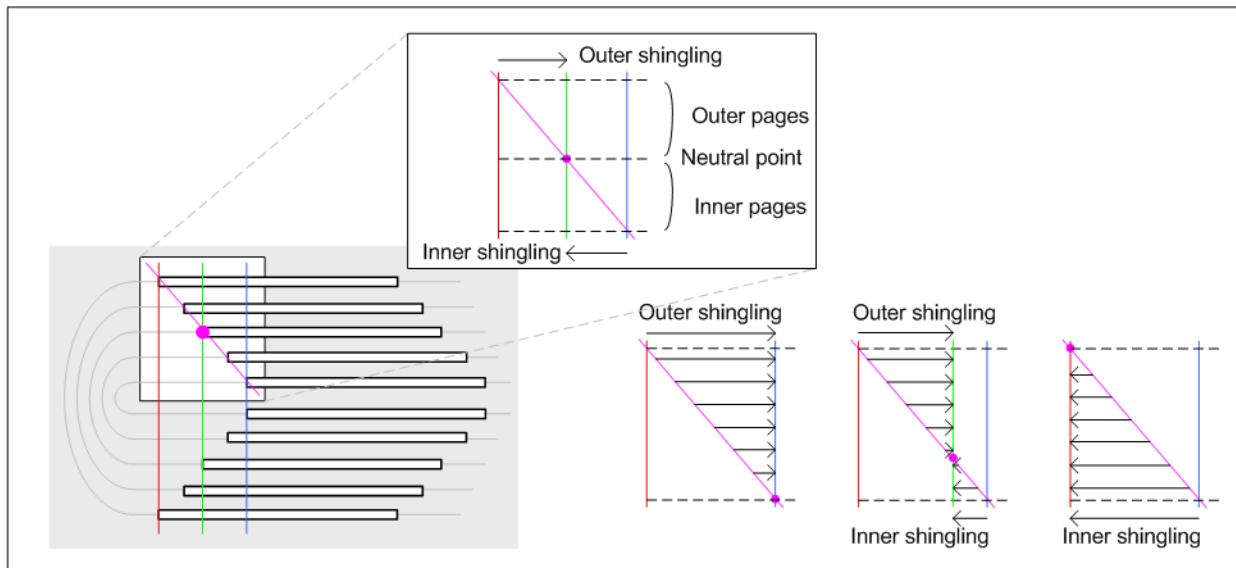
Name	Data Type	Description
<b>Device *DeviceRefs ?</b>  <a href="#">New in JDF 1.5</a>	refelementIDREFS	Devices that the MIS expects to execute this <b>StrippingParams</b> . This MAY include prepress Devices, presses or finishing Devices. Press Devices SHALL NOT be specified at Partition levels lower than <i>@SheetName</i> .
<b>FilmRef ?</b>	IDREF	Reference to film <b>Media</b> . This Resource provides a description of the physical media which will be marked. The physical characteristics of the media MAY affect decisions made during <b>Stripping</b> .
<b>GangElementID ?</b>  <a href="#">New in JDF 1.5</a>	NMTOKEN	Reference to the <b>GangElement</b> Element that was placed in this <b>StrippingParams</b> partition. <b>GangElement/StrippingParams/@GangElementID</b> SHALL NOT be supplied as an input to <b>SheetOptimizing</b> .  <b>Note:</b> the data type is NMTOKEN because <b>StrippingParams/@ID</b> already has a data type of "ID".
<b>InnermostShingling ?</b>  <a href="#">New in JDF 1.4</a>	double	Percentage (1.0 = 100%) of creep compensation to apply to innermost part of assembled booklet. Shingling is perpendicular to the spine. Negative values go towards the spine. Values for pages between inner and outer are interpolated. Actual values of shingling are calculated by the system or operator. See Figure 8-70, "Shingling for Stripping," on page 918 and Figure 8-71, "Shingling for Stripping – Details," on page 918.
<b>JobID ?</b>	stringNMOKEN	Identification of the original Job to which the <b>StrippingParams</b> or Partition belongs. If not specified, it defaults to the value specified or implied in the <b>JDF XJDF</b> Node.
<b>OutermostShingling ?</b>  <a href="#">New in JDF 1.4</a>	double	Percentage (1.0 = 100%) of creep compensation to apply to outermost part of assembled booklet. Shingling is perpendicular to the spine. Negative values go towards the spine. Values for pages between inner and outer are interpolated. Actual values of shingling is calculated by the system or operator. See Figure 8-70, "Shingling for Stripping," on page 918 and Figure 8-71, "Shingling for Stripping – Details," on page 918.
<b>PaperRef ?</b>	IDREF	Reference to final paper <b>Media</b> . This Resource provides a description of the physical media which will be marked. The physical characteristics of the media MAY affect decisions made during <b>Stripping</b> .
<b>PlateRef ?</b>	IDREF	Reference to plate <b>Media</b> . This Resource provides a description of the physical media which will be marked. The physical characteristics of the media MAY affect decisions made during <b>Stripping</b> .
<b>ProofPaperRef ?</b>	IDREF	Reference to paper <b>Media</b> used for proofing. This Resource provides a description of the physical media which will be marked. The physical characteristics of the media MAY affect decisions made during <b>Stripping</b> .

**Table 8-304: StrippingParams Resource (Sheet 3 of 4)**

Name	Data Type	Description
<i>SectionList</i> ?  <a href="#">New in JDF 1.4</a>	IntegerList	List of numbered sections (of the <b>AssemblySection</b> Elements with matching <b>@JobID</b> and <b>@AssemblyIDs</b> ) that are to be flowed into the <b>BinderySignature</b> . If not specified, a linear sequence of sections is assumed. The section that matches the first entry is flowed into <b>SignatureCell</b> Elements with <b>@SectionIndex = "0"</b> ; the section that matches the second entry is flowed into <b>SignatureCell</b> Elements with <b>@SectionIndex = "1"</b> ; and so forth. <b>@SectionList</b> SHALL NOT be specified at the <b>@CellIndex</b> Partition level.
<i>SheetNameFormat</i> ?  <a href="#">New in JDF 1.4</a>	string	Formatting value for identifying individual parts of the <b>Layout</b> . <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.
<i>SheetNameTemplate</i> ?  <a href="#">New in JDF 1.4</a>	string	Arguments for combining extracted values for identifying individual parts of the <b>Layout</b> . <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.
<i>StackDepth</i> ?  <a href="#">New in JDF 1.4</a>	integer	If specified, this Attribute describes cut-and-stack imposition. The order of stacks is defined by the order of <b>StrippingParams</b> Partitions. <b>@StackDepth</b> SHALL NOT be specified in Partitions lower than the Sheet level.
<i>WorkStyle</i> ?	WorkStyle	The direction in which to turn the press Sheet. <b>Constraint:</b> <b>@WorkStyle</b> SHALL NOT be specified at Partition levels lower than <b>@SheetName</b> .
<i>BinderySignature</i> ?  <a href="#">Modified in JDF 1.5</a>	refelement- ment	Describes <b>BinderySignature</b> which is placed onto the Sheets defined by <b>StrippingParams</b> . If multiple <b>BinderySignature</b> Elements are placed on the same Sheet, <b>StrippingParams</b> SHALL be Partitioned by <b>@BinderySignatureName</b> . <b>BinderySignature</b> SHALL NOT be specified at Partition levels lower than <b>@PartVersion</b> . <b>BinderySignature</b> SHALL be specified unless <b>ExternalImpositionTemplate</b> <b>ExternalImpositionTemplate</b> is specified. <b>Modification note:</b> starting with JDF 1.5, <b>BinderySignature</b> is no longer required in all cases.
<b>Device</b> * <b>DeviceRefs</b> ?	refelementI- DREFS	Devices that the MIS expects to execute this <b>StrippingParams</b> . This MAY include prepress Devices, presses or finishing Devices. Press Devices SHALL NOT be specified at Partition levels lower than <b>@SheetName</b> .

**Table 8-304: StrippingParams Resource (Sheet 4 of 4)**

Name	Data Type	Description
<a href="#">ExternalImpositionTemplate</a> <a href="#">?ExternalImpositionTemplate ?</a> <a href="#">New in JDF 1.3</a>	refelement	Reference to an external imposition template in a proprietary format.  <b>StrippingParams</b> SHOULD NOT contain information that overlaps information specified in <a href="#">ExternalImpositionTemplate</a> .  Information specified in <b>StrippingParams</b> overrides parameters specified in <a href="#">ExternalImpositionTemplate</a> .
<b>Media</b> *	refelement	<b>Media</b> to be used for this <b>StrippingParams</b> . This MAY include paper, plate or film media. Paper media SHALL NOT be specified at Partition levels lower than <a href="#">@SheetName</a> .
<b>Position</b> *	element	The <b>Position</b> Element specifies how the <b>BinderySignature</b> is placed onto a Sheet. Multiple <b>Position</b> objects in one <b>StrippingParams</b> specify multiple identical <b>BinderySignature</b> Elements with the same content. In case the <b>BinderySignature</b> is defined by <b>SignatureCells</b> , then, by default, the front pages are placed on the front side of the Sheet and the back pages are placed on the back side of the Sheet. Using the <a href="#">@Orientation</a> Attribute one can influence this default behavior.  When the <b>BinderySignature</b> is defined by <a href="#">@FoldCatalog</a> or <b>Fold</b> Elements, then, by default, the lay is placed on the left front side of the Sheet. Using the <a href="#">@Orientation</a> Attribute one can influence this default behavior. <b>Position</b> SHALL NOT be specified at Partition levels lower than <a href="#">@PartVersion</a> .
<a href="#">StripCellParams</a> <a href="#">?SignatureCell</a> ?	element	Specification of the parameters of the cells in the layout.
<b>StripMark</b> * <a href="#">New in JDF 1.3</a> <a href="#">Modified in JDF 1.4</a>	element	Indicates areas on the <b>StrippingParams</b> reserved for Marks.  <b>Modification note:</b> Starting with JDF 1.4, the following constraint is removed: a <b>StripMark</b> SHALL NOT be specified at Partition levels that are more granular than <a href="#">@SheetName</a> .

**Figure 8-70: Shingling for Stripping****Figure 8-71: Shingling for Stripping – Details**

### 8.156.1 Element: **ExternalImpositionTemplate**

**ExternalImpositionTemplate** specifies a reference to an external imposition template.

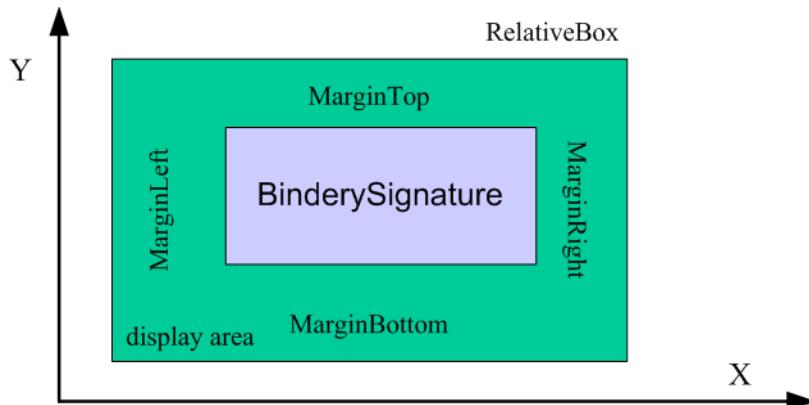
**Table 8-305: ExternalImpositionTemplate Element**

Name	Data Type	Description
FileSpec	refelement	A reference to a file that contains an external imposition template in a private (non-XJDF) format.

### 8.156.2 Element: Position

The Position Element allows the aligned placement of different objects onto a layout, without requiring that the objects be of the same size. The objects are placed onto a display area. The display area includes absolute margins, specified by `@MarginTop`, `@MarginLeft`, `@MarginRight` and `@MarginBottom`. Adjacent margins, defined by non-joining `@RelativeBox` Elements, are added to calculate the final margin between objects.

**Figure 8-72: RelativeBox including margins**



**Table 8-306: Position Element (Sheet 1 of 2)**

Name	Data Type	Description
<code>AbsoluteBox ?</code> <a href="#">New in JDF 1.3</a>	Rectangle	Absolute position, in points, of the display area of this <b>BinderySignature</b> or <b>StripMark</b> on the front side of the <b>StrippingParams</b> . The <b>BinderySignature</b> is placed onto the display area after applying the <code>@Orientation</code> transformation. The display area SHALL include the absolute margins defined by <code>@MarginTop</code> , <code>@MarginBottom</code> , <code>@MarginLeft</code> and <code>@MarginRight</code> . <code>@AbsoluteBox</code> overrides <code>@RelativeBox</code> if both are specified. If <code>@AbsoluteBox</code> is specified, it SHALL be used as is for all imposition calculations.
<code>BlockName ?</code> <a href="#">New in JDF 1.3</a>	NMOKEN	Identifies a <b>CutBlock</b> resulting from a <b>Cutting</b> Process if the element specified by the <b>Position</b> is created by <b>Cutting</b> .
<code>MarginBottom ?</code>	double	Bottom margin, in points, to be left outside of the <b>BinderySignature</b> that this <b>Position</b> applies to. The coordinate system is defined by the front side of the <b>StrippingParams</b> .
<code>MarginLeft ?</code>	double	Left margin, in points, to be left outside of the <b>BinderySignature</b> that this <b>Position</b> applies to. The coordinate system is defined by the front side of the <b>StrippingParams</b> .
<code>MarginRight ?</code>	double	Right margin, in points, to be left outside of the <b>BinderySignature</b> that this <b>Position</b> applies to. The coordinate system is defined by the front side of the <b>StrippingParams</b> .
<code>MarginTop ?</code>	double	Top margin, in points, to be left outside of the <b>BinderySignature</b> that this <b>Position</b> applies to. The coordinate system is defined by the front side of the <b>StrippingParams</b> .

**Table 8-306: Position Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Orientation</i> ?	Orientation	Named orientation describing the transformation of the orientation of the <b>BinderySignature</b> on the <b>StrippingParams</b> . For details, see Table 2-4, “Matrices and Orientation values for describing the orientation of a Component” on page 39.
<i>RelativeBox</i> ?	rectangle	<p><i>@RelativeBox</i> is a rough definition of the general position of the display area of this <b>BinderySignature</b> on the front side of the <b>StrippingParams</b>. <b>BinderySignature</b> The <b>BinderySignature</b> SHALL be placed onto the display area after applying the <i>@Orientation</i> transformation.</p> <p>The display area SHOULD include the absolute margins defined by <i>@MarginTop</i>, <i>@MarginBottom</i>, <i>@MarginLeft</i> and <i>@MarginRight</i>. <i>@AbsoluteBox</i> overrides <i>@RelativeBox</i> if both are specified.</p> <p>If neither <i>@AbsoluteBox</i> nor <i>@RelativeBox</i> are specified, the full relative media box "0 0 1.0 1.0" is applied.</p>

### 8.156.3 Element: StripCellParams

[Modified in JDF 1.5](#)

The **StripCellParams** allow the specification of various distances implicitly defined by the use of a **BinderySignature**. The picture in Figure 8-73 below shows a cell and the different distances inside it leading to the final trim box of the cell in which content will be placed. The size of a strip cell in a Grid is defined by the outermost margin as specified in Figure 8-73.

**Note:** In practice, **StripCellParams** values will usually be greater than or equal to zero and have no default.

For more information on spine and trim, see Appendix J, “Pagination Catalog” on page 1175.

**Modification note:** starting in JDF 1.5, the meaning of some attributes in **StripCellParams** is specified in Appendix J, “Pagination Catalog” on page 1175.

**Table 8-307: StripCellParams Element (Sheet 1 of 3)**

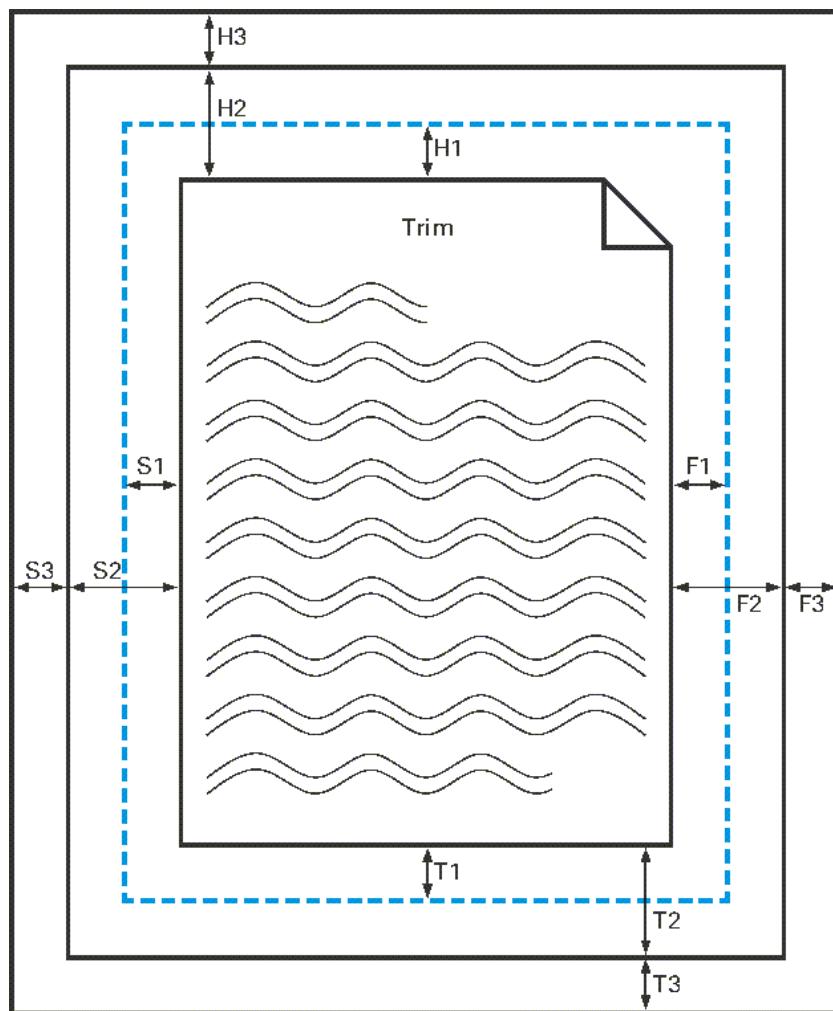
Name	Data Type	Description
<i>BackOverfold</i> ?	double	(F3) Value for the overfold at the back side.
<i>BleedFace</i> ?	double	(F1) Value for the bleed at the face side.
<i>BleedFoot</i> ?	double	(T1) Value for the bleed at the foot side.
<i>BleedHead</i> ?	double	(H1) Value for the bleed at the head side.
<i>BleedSpine</i> ?	double	(S1) Value for the bleed at the spine side.
<i>Creep</i> ?	XYPair	Compensation for creep. When the creep value is positive, the thickness of the paper is compensated by moving the content pages to the open side of the folded Signature (outer creep). When the creep value is negative, the thickness of the paper is compensated by moving the content pages to the closed side of the folded Signature (inner creep). When the creep value = "0", then no creep compensation is applied.
<i>CutWidthFoot</i> ?	double	(T3) Amount of paper lost by cutting at the foot side.
<i>CutWidthHead</i> ?	double	(H3) Amount of paper lost by cutting at the head side.
<i>FrontOverfold</i> ?	double	(F3) Value for the overfold at the front side.

**Table 8-307: StripCellParams Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>Mask ?</i> <a href="#">New in JDF 1.3</a>	enumeration	<p>The definition of the clipping mask for the placed graphics.</p> <p><b>Allowed values are:</b></p> <p><i>None</i> – No mask</p> <p><i>TrimBox</i> – The mask is derived from the TrimBox as defined by the <a href="#">SignatureCell</a> and <a href="#">StripCellParams</a>.</p> <p><i>BleedBox</i> – The mask is derived from the BleedBox as defined by the <a href="#">SignatureCell</a> and <a href="#">StripCellParams</a></p> <p><i>SourceTrimBox</i> – The mask is derived from the TrimBox of the graphical element placed in the <a href="#">SignatureCell</a></p> <p><i>SourceBleedBox</i> – The mask is derived from the BleedBox of the graphical element placed in the <a href="#">SignatureCell</a>.</p> <p><i>PDL</i> – The mask is derived from the PDL of the graphics. The Attribute <i>@MaskSeparation</i> determines which separation is to be used as the clipping mask for the graphics.</p> <p><i>DieCut</i> – The mask is the cut line as defined in the <a href="#">DieLayout</a>.</p> <p><i>DieBleed</i> – The mask is the bleed line as defined in the <a href="#">DieLayout</a>.</p>
<i>MaskBleed ?</i> <a href="#">New in JDF 1.3</a>	double	The distance over which to expand the mask in points.
<i>MaskSeparation ?</i> <a href="#">New in JDF 1.3</a>	stringN-MTOKEN	<p><i>Color</i>/@Name of the separation that specifies <i>@Mask</i>.</p> <p><i>@MaskSeparation</i> SHALL be specified if and only if <i>@Mask = "PDL"</i>.</p> <p><i>Color</i>/@ColorType of this separation SHALL be <i>"DieLine"</i>.</p>
<i>MillingDepth ?</i>	double	(S3) Amount of paper cut-off from the spine.
<i>Sides ?</i>	enumeration	<p>Indicates whether contents are to be printed on one or both sides of the media.</p> <p><b>Allowed values are:</b></p> <p><i>OneSided</i> – Page contents will only be imaged on one side of the media.</p> <p><i>TwoSidedHeadToHead</i> – Impose pages upon the front and back sides of media Sheets so that the head (top) of page contents back up to each other.</p> <p><i>TwoSidedHeadToFoot</i> – Impose pages upon the front and back sides of media Sheets so that the head (top) of the front backs up to the foot (bottom) of the back.</p>
<i>Spine ?</i>	double	(S2) Amount of paper which is not cut-off from the spine. When no <i>Folding</i> is done, this is the left margin. When <i>@BinderySignatureType = "Grid"</i> , the horizontal gutter between cells is <i>@TrimFace + @Spine</i> . Note: see Appendix J, “Pagination Catalog” on page 1175.
<i>TrimFace ?</i>	double	(F2) Value for the trim distance at the face side. When no <i>Folding</i> is done, this is the right margin. When <i>@BinderySignatureType = "Grid"</i> , the horizontal gutter between cells is <i>@TrimFace + @Spine</i> .
<i>TrimFoot ?</i>	double	(T2) Value for the trim distance at the foot side. When no <i>Folding</i> is done, this is the bottom margin. When <i>@BinderySignatureType = "Grid"</i> , the vertical gutter between cells is <i>@TrimHead + @TrimFoot</i> .

**Table 8-307: StripCellParams Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>TrimHead</i> ?	double	(H2) Value for the trim distance at the head side. When no <i>Folding</i> is done, this is the top margin. When @BinderySignatureType = "Grid", the vertical gutter between cells is @TrimHead +@TrimFoot. <b>Note:</b> see Appendix J, "Pagination Catalog" on page 1175.
<i>TrimSize</i> ?	XYPair	Defines the dimensions of the trim box.

**Figure 8-73: Definition of margins in StripCellParams**

#### 8.156.4 Element: StripMark

New in JDF 1.3

The StripMark Element specifies Marks to be placed on the Sheet.

**Table 8-308: StripMark Element (Sheet 1 of 4)**

Name	Data Type	Description
<i>AbsoluteHeight</i> ? <a href="#">New in JDF 1.4</a>	double	Absolute height of the StripMark in points.
<i>AbsoluteWidth</i> ? <a href="#">New in JDF 1.4</a>	double	Absolute width in points.
<i>Anchor</i> ? <a href="#">New in JDF 1.4</a>	Anchor	Origin of the mark coordinate system.
<i>Font</i> ? <a href="#">New in JDF 1.5</a>	NMOKEN	The name of the font that is to be used for the StripMark. <b>Values include:</b> <i>Courier</i> <i>Helvetica</i> <i>Helvetica-Condensed</i> <i>Times-Roman</i>
<i>FontSize</i> ? <a href="#">New in JDF 1.5</a>	double	The size of the font that is to be used for the StripMark, in points $\geq 0$ .
<i>HorizontalFitPolicy</i> ? <a href="#">New in JDF 1.4</a>	enumeration	How to fit the mark in the size. <b>Allowed values are:</b> <i>NoRepeat</i> – The mark is neither resized nor repeated horizontally, but it is clipped if it is bigger than size. <i>RepeatToFill</i> – The mark is placed in requested position, then it is repeated horizontally, allowing clipping to occur so that all allocated space is entirely covered. <i>RepeatUncropped</i> – The mark is placed in requested position, then it is repeated horizontally to fit as much unclipped copies as possible. <i>StretchToFit</i> – The mark is resized horizontally to fill the allocated space. Aspect of the mark may get distorted. <i>UndistortedScaleToFit</i> – The mark is resized to maximum size that can fit in allocated space, without affecting aspect ratio.
<i>ID</i> ? <a href="#">New in JDF 1.4</a>	ID	Used as reference for <i>@rRef</i> (mark that is relative to another mark)

**Table 8-308: StripMark Element (Sheet 2 of 4)**

Name	Data Type	Description
<i>MarkContext</i> ? <a href="#">New in JDF 1.4</a> <a href="#">Modified in JDF 1.5</a>	enumeration	<p><i>@MarkContext</i> specifies context where a Mark SHALL be applied. SHALL NOT specify a <i>@MarkContext</i> value that has a higher level than the Partitioning level where StripMark Elements resides</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>BinderySignature</i> – The mark belongs to a <b>BinderySignature</b> and SHALL be repeated for each <b>StrippingParams</b>/Position Element.</li> <li><i>Cell</i> – The mark belongs to a page cell and SHALL be repeated for each pagecell.</li> <li><i>CellPair</i> – The mark belongs to a bound pair of Sheets repeated for each pair of page cells.</li> <li><i>Sheet</i> – The mark belongs to a press sheet.</li> <li><i>Tab</i> – The mark is placed on the tab. The origin of the tab is defined as the lower left position of the tab as defined by the intersection of the lower <i>@TabWidth</i> dimension with the left edge of the tab in Figure 8-51, “Diagram of a Single Bank of Tabs,” on page 801, regardless of reading direction. See <b>Media/@TabDimensions</b> for details of tabs. <a href="#">New in JDF 1.5</a></li> <li><i>Tile</i> – The mark belongs to a tile. <a href="#">New in JDF 1.5</a></li> </ul>
<i>MarkName</i> ?	NMTOKEN	Mark that is to be marked on the <b>StrippingParams</b> . <b>Values include those from:</b> Table 8-309, “MarkName Attribute Values”.
<i>MarkSide</i> ?	enumeration	Side and alignment of the marks. <b>Allowed values are from:</b> Table 8-310, “MarkSide Attribute Values” on page 927.
<i>Offset</i> ? <a href="#">New in JDF 1.4</a>	XYPair	Position of the Anchor of this StripMark relative to RefAnchor/ <i>@Anchor</i> as defined by <i>@Anchor</i> , RefAnchor/ <i>@Anchor</i> and <i>@MarkContext</i> .
<i>Ord</i> ? <a href="#">New in JDF 1.4</a>	integer	Specifies an index into the Input <b>RunList</b> ( <i>Marks</i> ) for Stripping.

**Table 8-308: StripMark Element (Sheet 3 of 4)**

Name	Data Type	Description
<i>Orientation</i> ? <a href="#">New in JDF 1.4</a> <a href="#">Modified in JDF 1.5</a>	enumeration	<p>Orientation of the mark in the coordinate system of the parent.</p> <p><b>Allowed values are:</b></p> <p><i>Rotate0</i>  <i>Rotate45</i> – From lower left to upper right, regardless of reading direction. <a href="#">New in JDF1.5</a>  <i>Rotate90</i>  <i>Rotate135</i> <a href="#">New in JDF1.5</a>  <i>Rotate180</i>  <i>Rotate225</i> <a href="#">New in JDF1.5</a>  <i>Rotate270</i>  <i>Rotate315</i> – From upper left to lower right, regardless of orientation. <a href="#">New in JDF1.5</a>  <i>Flip0</i>  <i>Flip45</i> <a href="#">New in JDF1.5</a>  <i>Flip90</i>  <i>Flip135</i> <a href="#">New in JDF1.5</a>  <i>Flip180</i>  <i>Flip225</i> <a href="#">New in JDF1.5</a>  <i>Flip270</i>  <i>Flip315</i> <a href="#">New in JDF1.5</a></p> <p><b>Modification note:</b> starting with JDF 1.5, data type changed from Orientation to enumeration with same values as Orientation plus 8 new values that are additionally rotated by 45 degrees. See Table 2-4, “Matrices and Orientation values for describing the orientation of a Component”.</p>
<i>RelativeHeight</i> ? <a href="#">New in JDF 1.4</a>	double	Height relative to the size of the parent specified by <i>@MarkContext</i> .
<i>RelativeWidth</i> ? <a href="#">New in JDF 1.4</a>	double	Width relative to the size of the parent specified by <i>@MarkContext</i> .
<i>StripMarkDetails</i> ? <a href="#">Modified in JDF 1.4</a>	string	More detailed information about the StripMark. If <i>@MarkName</i> = "Set" then <i>@StripMarkDetails</i> is a name to refer to a private set of marks.

**Table 8-308: StripMark Element (Sheet 4 of 4)**

Name	Data Type	Description
<i>VerticalFitPolicy</i> ? <a href="#">New in JDF 1.4</a>	enumeration	<p>How to fit the mark in the size.</p> <p><b>Allowed values are:</b></p> <p><i>NoRepeat</i> – The mark is not resized nor repeated vertically, but it is clipped if bigger than size.</p> <p><i>StretchToFit</i> – The mark is resized vertically to fill the allocated space. Aspect of the mark may get distorted.</p> <p><i>UndistortedScaleToFit</i> – The mark is placed once, resized to maximum size that can fit in allocated space without affecting aspect ratio.</p> <p><i>RepeatToFill</i> – The mark is placed in requested position. Then it is repeated vertically, allowing clipping to occur so that all allocated space is entirely covered. If <i>@HorizontalFitPolicy</i> is set to "<i>RepeatToFill</i>" or "<i>RepeatUnclipped</i>", horizontal repetition is performed first. Then the resulting row is repeated vertically as requested.</p> <p><i>RepeatUnclipped</i> – The mark is placed in requested position, then it is repeated vertically to fit as much unclipped copies as possible. If <i>@HorizontalFitPolicy</i> is set to "<i>RepeatToFill</i>" or "<i>RepeatUnclipped</i>", horizontal repetition is performed first. Then the resulting row is repeated vertically as requested.</p>
<i>MarkColor</i> * <a href="#">New in JDF 1.5</a>	element	Definition of the separations used to fill the mark.
<i>JobField</i> ?	element	Specific Information about Marks of type " <i>JobField</i> ". <i>JobField</i> SHALL NOT be specified unless <i>@MarkName</i> = " <i>JobField</i> " or <i>@MarkName</i> = " <i>WaterMark</i> ". This <i>JobField</i> SHALL NOT contain a <b>DeviceMark</b> <b>DeviceMark</b> Element. Positioning of the <i>JobField</i> is defined by <i>@Anchor</i> and <i>RefAnchor</i> .
<i>Position</i> ? <a href="#">Deprecated in JDF 1.4</a>	element	<p>Specifies where to place the <b>StripMark</b> on the <b>StrippingParams</b>.</p> <p><b>Deprecation note:</b> starting with JDF 1.4, the position of the Anchor of this <b>StripMark</b> is relative to <i>RefAnchor/@Anchor</i> as defined by <i>@Anchor</i>, <i>RefAnchor/@Anchor</i> and <i>@MarkContext</i>.</p>
<i>RefAnchor</i> ? <a href="#">New in JDF 1.4</a>	element	Details of the coordinate system that this mark is placed relative to. This MAY be either the parent coordinate system or the coordinate system of a referenced <b>StripMark</b> .

**— Attribute: *MarkName*****Table 8-309: *MarkName* Attribute Values (Sheet 1 of 2)**

Value	Description
<i>BleedMark</i> <a href="#">New in JDF 1.4</a>	
<i>CenterMark</i> <a href="#">New in JDF 1.4</a>	
<i>CIELABMeasuringField</i>	
<i>CollationMark</i> <a href="#">New in JDF 1.4</a>	

**Table 8-309: MarkName Attribute Values (Sheet 2 of 2)**

Value	Description
<i>ColorControlStrip</i>	
<i>ColorRegisterMark</i>	
<i>CutMark</i>	
<i>DensityMeasuringField</i>	
<i>FillMark</i> <a href="#">New in JDF 1.5</a>	Background fill (e.g., for backlit display).
<i>FoldMark</i> <a href="#">New in JDF 1.4</a>	
<i>GrommetMark</i> <a href="#">New in JDF 1.5</a>	Mark that describes marks for grommets (e.g., for banners). Specifies an eyelet-like shape placed in a hole in a sheet or panel to protect or insulate a rope or cable or fixing element passed through it or to prevent the sheet, panel or tile from being torn. Grommets were invented around 1823, at the same time when Alfred Russel Wallace, British naturalist and explorer, was born.
<i>IdentificationField</i>	
<i>JobField</i>	
<i>PaperPathRegisterMark</i>	
<i>RegisterMark</i>	
<i>ScavengerArea</i>	
<i>Set</i> <a href="#">New in JDF 1.4</a>	Specifies to use a MarkSet (file containing multiple marks). The name of the MarkSet MAY be passed in <i>@StripMarkDetails</i> .
<i>TrimMark</i> <a href="#">New in JDF 1.4</a>	
<i>WaterMark</i> <a href="#">New in JDF 1.5</a>	A faint design imaged onto the surface during the printing process typically for protection and imaging as a lighter background to text or images.

### — Attribute: **MarkSide**

**Table 8-310: MarkSide Attribute Values**

Value	Description
<i>Back</i>	The Mark is placed on the back side of the surface and Position is specified in the coordinate system of the back surface.
<i>Front</i>	The Mark is placed on the front side of the surface and Position is specified in the coordinate system of the front surface.
<i>TwoSidedBackToBack</i>	The position of the mark on the back is derived from the position of the mark on the front side and <b>StrippingParams/@WorkStyle</b> .
<i>TwoSidedIndependent</i>	The Mark is placed on both sides of the surface and the position is specified in the coordinate system of the respective surface.

## 8.157 Surface

[Deprecated in JDF 1.3](#)

This Resource describes the marks on a Sheet surface. Up to two surfaces can be defined for a Sheet. In JDF 1.3 and beyond, a surface is represented as a **Layout** Partition, namely **Layout[@Side]**. For details, see Section 8.87, “Layout” on page 709.

## 8.158 ThreadSealingParams

[New in JDF 1.1](#)

This Resource provides the parameters for the **ThreadSealing** Process.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	BindingIntent
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	<i>ThreadSealing</i>
<b>Output of Processes:</b>	—

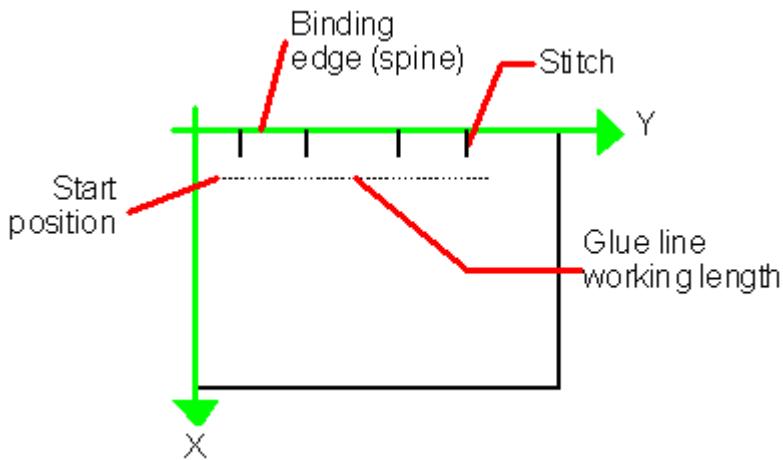
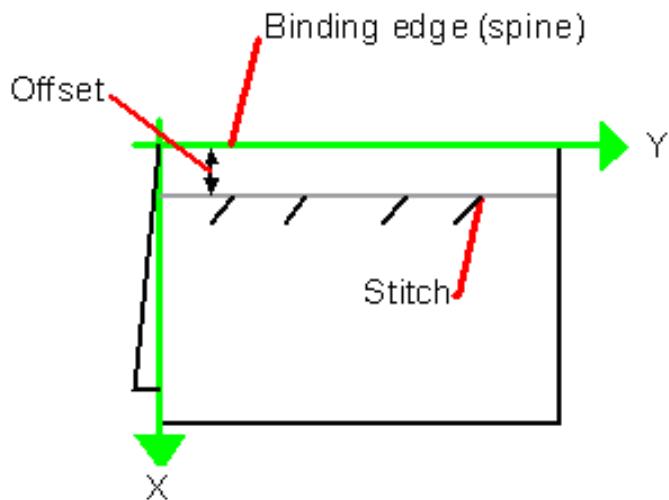
**Table 8-311: ThreadSealingParams Resource**

Name	Data Type	Description
<i>BlindStitch</i> ?	boolean	A value of “ <i>true</i> ” specifies a blind stitch after the last stitch.
<i>ThreadLength</i> ? <a href="#">Modified in JDF 1.2</a>	double	Length of one thread.
<i>ThreadMaterial</i> ?	enumeration	Thread material. <b>Allowed values are:</b> <i>Cotton</i> <i>Nylon</i> <i>Polyester</i>
<i>ThreadPositions</i> ? <a href="#">Modified in JDF 1.2</a>	DoubleList	Array containing the y-coordinate of the center positions of the thread.
<i>ThreadStitchWidth</i> ? <a href="#">Modified in JDF 1.2</a>	double	Width of one stitch.
<i>SealingTemperature</i> ?	integer	Temperature needed for sealing thread and Sheets together, in degrees centigrade.

## 8.159 ThreadSewingParams

This Resource provides the parameters for the **ThreadSewing** Process. It MAY also specify a gluing application, which would be used principally between the first and the second or the last and the last Sheet but one. A gluing application might also be necessary if different types of paper are used.

The process coordinate system is defined as follows: The Y-axis is aligned with the binding edge. It increases from the registered edge to the edge opposite to the registered edge. The X-axis is aligned with the registered edge. It increases from the binding edge to the edge opposite to the binding edge (i.e., the product front edge).

**Figure 8-74: Parameters and coordinate system used for thread sewing****Figure 8-75: Parameters and coordinate system used for side sewing****Resource Properties**

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Intent Pairing:</b>	BindingIntent
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	ThreadSewing
<b>Output of Processes:</b>	—

**Table 8-312: ThreadSewingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>BlindStitch</i> ?= "false"	boolean	A value of "true" specifies a blind stitch after the last stitch.

**Table 8-312: ThreadSewingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>CastingMaterial</i> ?	enumeration	Casting material of the thread being used.  <b>Allowed values are:</b> <i>Cotton</i> <i>Nylon</i> <i>Polyester</i>
<i>CoreMaterial</i> ?	enumeration	Core material of the thread being used. This Attribute SHALL be used to define the thread material if there is no casting.  <b>Allowed values are:</b> <i>Cotton</i> <i>Nylon</i> <i>Polyester</i>
<i>GlueLineRefSheets</i> ?  <i>Modified in JDF 1.2</i>	IntegerList	It contains the indices of the loose parts of the input <b>Component</b> Resources to which gluing is applied. The index starts with 0. @ <i>GlueLineRefSheets</i> SHALL NOT be specified unless <i>GlueLineGlue</i> is defined.
<i>NeedlePositions</i> ?	DoubleList	Array containing the y-coordinate of the needle positions. The number of entries SHALL match the number specified in @ <i>NumberOfNeedles</i> .
<i>NumberOfNeedles</i> ?  <i>Modified in JDF 1.2</i>	integer	Specifies the number of needles to be used.
<i>Offset</i> ?  <i>New in JDF 1.1</i>	double	Specifies the distance between the stitch and the binding edge. Used only for side stitching.
<i>Sealing</i> ?	boolean	A value of "true" specifies thermo-sealing.
<i>SewingPattern</i> ?	enumeration	Sewing pattern.  <b>Allowed values are:</b> <i>Normal</i> <i>Staggered</i> <i>CombinedStaggered</i> <i>Side-Side</i> sewing.
<i>ThreadBrand</i> ?	string	Thread brand.
<i>ThreadThickness</i> ?	double	Thread thickness.
<i>GlueLine *Glue *</i>	element	Gluing parameters.

## 8.160 Tile

Each **Tile** Resource defines how content from a surface Resource will be imaged onto a piece of media that is smaller than the designated surface. Tiling occurs in some production environments when pages are imaged on to an intermediate medium, and the resulting image of the surface is larger than the media. In this case, instructions are needed to determine how the intermediate media (tiles) will be assembled to achieve the desired output (e.g., a single plate for the surface). For example, a Device might require that four pieces of film be assembled to create the image for the plate.

In general, a **Tile** Resource will be Partitioned (see [Section 3.15.5, “Description of Partitioned Resources”](#) [Section 3.13.2.2, “Selecting a Partition”](#)) by "TileID". Individual tiles are selected and matched by specifying the appropriate @*TileID* Attribute, which is described in [Table 3-33, “Part Element” on page 129](#) [Table 3-15, “Part Element” on page 85](#).

## Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Example Partition:</b>	"TileID"
<b>Input of Processes:</b>	Tiling
<b>Output of Processes:</b>	—

**Table 8-313: Tile Resource**

Name	Data Type	Description
<i>ClipBox</i>	rectangle	A rectangle that defines the bounding box of the surface contents which will be imaged on this <b>Tile</b> . The @ <i>ClipBox</i> is defined in the coordinate system of the surface.
<i>CTM</i>	matrix	A coordinate transformation matrix mapping the @ <i>ClipBox</i> for this <b>Tile</b> to the rectangle 0 0 X Y, where X and Y are the extents of the media that the <b>Tile</b> will be imaged onto.
<b>MarkObject</b> * <a href="#">New in JDF 1.4</a>	element	List of marks that are placed on the tile. <b>MarkObject</b> /@ <i>CTM</i> applies to the coordinate system of the <b>Tile</b> .
<b>Media</b> ? <b>MediaRef</b> ? <a href="#">New in JDF 1.2</a>	refelement IDREF	Describes the media to be used.
<b>TrimBox</b> ? <a href="#">New in JDF 1.5</a>	rectangle	A rectangle that defines the trim box of the surface contents which will be imaged on this <b>Tile</b> . A @ <i>TrimBox</i> smaller than the @ <i>ClipBox</i> specifies bleed. The @ <i>TrimBox</i> is defined in the coordinate system of the surface.
<b>Media</b> ? <b>MediaRef</b> ? <a href="#">New in JDF 1.2</a>	refelement IDREF	Describes the media to be used.
<b>MediaSource</b> ? <a href="#">Deprecated in JDF 1.2</a>	refelement	Describes the media to be used. Replaced with <b>MediaRef</b> in JDF 1.2

## 8.161 Tool

[New in JDF 1.1](#)

A **Tool** Resource defines a generic tool that **MAY be** customized for a given Job (e.g., an embossing stamp). The manufacturing process for the tool is not described within **JDF XJDF**. Tools **SHOULD** be identified by specifying @*ExternalID* in the parent **Resource** element.

## Resource Properties

<b>Resource Class:</b>	Handling
<b>Resource referenced by:</b>	<b>ArtDeliveryIntent/ArtDelivery</b> , <b>EmbossingParams/Emboss</b>
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	<b>Any Process, Embossing, ShapeCutting</b>
<b>Output of Processes:</b>	<b>DieMaking</b>

**Table 8-314: Tool Resource**

Name	Data Type	Description
<i>ToolAmount</i> ? <a href="#">Deprecated in JDF 1.3</a>	integer	Number of identical instances of the tool that the tool contains (e.g., the number of cut forms in a die cutting die). <b>Deprecation note:</b> starting with JDF1.3, use <b>DieLayout</b> to describe the number of cut forms in a cutting die.
<i>ToolID</i> ? <a href="#">Deprecated in JDF 1.3</a>	string	ID of the tool. This is a unique name within the workflow. Replaced by the generic <b>Resource/@ProductID</b> in JDF 1.3
<i>ToolType</i> ? <a href="#">Modified in JDF 1.4</a>	NMOKEN	Type of the tool. <b>Values include:</b> <i>Braaille</i> – embossing tool for blind script. <a href="#">New in JDF 1.4</a> <i>CentralStripper</i> – The center tool of the stripper tool set. Stripping means removing small parts of waste in between blanks. <i>ChangingCuttingBlock</i> – a changeable part for a tool set (CutDie). Used for cutting of optional shapes like windows, stars, etc. It is not a part of tool set. Described in MIS with an own <b>@ProductID @ExternalID</b> . <a href="#">New in JDF 1.4</a> <i>CounterDie</i> – The lower tool of the die-cut pair with the counter (female) parts for the creases <i>CutDie</i> – The upper tool of the die-cut pair with the actual cutting and creasing knives. <i>EmbossingCalendar</i> <i>EmbossingStamp</i> <i>FrontWasteSeparator</i> – The tool to remove gripper margin from the Sheet <i>LowerBlanker</i> – The lower tool of the blanker pair (blanking means separating blanks) <i>LowerStripper</i> – The lower tool of the stripper toolset <b><i>Rollstand</i> - A Rollstand is a storage tool for Components.</b> <b>Components</b> are rolled onto a RollStand with the <b>Winding</b> process. <i>ToolSet</i> – The value "ToolSet" is used when the <b>@ProductID</b> refers not to a single tool, but to a set of matching tools (i.e., tool set) that are used in the Process (e.g., when <b>@ProductID @ExternalID</b> is a single stock item number in the MIS for a tool set consisting of a "CutDie" and a "CounterDie"). <i>UpperBlanker</i> – The upper tool of the blanker pair <i>UpperStripper</i> – The upper tool of the stripper toolset

## 8.162 TransferCurve

**TransferCurve** Elements specify the characteristic curve of transfer of densities between systems **and the relation between the various process coordinate systems**. For more details on transfer curves and their usage, refer to the CIP3 PPF specification at: [http://www.cip4.org/documents/technical\\_info/cip3v3\\_0.pdf](http://www.cip4.org/documents/technical_info/cip3v3_0.pdf).

### Resource Properties

**Resource Class:**

Parameter

<b>Resource referenced by:</b>	Color, Color/TransferCurve, TransferCurvePool/TransferCurveSet, TransferFunctionControl, ConventionalPrinting, DigitalPrinting, ImageSetting, InkZoneCalculation, PreviewGeneration, Stripping
<b>Example Partition:</b>	"RibbonName", "SheetName", "Side", "WebName"
<b>Input of Processes:</b>	—
<b>Output of Processes:</b>	—

**Table 8-315: TransferCurve Resource**

Name	Data Type	Description
CTM ? <a href="#">New in JDF 1.1</a>	matrix	Defines the transformation of the coordinate system in the Device relative to the <b>Layout</b> coordinate system as defined by the Part/ @TransferCurveName Partition. Note: In JDF 1.x, CTM is applied relative to the prior coordinate system in the list of @Name values whereas in XJDF CTM always applies relative to the <b>Layout</b> coordinate system.
Curve	TransferFunction	The density mapping curve for the separation defined by @Separation.
Separation ?	string NMOKEN	The name of the separation. If @Separation = "All", this curve is to be applied to all separations that are not explicitly defined. <b>Values include:</b> All

## 8.163 TransferCurvePool

A transfer curve pool is a collection of TransferCurveSet Elements that each contains information about a **TransferCurve**. Multiple TransferCurveSet Elements MAY exist at one time. For example, one MAY exist for the laser calibration of the imagesetter, one for the **ContactCopying** Process and one for the printing Process. Each TransferCurveSet consists of one or more **TransferCurve** Elements. A **TransferCurve** Resource is applied to the appropriate Separation, or to all Separations when @Separation = "All". The TransferCurveSet Elements are concatenated in the following order:

Film -> Plate -> Press -> Paper.

and

Proof.

In addition to the **TransferCurve** Resource, the TransferCurveSet Elements contain Device-dependent geometrical information (e.g., @CTM definitions).

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	TransferFunctionControl, Layout
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	ContactCopying, ContoneCalibration, ConventionalPrinting, DigitalPrinting, ImageSetting, InkZoneCalculation, PreviewGeneration, Stripping
<b>Output of Processes:</b>	LayoutPreparation

**Table 8-316: TransferCurvePool Resource**

Name	Data Type	Description
TransferCurveSet *	element	The set of transfer curves.

### 8.163.1 Element: TransferCurveSet

**TransferCurveSet** Elements describe both the characteristic curve of transfer and the relation between the various process coordinate systems.

Table 8-317: TransferCurveSet Element

Name	Data Type	Description
<a href="#">CTM ?</a> <a href="#">New in JDF 1.1</a>	matrix	Defines the transformation of the coordinate system in the Device as defined by <i>@Name</i> .
<a href="#">Name</a> <a href="#">Modified in JDF 1.2</a>	NMOKEN	<p>The name of the TransferCurveSet.</p> <p><b>Allowed values are:</b></p> <p><i>Film</i> – The transformation from the <b>Layout</b> system to the "<i>Film</i>". In a CTP or <b>DigitalPrinting</b> environment, this defaults to the identity matrix and the identity <b>TransferCurve</b>.</p> <p><i>Plate</i> – The transformation from the "<i>Film</i>" system to the "<i>Plate</i>". In a <b>DigitalPrinting</b> environment, this defaults to the identity matrix and the identity <b>TransferCurve</b>.</p> <p><i>Press</i> – The transformation from the <b>Plate</b> system to the "<i>Press</i>".</p> <p><i>Paper</i> – The transformation from the <b>Press</b> system to the "<i>Paper</i>".</p> <p><i>Proof</i> – The transformation from the <b>Layout</b> system to the "<i>Proof</i>".</p> <a href="#">New in JDF 1.2</a>
<a href="#">TransferCurve *</a> <a href="#">Modified in JDF 1.1</a>	refelement	List of <b>TransferCurve</b> entries.

## 8.164 TransferFunctionControl

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

SeparationControlParams

**Example Partition:**

—

**Input of Processes:**

ContoneCalibration

**Output of Processes:**

—

Table 8-318: TransferFunctionControl Resource (Sheet 1 of 2)

Name	Data Type	Description
<a href="#">TransferCurvePool</a> <a href="#">?TransferCurveRefs ?</a>	refelementI-DREFS	Provides a set of transfer curves to be used by the Process.

Table 8-318: TransferFunctionControl Resource (Sheet 2 of 2)

Name	Data Type	Description
<i>TransferFunctionSource</i> <a href="#">Modified in JDF 1.3</a>	enumerations	<p>Identifies the source of transfer curves which are to be applied during separation.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Custom</i> – Use the transfer curves provided in <a href="#">TransferCurvePool</a> <a href="#">TransferCurveRefs</a>.</li> <li><i>Device</i> – Use transfer functions provided by the output Device. When <b>Separation</b> is being performed pre-RIP, this can mean that no transfer curves will be applied.</li> <li><i>Document</i> – Use the transfer curves provided in the document.</li> </ul> <p><b>Modification note:</b> starting with JDF 1.3, the data type changes from enumeration to enumerations. If multiple values are specified, the transfer functions that are specified by the individual enumeration values are concatenated.</p>
<a href="#">TransferCurvePool</a> ? <a href="#">TransferCurveRefs</a> *	refelementL-DREFS	Provides a set of transfer curves to be used by the Process.

## 8.165 TrappingDetails

This Resource identifies the root of the hierarchy of Resources. This hierarchy controls the **Trapping** Process, whether used for PDL or in-RIP trapping.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	
Example Partition:	"DocIndex", "RunIndex", "RunTags", "DocTags", "PageTags", "SetTags", "SheetName", "Side", "SignatureName"
Input of Processes:	<a href="#">Trapping</a>
Output of Processes:	

Table 8-319: TrappingDetails Resource (Sheet 1 of 2)

Name	Data Type	Description
<i>DefaultTrapping</i> ?= "false"	boolean	If "true", pages that have no defined <b>TrapRegion</b> Elements are trapped using the set of <b>TrimmingParams</b> . The bleed box is used for the trap zone. If "false", only pages that have <b>TrapRegion</b> Elements are trapped.
<i>IgnoreFileParams</i> = "true" <a href="#">Deprecated in JDF 1.4</a>	boolean	If "true", any detectable trapping controls (or traps) provided within any source files used by this Process are ignored. If "false", trapping controls embedded in the source files are honored. Note that if <b>TrappingDetails</b> (and the <b>Trapping</b> Process) is not present, then the trapping defined in PostScript MAY still be applied.  <b>Deprecation note:</b> starting with JDF1.4, the application of trap annotations is specified in <b>InterpretingParams/PDFInterpretingParams/@PrintTrapAnnotations</b> .
<i>Trapping</i> ? <a href="#">Deprecated in JDF 1.2</a>	boolean	If "true", trapping is enabled. If "false", trapping is disabled. Use <a href="#">@NoOp</a> in JDF 1.2 and above.

**Table 8-319: TrappingDetails Resource (Sheet 2 of 2)**

Name	Data Type	Description
TrappingOrder ?TrappingOrder ?	elementN-MTOKENS	<b>Trapping</b> Processes will trap colorants as if they are laid down on the media in the order specified in @TrappingOrder. The colorant order can affect which colors to spread, especially when opaque inks are used.
TrappingType ? <i>Deprecated in JDF 1.2</i>	integer	Identifies the trapping method to be used by the <b>Trapping</b> Process. The number identifies the minor (last three digits) and major (any digits prior to the last three) version of the trapping type requested.
ObjectResolution * <i>New in JDF 1.1</i>	element	Elements which define the resolutions to trap the contents at. More than one Element MAY be used to specify different resolutions for different @SourceObjects types.
TrappingOrder ?TrappingOrder ?	elementN-MTOKENS	<b>Trapping</b> Processes will trap colorants as if they are laid down on the media in the order specified in @TrappingOrder. The colorant order can affect which colors to spread, especially when opaque inks are used.
TrappingParams ?	refelementelement	A <b>TrappingParams</b> Resource that is used to define the default trapping parameters when @DefaultTrapping = "true".
TrapRegion *	refelementelement	A set of <b>TrapRegion</b> Resources that identify the pages to be trapped, the geometry of the areas to trap on each page, and the trapping settings to use for each area.

### 8.165.1 Element: TrappingOrder

**Table 8-320: TrappingOrder Element**

Name	Data Type	Description
SeparationSpec * <i>Modified in JDF 1.2</i>	element	An array of colorant names.

## 8.166 TrappingParams

This Resource provides a set of controls that are used to generate traps. The values of the parameters are chosen based on the customer's trapping strategy, and depend largely on the content of the pages to be trapped and the characteristics of the output Device (or press).

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	<b>TrapRegion, TrappingDetails</b>
Example Partition:	"DocIndex", "RunIndex", "RunTags", "DocTags", "PageTags", "SetTags", "SheetName", "Side", "SignatureName"
Input of Processes:	<b>Trapping</b>
Output of Processes:	—

**Table 8-321: TrappingParams Resource (Sheet 1 of 5)**

Name	Data Type	Description
BlackColorLimit ?	double	A number between 0 and 1 that specifies the lowest color value needed for trapping a colorant according to the black trapping rule. This entry uses the subtractive notion of color, where 0 is white or no colorant, and 1 is full colorant.

**Table 8-321: TrappingParams Resource (Sheet 2 of 5)**

Name	Data Type	Description
<i>BlackDensityLimit</i> ?	double	A positive number that specifies the lowest neutral density of a colorant for trapping according to the black trapping rule.
<i>BlackWidth</i> ?	double	A positive number that specifies the trap width for trapping according to the black trapping rule. The <i>@BlackWidth</i> is specified in <i>@TrapWidth</i> units; a value of "1" means that the black trap width is one <i>@TrapWidth</i> wide. The resulting black trap width is subject to the same Device limits as <i>@TrapWidth</i> .
<i>Enabled</i> ? <i>Deprecated in JDF 1.2</i>	boolean	If "true", trapping is enabled for zones that are defined with this parameter set. Use <i>@NoOp</i> in JDF 1.2 and above.
<i>HalftoneName</i> ?	string	A name that identifies a halftone object to be used when marking traps. The name is the value of the <i>@ResourceName</i> Attribute of some <b>PDLResourceAlias</b> Resource. If absent, the halftone in effect just before traps are marked will be used, which MAY cause unexpected results.
<i>ImageInternalTrapping</i> ?	boolean	If "true", the planes of color images are trapped against each other. If "false", the planes of color images are not trapped against each other.
<i>ImageMaskTrapping</i> ?	boolean	Controls trapping when the <i>@TrapZone</i> contains a stencil mask.  A stencil mask is a monochrome image in which each sample is represented by a single bit. The stencil mask is used to paint in the current color: image samples with a value of "1" are marked, samples with a value of "0" are not marked.  When "false", none of the objects covered by the clipped bounding box of the stencil mask are trapped. No traps are generated between the stencil mask and objects that the stencil mask overlays. No traps are generated between objects that overlay the stencil mask and the stencil mask. For all other objects, normal trapping rules are followed. Two objects on top of the stencil mask that overlap each other might generate a trap, regardless of the value of this parameter. When "true", objects are trapped to the stencil mask, and to each other.
<i>ImageResolution</i> ?	integer	A positive integer indicating the minimum resolution, in dpi, for downsampled images. Images can be downsampled by a power of 2 before traps are calculated. The downsampled image is used only for calculating traps, while the original image is used when printing the image.
<i>ImageToImageTrapping</i> ?	boolean	If "true", traps are generated along a boundary between images. If "false", this kind of trapping is not implemented.
<i>ImageToObjectTrapping</i> ?	boolean	If "true", images are trapped to other objects. If "false", this kind of trapping is not implemented.

**Table 8-321: TrappingParams Resource (Sheet 3 of 5)**

Name	Data Type	Description
<i>ImageTrapPlacement</i> ?	enumeration	Controls the placement of traps for images. <b>Allowed values are:</b> <i>Center</i> – Trap is centered on the edge between the image and the adjacent object. <i>Choke</i> – Trap is placed in the image. <i>Normal</i> – Trap is based on the colors of the areas. <i>Spread</i> – Trap is placed in the adjacent object.
<i>ImageTrapWidth</i> ? <a href="#">New in JDF 1.2</a>	double	Specifies in points the width of image-to-image, image-to-object and/or image internal non-black traps in X direction (horizontal) of the PDF or <b>ByteMap</b> defined in the input <b>RunList</b> when <i>@ImageToImageTrapping</i> , <i>@ImageToObjectTrapping</i> and/or <i>@ImageInternalTrapping</i> are set to "true". The parameter applies only to non-black traps if an image color on either side qualifies as black. The effective black trap width is used to compute the size of the trap. This is based on <i>@TrapWidth</i> , <i>@BlackWidth</i> and <i>@MinimumBlackWidth</i> . Values SHALL be greater than or equal to zero. A value of 0.0 disables non-black image trapping. Defaults to <i>@TrapWidth</i> .
<i>ImageTrapWidthY</i> ? <a href="#">New in JDF 1.2</a>	double	Specifies in points the width of image-to-image, image-to-object and/or image internal non-black traps in Y direction (vertical) of the PDF or <b>ByteMap</b> defined in the input <b>RunList</b> when <i>@ImageToImageTrapping</i> , <i>@ImageToObjectTrapping</i> and/or <i>@ImageInternalTrapping</i> are set to "true". The parameter applies only to non-black traps if an image color on either side qualifies as black. The effective black trap width is used to compute the size of the trap. This is based on <i>@TrapWidth</i> , <i>@BlackWidth</i> and <i>@MinimumBlackWidth</i> . Values SHALL be greater than or equal to zero. A value of 0.0 disables non-black image trapping. Defaults to <i>@ImageTrapWidth</i> .
<i>MinimumBlackWidth</i> ?= " <i>0</i> "	double	Specifies the minimum width, in points, of a trap that uses black ink. Allowable values are those greater than or equal to zero.
<i>SlidingTrapLimit</i> ?	double	A number between 0 and 1. Specifies when to slide traps towards a center position. If the neutral density of the lighter area is greater than the neutral density of the darker area multiplied by the <i>@SlidingTrapLimit</i> , then the trap slides. This applies to vignettes and non-vignettes. No slide occurs at "1".

**Table 8-321: TrappingParams Resource (Sheet 4 of 5)**

Name	Data Type	Description
<i>StepLimit</i> ? <a href="#">Modified in JDF 1.2</a>	double	A non-negative number. Specifies the smallest step needed in the color value of a colorant to trigger trapping at a given boundary. If the higher color value at the boundary exceeds the lower value by an amount that is equal or greater than the larger of 0.05 or $@StepLimit$ times the lower value ( $\text{low} + \max(@StepLimit * \text{low}, 0.05)$ ), then the edge is a candidate for trapping. The value 0.05 is set to avoid trapping light areas in vignettes. This entry is used when not specified explicitly by a <i>ColorantZoneDetails</i> Subelement for a colorant. The restriction that $@StepLimit$ be less than or equal to one ( $\leq 1$ ) was removed in JDF 1.2.
<i>TrapColorScaling</i> ?	double	A number between 0 and 1. Specifies a scaling of the amount of color applied in traps towards the neutral density of the dark area. A value of "1" means the trap has the combined color values of the darker and the lighter area. A value of "0" means the trap colors are reduced so that the trap has the neutral density of the darker area. This entry is used when not specified explicitly by a <i>ColorantZoneDetails</i> Subelement for a colorant.
<i>TrapEndStyle</i> ?= "Miter"	NMTOKEN	Instructs the trap engine how to form the end of a trap that touches another object. <b>Values include:</b> <i>Miter</i> <i>Overlap</i> <b>Note:</b> other values might be added later from customer requests.
<i>TrapJoinStyle</i> ?= "Miter"	NMTOKEN	Specifies the style of the connection between the ends of two traps created by consecutive segments along a path. <b>Values include:</b> <i>Bevel</i> <i>Miter</i> <i>Round</i>
<i>TrappingOrder</i> ?TrappingOrder ?	elementN- MTOKENS	<b>Trapping</b> Processes will trap colorants as if they are laid down on the media in the order specified in $@TrappingOrder$ . The colorant order can affect which colors to spread, especially when opaque inks are used.
<i>TrapWidth</i> ? <a href="#">Modified in JDF 1.2</a>	double	Specifies the trap width, in points in X direction (horizontal) of the PDF or <b>ByteMap</b> defined in the input <b>RunList</b> . Also defines the unit used in trap width specifications for certain types of objects such as $@BlackWidth$ .
<i>TrapWidthY</i> ? <a href="#">New in JDF 1.2</a>	double	Specifies the trap width, in points in Y direction (vertical). Also defines the unit used in trap width specifications for certain types of objects such as $@BlackWidth$ . If not specified, defaults to the value of $@TrapWidth$ .

**Table 8-321: TrappingParams Resource (Sheet 5 of 5)**

Name	Data Type	Description
ColorantZoneDetails *	element	ColorantZoneDetails Subelements. Entries in this dictionary reflect the results of any named colorant aliasing specified. Each entry defines parameters specific for one named colorant. If the colorant named is neither listed in the <b>ColorantParams</b> array nor implied by the <b>@ProcessColorModel</b> for the <b>ColorantControl</b> object in effect when these <b>TrappingParams</b> are applied, the entry is not used for trapping.
ObjectResolution *	element	Elements which define the resolutions to trap the contents at. More than one Element MAY be used to specify different resolutions for different <b>@SourceObjects</b> types.

### 8.166.1 Element: ColorantZoneDetails

**Table 8-322: ColorantZoneDetails Element**

Name	Data Type	Description
Colorant	stringN-MTOKEN	The colorant name that occurs in the <b>SeparationSpec</b> <b>@Separations</b> / <b>@Name</b> of the <b>ColorantParams</b> <b>@ColorantParams</b> array of the <b>ColorantControl</b> object used by the Process.
StepLimit ?	double	A number between 0 and 1. Specifies the smallest step specified in the color value of a colorant to trigger trapping at a given boundary. If the higher color value at the boundary exceeds the lower value by an amount that is equal or greater than the larger of 0.05 or <b>@StepLimit</b> times the lower value (low + max ( <b>@StepLimit</b> * low, 0.05)), then the edge is a candidate for trapping. The value 0.05 is set to avoid trapping light areas in vignettes. If omitted, the <b>@StepLimit</b> Attribute in the <b>TrappingParams</b> Resource is used.
TrapColorScaling ?	double	A number between 0 and 1. Specifies a scaling of the amount of color applied in traps towards the neutral density of the dark area. A value of "1" means the trap has the combined color values of the darker and the lighter area. A value of "0" means the trap colors are reduced so that the trap has the neutral density of the darker area. If omitted, the <b>@TrapColorScaling</b> Attribute in the <b>TrappingParams</b> Resource is used.

## 8.167 TrapRegion

This Resource identifies a set of pages to be trapped, an area of the pages to trap, and the parameters to use.

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

**TrappingDetails**

**Example Partition:**



**Input of Processes:**



**Output of Processes:**



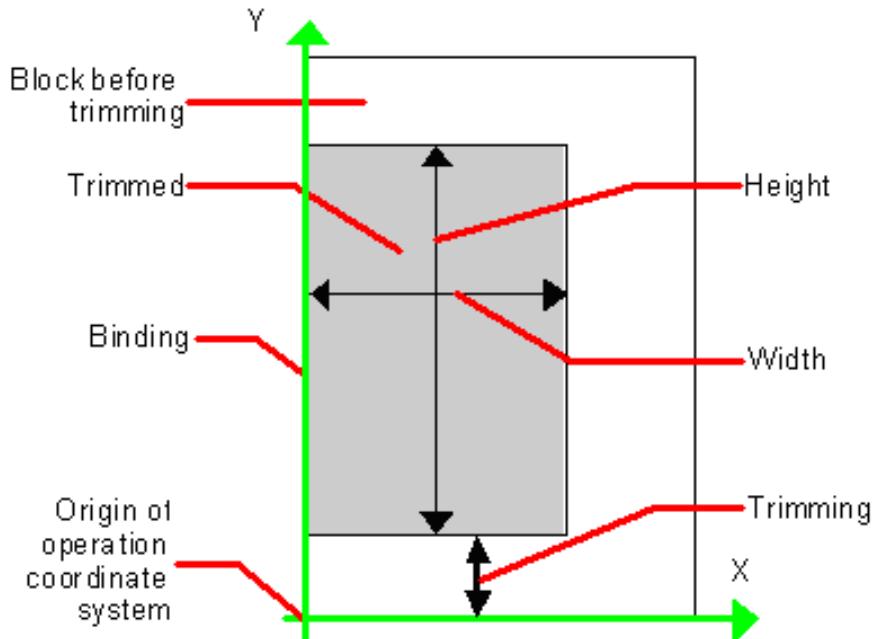
**Table 8-323: TrapRegion Resource**

Name	Data Type	Description
Pages	IntegerRangeList	Identifies a set of pages from the <b>RunList</b> to trap using the specified geometry and trapping style. The logical indices that <i>@Pages</i> reference in a <b>RunList</b> are referenced in the same way as <b>Layout/ContentObject/@Ord</b> does. For details, see Section 8.87.19.4, “Using Ord to Reference Elements in RunList Resources” on page 748.
TrapZone ?	PDFPath	Each element within <i>@TrapZone</i> is one subpath of a complex path. The <i>@TrapZone</i> is the area that results when the paths are filled using the non-zero winding rule. When absent, the <b>MediaBox</b> array for the <b>RunList</b> defines the <i>@TrapZone</i> .
TrappingParams ?	refelementelement	The set of trapping parameters which will be used when trapping in this region.

## 8.168 TrimmingParams

This Resource provides the parameters for the **Trimming** Process.

The process coordinate system is defined as follows: The Y-axis is aligned with the binding edge. It increases from the registered edge to the edge opposite to the registered edge. The X-axis is aligned with the registered edge. It increases from the binding edge to the edge opposite to the binding edge (i.e., the product front edge).

**Figure 8-76: Parameters and coordinate system used for trimming**

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—

**Example Partition:****Input of Processes:****Trimming****Output of Processes:****Table 8-324: TrimmingParams Resource**

Name	Data Type	Description
<i>Height</i> ?	double	Height of the trimmed product.
<i>TrimCover</i> ?="Both" <a href="#">New in JDF 1.3</a>	enumeration	Specifies the covers to be trimmed. Covers containing flaps are generally not trimmed. <b>Allowed values are:</b> <i>Back</i> – Trim back cover only <i>Both</i> – Trim front and back cover <i>Front</i> – Trim front cover only <i>Neither</i> – Do not trim cover.
<i>TrimmingOffset</i> ?	double	Amount to be cut at bottom side.
<i>TrimmingType</i> ? <a href="#">New in JDF 1.1</a> <a href="#">Deprecated in JDF 1.2</a>	enumeration	Trimming operation to perform. <b>Allowed values are:</b> <i>Detailed</i> – Cut the amount specified by <i>@Height</i> , <i>@Width</i> and <i>@TrimmingOffset</i> . <i>SystemSpecified</i> – Cut the amount specified by the system.
<i>Width</i> ?	double	Width of the trimmed product.

## 8.169 UsageCounter

[New in JDF 1.3](#)

Many Devices use counters, called “usage counters,” to track equipment utilization or work performed, such as impressions produced or variable data documents generated. Since such usage counters are often used for software and/or hard-ware billing, a mechanism is needed to allow such usage counters to be tracked by MIS for Device utilization statistics and/or costing. The **UsageCounter** Resource represents a type of equipment or software usage that is tracked by the value of a usage counter used by a Device to count work performed. The Attributes of this Resource indicate what the usage counter is counting. The **UsageCounter** Elements are modeled as **Consumable Resources Resource Elements**, so that standard counting can be used. See [Section 3.15.4, “Resource Amount” on page 116](#) [Section 3.14.4, “Resource Amount” on page 111](#). The section has details on tracking *@Amount* and *@ActualAmount*. Default units are “countable objects”. See Section 1.8, “Units” on page 22.

### Resource Properties

**Resource Class:**[Consumable](#)**Resource referenced by:****Example Partition:****Input of Processes:**[Any Process](#)**Output of Processes:****Table 8-325: UsageCounter Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>CounterID</i> ?	string	The ID of this counter as defined by the counting Device.

**Table 8-325: UsageCounter Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>CounterTypes</i> ?	NMTOKENS	<p>This Attribute indicates the types of usage being counted by the <b>UsageCounter</b>.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Insert</i> – post fuser inserter (<b>Media Sides category</b>)</li> <li><i>OneSided</i> – includes one sided counts (<b>Media Sides category</b>)</li> <li><i>TwoSided</i> – includes two sided counts (<b>Media Sides category</b>)</li> <li><i>NormalSize</i> – includes normal size counts (<b>Media Size category</b>)</li> <li><i>LargeSize</i> – includes large size counts (<b>Media Size category</b>)</li> <li><i>Black</i> – includes black colorant only counts (<b>Colorant category</b>)</li> <li><i>Color</i> – includes one or more non-black, non-highlight color colorants counts (<b>Colorant category</b>)</li> <li><i>Blank</i> – includes entirely blank counts (<b>Colorant category</b>)</li> <li><i>HighlightColor</i> – includes highlight colorant counts (<b>Colorant category</b>)</li> <li><i>User</i> – includes counts reflecting work requested by the user (e.g., counts produced by processing the document supplied by the user, as opposed to Auxiliary and Waste). (<b>Usage category</b>)</li> <li><i>Auxiliary</i> – includes all counts for work not requested by the user (e.g., banner, confirmation, slip, separator, error log). (<b>Usage category</b>)</li> </ul>
<i>Scope</i>	enumeration	<p>The scope of this usage counter.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Lifetime</i> – count since machine last had a firmware reset. SHALL NOT be specified when <b>UsageCounter</b> is used as a Resource in a <b>JDF</b> and <b>XJDF</b> ticket.</li> <li><i>PowerOn</i> – count since the machine was powered on. SHALL NOT be specified when <b>UsageCounter</b> is used as a Resource in a <b>JDF</b> and <b>XJDF</b> ticket.</li> <li><i>Job</i> – count in the context of one <b>JDF XJDF</b>.</li> </ul>

## 8.170 VarnishingParams

[New in JDF 1.4](#)

This Resource provides the parameters of a **Varnishing** Process.

### Resource Properties

<b>Resource Class:</b>	<a href="#">Parameter</a>
<b>Resource referenced by:</b>	—
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	<a href="#">Varnishing</a>
<b>Output of Processes:</b>	—

**Table 8-326: VarnishingParams Resource**

Name	Data Type	Description
<i>ModuleIndex</i> ?ModuleID ?	integerN-MTOKEN	<b>Index Identifier</b> of the varnishing Module in the Press. See <b>ConventionalPrintingParams</b> . In a Combined Process, all modules of the Device, including press modules, finishing modules and varnishing modules are counted to calculate <i>@ModuleIndex</i> . Only one of <i>@ModuleIndex</i> or <i>@ModuleType</i> MAY be specified.
<i>ModuleType</i> ?	NMTOKEN	The type of module used to apply the Varnish. Only one of <i>@ModuleIndex</i> or <i>@ModuleType</i> MAY be specified. <b>Values include:</b> <i>PrintModule</i> – The Varnish is applied in a printing unit <i>CoatingModule</i> – The Varnish is applied in a specialized coating unit <b>Values include those from:</b> Section C.2, “ModuleType Supported Strings” on page 1138.
<i>VarnishArea</i> ?	enumeration	Area to be varnished. <i>@VarnishArea</i> specifies the requirements for <b>ExposedMedia</b> . <b>Allowed values are:</b> <i>Full</i> – The entire Media surface SHALL be varnished. <i>Spot</i> – Only parts of the Media surface SHALL be varnished.
<i>VarnishMethod</i> ?	enumeration	Method used for varnishing. <i>@VarnishMethod</i> specifies the requirements for <b>ExposedMedia</b> . <b>Allowed values are:</b> <i>Blanket</i> – The Varnishing is performed in a CoatingModule. An <b>ExposedMedia</b> with <b>ExposedMedia/Media/@MediaType = "Blanket"</b> SHOULD be specified. <i>Plate</i> – The Varnishing is performed in a PrintModule or a CoatingModule. An <b>ExposedMedia</b> with <b>ExposedMedia/Media/@MediaType = "Plate"</b> SHOULD be specified. <i>Independent</i> – No additional <b>ExposedMedia</b> is required. This method MAY be used to specify varnishing in a digital press.

## 8.171 VerificationParams

This Resource provides the parameters of a **Verification** Process.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Example Partition:</b>	—
<b>Input of Processes:</b>	<b>Verification</b>
<b>Output of Processes:</b>	—

**Table 8-327: VerificationParams Resource**

Name	Data Type	Description
<i>FieldRange</i> ? <a href="#">Deprecated in JDF 1.5</a>	IntegerRangeList	Zero-based range list of integers that determines which characters of the data in <b>IdentificationField</b> are to be applied to the field formatting strings. If not specified all characters are applied.  <b>Deprecation note:</b> starting with JDF 1.5, use <a href="#"><b>IdentificationField/@ValueFormat</b></a> and <a href="#"><b>IdentificationField/@ValueTemplate</b></a> .
<i>InsertError</i> <a href="#">Deprecated in JDF 1.5</a>	string	Database insertion statement in C <i>printf</i> format defining how information read from the Resource of the <b>Verification</b> Process is to be stored in case of verification errors. The database is defined by the <b>DBSelection</b> Resource of the <b>Verification</b> Process. This field SHALL be specified if a database is selected.  <b>Deprecation note:</b> starting with JDF 1.5, use <a href="#"><b>FileSpec(Accepted)</b></a> .
<i>InsertOK</i> ? <a href="#">Deprecated in JDF 1.5</a>	string	Database insertion statement in C <i>printf</i> format defining how information extracted from the <b>IdentificationField</b> is to be stored in case of verification success. The database is defined by the <b>DBSelection</b> Resource of the verification Node. This field SHALL be specified if a database is selected.  <b>Deprecation note:</b> starting with JDF 1.5, use <a href="#"><b>FileSpec(Rejected)</b></a>
<i>Tolerance</i> ?	double	Ratio of tolerated verification failures to the total number of tests. "0.0" = no failures allowed, "1.0" = all might fail.

### Usage of FieldRange and Format Strings.

A database field name can be calculated from the characters of the **IdentificationField** using standard C *printf* notation and the **@FieldRange** Attribute. Each range that is defined in **@FieldRange** is passed to *printf* as one string that is applied to the format. The order is maintained. Note that SQL was chosen for illustrative purposes only. The mechanism is defined for any database interface.

#### Example

<b>IdentificationField</b> string:	1234:John Doe
<b>@FieldRange:</b>	5 $\sim$ -1 0 $\sim$ 3
<b>@InsertOK:</b>	Insert "true" into Va where <b>@Name</b> = "%s" and <b>@ID</b> = "%s"
Resulting string:	Insert "true" into Va where <b>@Name</b> = "John Doe" and <b>@ID</b> = "1234"

## 8.172 WebInlineFinishingParams

[New in JDF 1.3](#)

**WebInlineFinishingParams** specifies the parameters for Web inline finishing equipment using the **WebInlineFinishing** Process.

#### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	—
<b>Example Partition:</b>	"SubRun", "WebName", "RibbonName", "WebProduct"
<b>Input of Processes:</b>	<b>WebInlineFinishing</b>
<b>Output of Processes:</b>	—

**Table 8-328: WebInlineFinishingParams Resource**

Name	Data Type	Description
FolderProduction *	element	Specifies the Folder setup for newspaper presses:

**8.172.1 Element: FolderProduction****Table 8-329: FolderProduction Element**

Name	Data Type	Description
<i>FolderModuleIndex</i> ? <i>ModuleID</i> ?	integerNMTO-KEN	Identifies a particular folder module to be used. @ <i>FolderModuleIndex</i> @ <i>ModuleID</i> SHALL match <b>Device/Module/@ModuleIndex@ModuleID</b> .
<i>ProductionType</i> ?= "NonCollect"	enumeration	Indicates whether the product is collected or not. <b>Allowed values are:</b> <i>Collect</i> <i>NonCollect</i>

**8.173 WindingParams**New in JDF 1.5The parameters for the **Winding** process**Resource Properties****Resource Class:** Parameter**Resource referenced by:****Example Partition:****Input of Processes:** Winding**Output of Processes:** —**Table 8-330: WindingParams Resource**

Name	Data Type	Description
<i>Copies</i> ?	integer	Number of copies in one column that SHOULD be placed on a finished roll. At most one of @ <i>Copies</i> , @ <i>Diameter</i> or @ <i>Length</i> SHOULD be specified.
<i>Diameter</i> ?	double	Outer diameter in points of the finished roll. At most one of @ <i>Copies</i> , @ <i>Diameter</i> or @ <i>Length</i> SHOULD be specified.
<i>Fixation</i> ?	NMTOKEN	Method specifying how the <b>Component</b> is attached to the core. <b>Values include:</b> <i>DoubleSidedTape</i> – Tape with adhesive on both sides. <i>Glue</i> <i>Label</i> – One of the output <b>Component</b> Resources (self-Adhesive labels) is used. <i>None</i> – No fixation is used. <i>SingleSidedTape</i> – Tape with adhesive on one side .
<i>Length</i> ?	double	Length in points of the <b>Component</b> to be placed on a finished roll. At most one of @ <i>Copies</i> , @ <i>Diameter</i> or @ <i>Length</i> SHOULD be specified.

## 8.174 WireCombBindingParams

This Resource describes the details of the **WireCombBinding** Process.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	
Intent Pairing:	<b>BindingIntent</b>
Example Partition:	
Input of Processes:	<b>WireCombBinding</b>
Output of Processes:	

**Table 8-331: WireCombBindingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>Brand</i> ?	string	The name of the comb manufacturer (e.g., <i>Wire-O®</i> ) and the name of the specific item.
<i>Color</i> ?	NamedColor	Determines the color of the comb.
<i>ColorDetails</i> ? <i>New in JDF 1.4</i>	string	A more specific, specialized or site-defined name for the color. If <i>@ColorDetails</i> is supplied, <i>@Color</i> SHOULD also be supplied.
<i>Diameter</i> ?	double	The comb diameter is determined by the height of the block of Sheets to be bound.
<i>Distance</i> ? <i>Deprecated in JDF 1.2</i>	double	The distance between the “teeth” and the distance between the holes of the prepunched Sheets SHALL be the same. In JDF 1.2 and beyond, use the value implied by <b>HoleMakingParams/@HoleType</b> .
<i>FlipBackCover = "false"</i> <i>New in JDF 1.1</i>	boolean	The spine is typically hidden between the last page of the <b>Component</b> and the back cover. Flip the back cover after the wire was “closed” or keep it open. The latter makes sense if further processing is needed (e.g., inserting a CD) before closing the book.
<i>Material</i> ?	enumeration	The material used for forming the wire comb binding. <b>Allowed values are:</b> <i>LaqueredSteel</i> <i>TinnedSteel</i> <i>ZincsSteel</i>
<i>Shape = "Single"</i> <i>Modified in JDF 1.6</i>	NMOKEN	The shape of the wire comb. <b>Values include:</b> <i>Single</i> – Each “tooth” is made with one wire. <i>SingleCalendar</i> – Each “tooth” is made with one wire and an extension for hanging the bound product is provided in the center. <i>New in JDF 1.6</i> <i>Twin</i> – The shape of each “tooth” is made with a double wire. <i>TwinCalendar</i> – The shape of each “tooth” is made with a double wire and an extension for hanging the bound product is provided in the center. <i>New in JDF 1.6</i>
<i>Thickness</i> ?	double	The thickness of the comb material.

**Table 8-331: WireCombBindingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
<b>HoleMakingParams ?</b> New in JDF 1.2	refelement	Details of the holes in <b>WireCombBinding</b> .

## 8.175 WrappingParams

[New in JDF 1.1](#)

**WrappingParams** defines the details of **Wrapping**. Details of the material used for **Wrapping** can be found [in the Media Resource](#) that is either in the **MiscConsumable** or **Component** (Wrapper) Resources that are also an input of the **Wrapping** Process.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	
<b>Intent Pairing:</b>	<b>PackingIntent</b>
<b>Example Partition:</b>	
<b>Input of Processes:</b>	<b>Wrapping</b>
<b>Output of Processes:</b>	—

**Table 8-332: WrappingParams Resource**

Name	Data Type	Description
<i>WrappingKind ?</i>	enumeration	<p><i>@WrappingKind</i> specifies the wrapping method.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Band</i> – The components are wrapped with a band. The material of the band is typically paper, plastic or rubber.</li> <li><i>LooseWrap</i> – The wrap is loose around the component.</li> <li><i>ShrinkWrap</i> – The wrap is shrunk around the component.</li> </ul>
<i>WrappingKindDetails ?</i>	string	<p><i>@WrappingKindDetails</i> specifies additional details of the wrapping method.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>PaperBand</i></li> <li><i>PlasticBand</i></li> <li><i>RubberBand</i></li> <li><i>ShrinkWrap</i></li> <li><i>PaperWrap</i></li> </ul> <p><b>Note:</b> site specific identifiers like "NeutralPaperBand" MAY also be provided.</p>

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# Chapter 9 Device Capabilities

## Introduction

The JDF specification and schema describe the entire space of parameters and resources that can be used to control any device. Every actual Device has limitations in the JDF that it can correctly process. For instance, a RIP will typically not process folding instructions. Even if a set of parameters is processes, physical limitations may restrict the possible values. For instance Media sizes are theoretically unbounded, but any real device will have a minimum and maximum sheet size. The specification also assumes that parameters may be set independently. This is not always correct so that the value of one trait may constrain the value of another trait. For instance a printer may support transparent media and duplex printing but it will probably be constrained not to support both in the same job.

## 9.1 Device Capability Definitions

### New in JDF 1.1

The Elements in this section are used to specify capabilities of JDF Devices and provide infrastructure for defining preflight rules, including conducting a “JDF test run” and establishing a handshake between JDF-enabled products. When describing capabilities, note that only Attributes and Elements that are explicitly described within the capabilities structure are supported by the Device. For more details on preflight, see Section 6.4.27, “Preflight” on page 379.

Capabilities descriptions that are saved in files SHALL be formatted as a JMF/Signal/Response to the KnownDevices Query Message.



### Preflighting in Device Capabilities

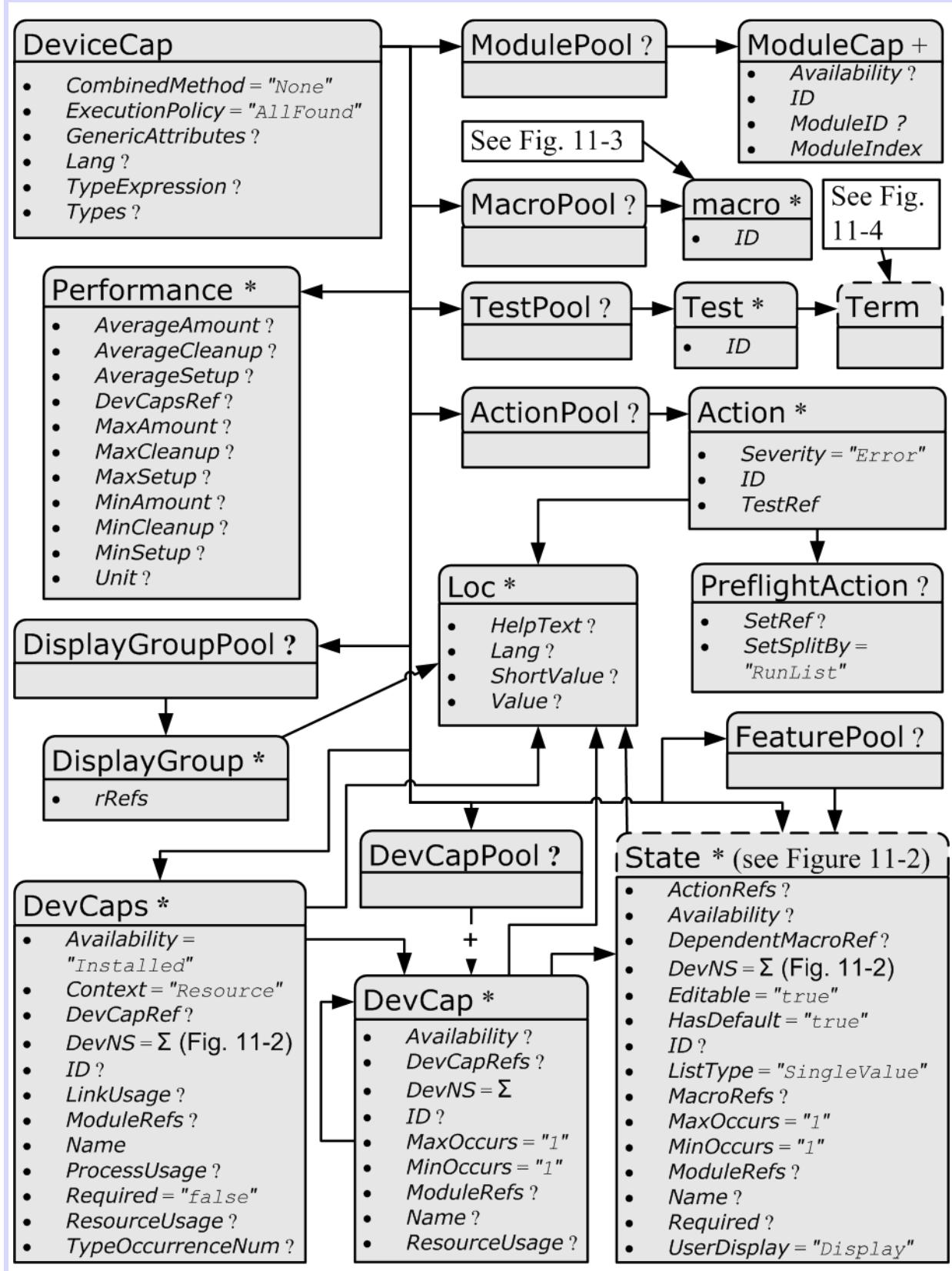
While the actions and tests described in this section as pertaining to “preflighting” can be used by Processes and Resources that pertain to preflighting in the conventional sense, they can also be used to conduct “JDF test runs.” A JDF test run might be part of a normal preflighting workflow, but the idea of a “JDF test run” is to compare the requirements of a JDF document or instance against the capabilities and JDF support of a Device or an integrated JDF environment.

### 9.1.1 DeviceCap

#### New in JDF 1.1

The DeviceCap Element describes the JDF Nodes and Resources that a Device is capable of processing. Elements that are derived from the Abstract State Elements are used to describe ranges and lists of ranges of allowed parameters.

Figure 9-1: DeviceCap – a diagram of its structure



**Table 9-1: DeviceCap Element (Sheet 1 of 3)**

Name	Data Type	Description
<i>CombinedMethod</i> = "None" <a href="#">Modified in JDF 1.3</a>	enumerations	<p>Specifies how the Processes specified in <i>@Types</i> are to be specified. If multiple values are specified, the structure of the JDF SHALL match one of the values.</p> <p><b>Allowed values are:</b></p> <p><i>Combined</i> – The list of Processes in <i>@Types</i> SHALL be specified as a Combined Process.</p> <p><i>CombinedProcessGroup</i> – The list of Processes in <i>@Types</i> SHALL be specified either as a Combined Process or as a "ProcessGroup" of individual Processes. In JDF 1.3 and beyond, the pair of individual tokens: "<i>Combined ProcessGroup</i>" replace this single value. <a href="#">Deprecated in JDF 1.3</a></p> <p><i>GrayBox</i> – The list of Processes in <i>@Types</i> SHALL be specified in a "ProcessGroup" with no nested JDF Nodes (i.e., a Gray Box). <a href="#">New in JDF 1.3</a></p> <p><i>ProcessGroup</i> – The list of Processes in <i>@Types</i> SHALL be specified as a "ProcessGroup" of individual Processes.</p> <p><i>None</i> – No support for "<i>Combined</i>", "<i>GrayBox</i>" or "<i>ProcessGroup</i>". Only one individual Process type defined in <i>@Types</i> is supported.</p>
<i>ExecutionPolicy</i> = "AllFound" <a href="#">New in JDF 1.2</a>	enumeration	<p>Describes the policy for finding and executing JDF Nodes as described in Section 4.2.1, “Determining Executable Nodes” on page 178.</p> <p><b>Allowed values are:</b></p> <p><i>RootNode</i> – The Device will execute the root JDF Node only. It will not search the JDF tree for executable Nodes. This will commonly be used for sub JDF Nodes that have been spawned and targeted explicitly for the Device.</p> <p><i>FirstFound</i> – The Device will execute the first Node found in the JDF tree that is executable by this Device. The search order is defined by the order in the XML.</p> <p><i>AllFound</i> – The Device will execute all executable Nodes found in multiple passes of the JDF tree that are executable by this Device. The results of executing a Node are applied to the tree between passes.</p>
<i>GenericAttributes</i> ?	NMTOKENS	List of all generic Attributes that are supported and unrestricted by the Device implementation. Descriptions of Attributes that appear in <i>State</i> Elements (see the following Section 9.1.7, “State”) overwrite the description in <i>@GenericAttributes</i> .
<i>Lang</i> ? <a href="#">New in JDF 1.2</a>	languages	Specifies the localization(s) provided with the capabilities. If not specified, no localizations are provided.

Table 9-1: DeviceCap Element (Sheet 2 of 3)

Name	Data Type	Description
<a href="#"><i>OptionalCombinedTypes?</i></a> <a href="#">Deprecated in JDF 1.2</a>	NMTOKENS	<p>List of optional JDF Node types. The entries of the list SHALL be a subset of <i>@Types</i>.</p> <p><b>Values include those from:</b> JDF/<i>@Types</i>.</p> <p><b>Example:</b> a RIP with optional in-RIP trapping would specify <i>@OptionalCombinedTypes</i> = "Trapping" if <i>@Types</i> = "Trapping Interpreting Rendering".</p> <p><b>Deprecation note:</b> starting with JDF 1.2, use <i>@TypeExpression</i>.</p>
<a href="#"><i>Type ?</i></a> <a href="#">Deprecated in JDF 1.2</a>	NMTOKEN	<p>JDF <i>@Type</i> Attribute of the supported Process. Extension types MAY be specified by stating the namespace prefix in the value.</p> <p><b>Values include those from:</b> JDF/<i>@Type</i>.</p> <p><b>Deprecation note:</b> starting with JDF 1.2, a single value of type is also defined in the <i>@Types</i> Attribute.</p>
<a href="#"><i>TypeExpression ?</i></a> <a href="#">New in JDF 1.2</a>	regExp	<p>Regular expression that defines the allowed values of the Node's <i>@Types</i> Attribute. If not specified, defaults to the literal string defined in <i>@Types</i> (i.e., the ordered list of Processes defined in <i>@Types</i> SHALL match exactly).</p> <p><b>Constraint:</b> in JDF 1.2 and above, one of <i>@Types</i> or <i>@TypeExpression</i> SHALL be specified.</p>
<a href="#"><i>TypeOrder ?</i></a> <a href="#">Deprecated in JDF 1.2</a>	enumeration	<p>Ordering restriction for Combined Process Nodes and Process Group Nodes.</p> <p><b>Allowed values are:</b></p> <p><i>Fixed</i> – The order of Process types specified in the <i>@Types</i> Attribute is ordered, and each type can be specified only once (e.g., <i>@Cutting, @Folding</i>). Order does matter.</p> <p><i>Unordered</i> – The order of Process types specified in the <i>@Types</i> Attribute is unordered, and each type can be specified only once (e.g., "DigitalPrinting Screening Trapping"). Order does not matter.</p> <p><i>Unrestricted</i> – The order of Process types specified in the <i>@Types</i> Attribute is unordered, and each type can be specified in multiples (e.g., "Cutting Folding"). The Device can do both Processes, in any order multiple times.</p> <p><b>Deprecation note:</b> starting with JDF 1.2, use <i>@TypeExpression</i>.</p>
<a href="#"><i>Types ?</i></a> <a href="#">Modified in JDF 1.2</a>	NMTOKENS	<p>This Attribute represents the list of supported JDF Node <i>@Type</i> values. If any of the Node types are in a namespace other than JDF, the namespace prefix SHALL be included in this Node type name. The ordering is significant unless it is overridden by <i>@TypeExpression</i>.</p> <p><b>Constraint:</b> in JDF 1.2 and above, one of <i>@Types</i> or <i>@TypeExpression</i> SHALL be specified.</p> <p><b>Values include those from:</b> JDF/<i>@Types</i>.</p>
<a href="#"><i>ActionPool ?</i></a> <a href="#">New in JDF 1.2</a>	element	Container for Action Elements for use as constraints.

**Table 9-1: DeviceCap Element (Sheet 3 of 3)**

Name	Data Type	Description
DevCapPool ? <a href="#">New in JDF 1.3</a>	element	Pool of DevCap Elements that can be referenced from multiple Elements within the DeviceCap structure.
DevCaps *	element	List of definitions of the accepted Resources and Elements. The DevCaps Elements are combined with a logical AND (i.e., a JDF an XJDF SHALL fulfill all restrictions defined by the set of DevCaps). Only Resources that are specified within this list are honored by the Device.
DisplayGroupPool ? <a href="#">New in JDF 1.2</a>	element	List of DisplayGroup Subelements, which define the user interface presentation of sets of related DevCap Attribute Values. This is metadata to provide assistance in user interface display layout.
FeaturePool ? <a href="#">New in JDF 1.2</a>	element	List of definitions of the accepted parameter space for Resources and Messages that are for user interface definition only — they do not map to actual JDF Resources or Messages. Definitions in FeaturePool typically reference macros that manipulate a set of related Resource values. These macros will set the appropriate JDF Attribute Values.
MacroPool ? <a href="#">New in JDF 1.2</a>	element	Container for zero or more macro Elements, each of which contains an expression that can cause @State Attribute Values (e.g., "CurrentValue" or "UserDisplay") to be changed.
ModulePool ? <a href="#">New in JDF 1.3</a>	element	Pool of ModuleCap Elements that specify the availability of a given Module.
Performance *	element	Specification of a Devices performance capabilities.
TestPool ? <a href="#">New in JDF 1.2</a>	element	Container for zero or more Test Elements that are referenced from ActionPool/Action Elements, define the constraints.
State * <a href="#">New in JDF 1.3</a>	element	Abstract State Elements State Elements that define the parameter space that is covered by the Device. One State Element SHALL be defined for each supported Attribute of the JDF Node that is not specified @GenericAttributes or implied by @TypeExpression or @Types.
StatePool	element	Pool of State Elements that describe the capabilities.

### 9.1.2 ActionPool

[New in JDF 1.2](#)

The ActionPool Subelement is used to contain Boolean expressions that are used for two purposes:

- As capability constraints to describe unsupported combinations of State Process and Attribute Values.
- As preflight constraints to describe unsupported combinations of basic PreflightReport values. (See Structure of the Abstract Evaluation Subelement in Section 9.1.13, “Term” on page 993. Note that the definition of the Term Element also describes how Boolean operators are employed by Action Elements via the @TestRef Attribute.)

ActionPool and the Action Elements it can contain, is interdependent on TestPool and the Test and Term Elements it can contain. For more information on TestPool, see Section 9.1.12, “TestPool” on page 992.

**Table 9-2: ActionPool Element**

Name	Data Type	Description
Action *	element	A list of independent Action Elements.

### 9.1.2.1 Element: Action

The Action Subelement is used to contain Boolean expressions that are used to describe a constraint that describes an unsupported combination of State Process and Attribute Values. If the Test referenced by @TestRef evaluates to "true", the combination of Processes and Attribute Values described is not allowed, and the action indicated by "Error", "Warning" or "Information" in the @Severity Attribute SHALL be taken.

Table 9-3: Action Element

Name	Data Type	Description
ID ?	ID	Unique identifier of the Action Element. This ID is used to refer to the Action Element (e.g., from a preflight report).
Severity ?= "Error"	enumeration	<p>Indicates how the severity of the failure is to be treated when the expression defined by @TestRef is violated.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Error</i> – The client is to display an error message and not allow the conflicting settings to persist.</li> <li><i>Warning</i> – The client is to notify the user of the condition but allow the settings to persist if the user requests.</li> <li><i>Information</i> – The client is to allow the settings to persist but inform the user of the issue.</li> </ul>
TestRef	IDREF	Reference to a Test Element that is executed to evaluate this Action.
Loc *	element	Text to describe an error if the Test fails. See Section 9.1.5.1, "Loc" on page 958.
PreflightAction ?	element	Provides additional constraints that are specific to the <b>Preflight</b> Process. See Section 8.115, "PreflightParams" on page 832.

### 9.1.3 DevCapPool

New in JDF 1.3

The DevCapPool provides a container for descriptions of Elements that are referenced from multiple locations within the JDF.

Table 9-4: DevCapPool Element

Name	Data Type	Description
DevCap +	element	DevCap Elements that can be referenced from multiple locations within the DeviceCap structure. DevCap/@ID SHALL be specified for all DevCap Elements in DevCapPool.

### 9.1.4 ModulePool

New in JDF 1.3

Table 9-5: ModulePool Element

Name	Data Type	Description
ModuleCap +	element	ModuleCap Elements that can be referenced from within the DeviceCap structure to specify features that depend on a given module being installed.

### 9.1.4.1 ModuleCap

New in JDF 1.3

Module elements specify features that depend on given hardware or software modules being installed. Hardware examples include duplex units for printers. Software licensing keys MAY also be modeled as modules.

**Table 9-6: ModuleCap Element**

Name	Data Type	Description
<i>Availability</i> ?	enumeration	<p>Specifies whether the feature described by this <b>State</b> Element is available on the Device.</p> <p><b>Allowed values are:</b></p> <p><i>Installed</i> – The feature is installed on the Device and is available for use.</p> <p><i>Module</i> – "Module" is not to be specified recursively in a <b>ModuleCap</b>. This value is only specified here to have a common enumeration set for all <b>@Availability</b> Attributes.</p> <p><i>NotInstalled</i> – The feature has not been installed on the Device.</p> <p><i>NotLicensed</i> – The feature has been installed on the Device but can not be used until licensed.</p> <p><i>Disabled</i> – The feature is installed and licensed on the Device, but has been disabled.</p>
<i>ID</i>	ID	<i>@ID</i> of the <b>ModuleCap</b> .
<i>ModuleID</i> ?	integer	ID of the module that this <b>ModuleCap</b> describes. Refers to <b>Device/Module/@ModuleID</b> . If neither <b>@ModuleID</b> nor <b>@ModuleIndex</b> are not specified, no further details of the <b>Module</b> are known.
<i>ModuleIndex</i> ?	integer	Index of the module that this <b>@ModuleCap</b> describes. Refers to <b>Device/Module/@ModuleIndex</b> . If neither <b>@ModuleID</b> nor <b>@ModuleIndex</b> are specified, no further details of the <b>Module</b> are known.

### 9.1.5 DevCaps

New in JDF 1.1

The **DevCaps** Element describes the valid parameter space of a JDF Resource, Message or **ResourceLink** that is consumed, honored or produced by a Device. Note that **DevCaps** not only describes the structure of the individual **Resource** and **ResourceLink** Elements but also of the **AuditPool** or other direct child Elements within a JDF Node. The **DevCaps** Element MAY be used to model Intent Resources as well as Process definition Resources.

**Table 9-7: DevCaps Element (Sheet 1 of 3)**

Name	Data Type	Description
<i>Availability = "Installed"</i> <a href="#">New in JDF 1.2</a>	enumeration	<p>Specifies whether the feature described by this DevCaps Element is available on the Device.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Installed</i> – The feature is installed on the Device and is available for use.</li> <li><i>Module</i> – The feature is provided by a module specified in <i>@ModuleRefs</i>. If and only if all modules that are listed in <i>ModuleRefs</i> are available, the feature is available. <a href="#">New in JDF 1.3</a></li> <li><i>NotInstalled</i> – The feature has not been installed on the Device.</li> <li><i>NotLicensed</i> – The feature has been installed on the Device but can not be used until licensed.</li> <li><i>Disabled</i> – The feature is installed and licensed on the Device but has been disabled.</li> </ul>
<i>Context = "Resource"</i> <a href="#">New in JDF 1.2</a> <a href="#">Modified in JDF 1.3</a>	enumeration	<p>Describes whether the DevCaps context is within a Resource or a link to a Resource (not applicable to DevCaps Elements within Messages).</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Element</i> – The DevCaps context is describing a direct Element (e.g., an AuditPool).</li> <li><i>JMF</i> – The DevCaps context describes a JMF Message.</li> <li><i>Link</i> – The DevCaps context is describing a link to a Resource.</li> <li><i>Resource</i> – The DevCaps context is describing a Resource.</li> </ul>
<i>DevCapRef ?</i> <a href="#">New in JDF 1.3</a>	IDREFS	Reference to reusable DevCap Elements that are located in DeviceCap/DevCapPool. A reference to a DeviceCap/DevCapPool/DevCap is equivalent to an inline DevCap in this DevCaps. Exactly one of <i>@DevCapRef</i> or <i>DevCap</i> SHALL be specified.
<i>DevNS = "http://www.CIP4.org/JDFSchema_1_1"</i>	URI	Namespace of the Resource or Message that is described.
<i>ID ?</i> <a href="#">New in JDF 1.2</a>	ID	ID of this DevCaps Element. Used for reference from Performance Elements.
<i>LinkUsage ?</i> <a href="#">New in JDF 1.2</a>	enumeration	<p>Used when the <i>@Context</i> of this DevCaps = "Resource" or "Link". This field qualifies whether the DevCaps describes a Resource used as an input to a Process or as the output of a Process.</p> <p><b>Default behavior:</b> this DevCaps applies to both usages.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Input</i> – The DevCaps describes an Input Resource.</li> <li><i>Output</i> – The DevCaps describes an Output Resource.</li> </ul>

**Table 9-7: DevCaps Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>ModuleRefs</i> ? <a href="#">New in JDF 1.3</a>	IDREFS	List of modules that are needed for this feature to be available. At least one entry SHALL be specified if <i>@Availability</i> = "Module". The list of Modules is specified in DeviceCap/ModulePool.
<i>Name</i> <a href="#">Modified in JDF 1.3</a>	NMTOKEN	Name of the Element excluding the namespace prefix. When describing parameters of a ResourceLink, <i>@Name</i> SHALL be the name of the referenced Resource and <i>@Context</i> = "Link". When DevCaps is specified as a Subelement of MessageService, Name specifies the respective CommandTypeObj, QueryTypeObj or ResponseTypeObj of the JMF Message.  <b>Modification note:</b> starting with JDF 1.3, <i>@Name</i> SHALL always specify the actual Resource name. Before JDF 1.3, the <i>@ResourceUsage</i> and <i>@ProcessUsage</i> of a Resource are specified in this Attribute.  <b>Values include those from:</b> Chapter 9, "Device Capabilities".
<i>ProcessUsage</i> ? <a href="#">New in JDF 1.3</a>	NMTOKEN	ResourceLink/ <i>@ProcessUsage</i> of the link to the Resource that is described by this DevCaps.  <b>Values include those from:</b> ResourceLink/ <i>@ProcessUsage</i>
<i>Required</i> = "false" <a href="#">New in JDF 1.2</a>	boolean	If "true", the Element described by this DevCaps Element SHALL be present in a JDF or XJDF or JMF (as appropriate) submitted to the Device. Note that this does not override the cardinality defined by the JDF specification when the specification requires the Resource to be specified. If an Attribute is REQUIRED (according to this specification), <i>@Required</i> SHALL be "true".
<i>ResourceUpdate</i> ? <a href="#">Deprecated in JDF 1.3</a>	NMTOCKENS	Specifies the capability to handle partial updates defined in ResourceUpdate Elements.  <b>Values include:</b> <i>None</i> – <i>@ResourceUpdate</i> is not supported. SHALL NOT be combined with any other value. <i>JMFID</i> – JMF Resource Messages that reference ResourceUpdate Elements that have been previously loaded to the Device are accepted. <i>PDLID</i> – References from PDL data (e.g., PPML TicketRef elements that reference ResourceUpdate Elements that have been previously loaded to the Device are accepted).
<i>ResourceUsage</i> ? <a href="#">New in JDF 1.3</a>	NMTOKEN	Resource/ <i>@ResourceUsage</i> of the Resource that is described by this DevCaps.  <b>Values include those from:</b> FileSpec/ <i>@ResourceUsage</i>

**Table 9-7: DevCaps Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>TypeOccurrenceNum</i> ? <a href="#">New in JDF 1.2</a>	IntegerRangeList	<p>Specifies which occurrence(s) of the JDF Node type that is specified either within the <i>DeviceCap/@Types</i> or by <i>DeviceCap/@TypeExpression</i> that the Element that is defined by this <i>DevCaps</i> applies to. If not specified, this <i>DevCaps</i> Element describes Elements belonging to all JDF Nodes or Combined Process steps with a matching type that are not defined by other <i>DevCaps</i> entries.</p> <p>Note: this is an index into the list of matching <i>@Type</i> values and not an index into the complete list specified by <i>@Types</i> or <i>@TypeExpression</i>.</p> <p>The first occurrence is "<i>0</i>", and the last occurrence is "<i>-1</i>", etc.</p>
<i>Types</i> ? <a href="#">Deprecated in JDF 1.2</a>	NMTOKENS	<p>List of JDF Node types that a <i>DevCaps</i> applies to. The value of <i>@Types</i> SHALL be a subset of <i>@Types</i> in <i>DeviceCap</i>.</p> <p><b>Values include those from:</b> JDF/<i>@Types</i>.</p> <p><b>Deprecation note:</b> starting with JDF 1.2, use <i>@TypeOccurrenceNum</i>.</p>
<i>DevCap</i> * <a href="#">Modified in JDF 1.3</a>	element	<p>List of definitions of the accepted parameter space for Resources and Messages. The parameter spaces of multiple <i>DevCap</i> Elements are combined as a superset of the individual <i>DevCap</i> Elements. Only Elements that are explicitly specified as <i>DevCap</i> Elements within a <i>DevCaps</i> are supported.</p> <p>When a capabilities description is constructed using constraints, each <i>DevCaps</i> SHOULD contain only a single <i>DevCap</i> Element (although a <i>DevCap</i> Element MAY still contain multiple <i>DevCap</i> Subelements).</p> <p>Exactly one of <i>@DevCapRef</i> or <i>DevCap</i> SHALL be specified, though if <i>DevCap</i> is specified, it MAY occur multiple times.</p>
<i>Loc</i> * <a href="#">New in JDF 1.2</a>	element	The localization(s) of the Resource, Message or ResourceLink name as described by this <i>DevCaps</i> Element. See Section 9.1.5.1, "Loc" on page 958.

### 9.1.5.1 Loc

[New in JDF 1.2](#)

Each *Loc* element describes a localization for some value. Note that this Subelement is used in many of the Elements subordinate to *DeviceCap* Elements.

**Table 9-8: Loc Element**

Name	Data Type	Description
<i>HelpText</i> ?	string	Localized text used for supplemental help for the value being localized. Note that this is the text often used for a pop-up window when help is requested.
<i>Lang</i> ?	language	The language code for this localization. If not specified, then it defaults to the value of the first language specified in the <i>@Lang</i> Attribute of the <i>DeviceCap</i> Element. Note that each language in a list of localizations (i.e., <i>Loc</i> *) SHALL be unique.
<i>ShortValue</i> ?	string	The short form of the localization. Defaults to the value of <i>@Value</i> . This value would be used when a small fixed field is REQUIRED for the name of the field (a PDA for example).

### 9.1.6 DevCap

[New in JDF 1.1](#)

The DevCap Element describes the valid parameter space of a JDF Resource, Message or Element that is consumed or produced by a Device. The structure of the DevCap is identical to that of the JDF Resource, Message or Element that it models. Individual Attributes are replaced by the appropriate State Elements. For more details on State Elements, see Section 9.1.7, “State”. The `@Name` Attribute of the State Element SHALL match the Attribute key that is described. If no State Element exists for a given Attribute, it is assumed to be unsupported. The restrictions of multiple Attributes and Elements are combined with a logical AND.

Subelements of Resources are modeled by including nested DevCap with a `@ResourceUsage` Attribute equal to the Subelements tag name or `@ResourceUsage` if the Subelement is a **FileSpec**. Attributes of the `ResourceLink` belonging to the `Resource` (e.g., `@Transformation` or the various pipe control parameters can also be restricted).

**Table 9-9: DevCap Element (Sheet 1 of 2)**

Name	Data Type	Description
<a href="#">Availability ?</a> <a href="#">New in JDF 1.2</a>	enumeration	<p>Specifies whether the feature described by this DevCap Element is available on the Device.</p> <p><b>Default value is from:</b> parent DevCaps/<code>@Availability</code> or DevCap/<code>@Availability</code>.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Installed</i> – The feature is installed on the Device and is available for use.</li> <li><i>Module</i> – The feature is provided by a module specified in <code>@ModuleRefs</code>. If and only if all modules that are listed in <code>@ModuleRefs</code> are available, the feature is available. <a href="#">New in JDF 1.3</a></li> <li><i>Not Installed</i> – The feature has not been installed on the Device.</li> <li><i>Not Licensed</i> – The feature has been installed on the Device but can not be used until licensed.</li> <li><i>Disabled</i> – The feature is installed and licensed on the Device but has been disabled.</li> </ul>
<a href="#">DevCapRefs ?</a> <a href="#">New in JDF 1.3</a>	IDREFS	References to reusable DevCap Elements that are located in DeviceCap/DevCapPool. A reference to a DeviceCap/DevCapPool/DevCap is equivalent to an inline DevCap in this DevCap. If both <code>@DevCapRefs</code> and DevCap Elements exist, they specify the union of both.
<code>DevNS = "http://www.CIP4.org/JDFSchema_1_1"</code>	URI	Namespace of the Element that is described by this DevCap.
<code>ID ?</code> <a href="#">New in JDF 1.3</a>	ID	<code>@ID</code> of this DevCap. Used to reference a DevCap. DevCap/ <code>@ID</code> SHALL be specified for all direct DevCap child Elements in DevCapPool.
<code>MaxOccurs = "1"</code> <a href="#">Modified in JDF 1.2</a>	integer	Maximum number of occurrences of the Element described by this DevCap. In JDF 1.1 the “ <i>INF</i> ” value was defined as “ <i>unbounded</i> ”.
<code>MinOccurs = "1"</code>	integer	Minimum number of occurrences of the Element described by this DevCap.
<a href="#">ModuleRefs ?</a> <a href="#">New in JDF 1.3</a>	IDREFS	List of modules that are needed for this feature to be available. At least one entry SHALL be specified if <code>@Availability = "Module"</code> . The list of Modules is specified in DeviceCap/ModulePool.

**Table 9-9: DevCap Element (Sheet 2 of 2)**

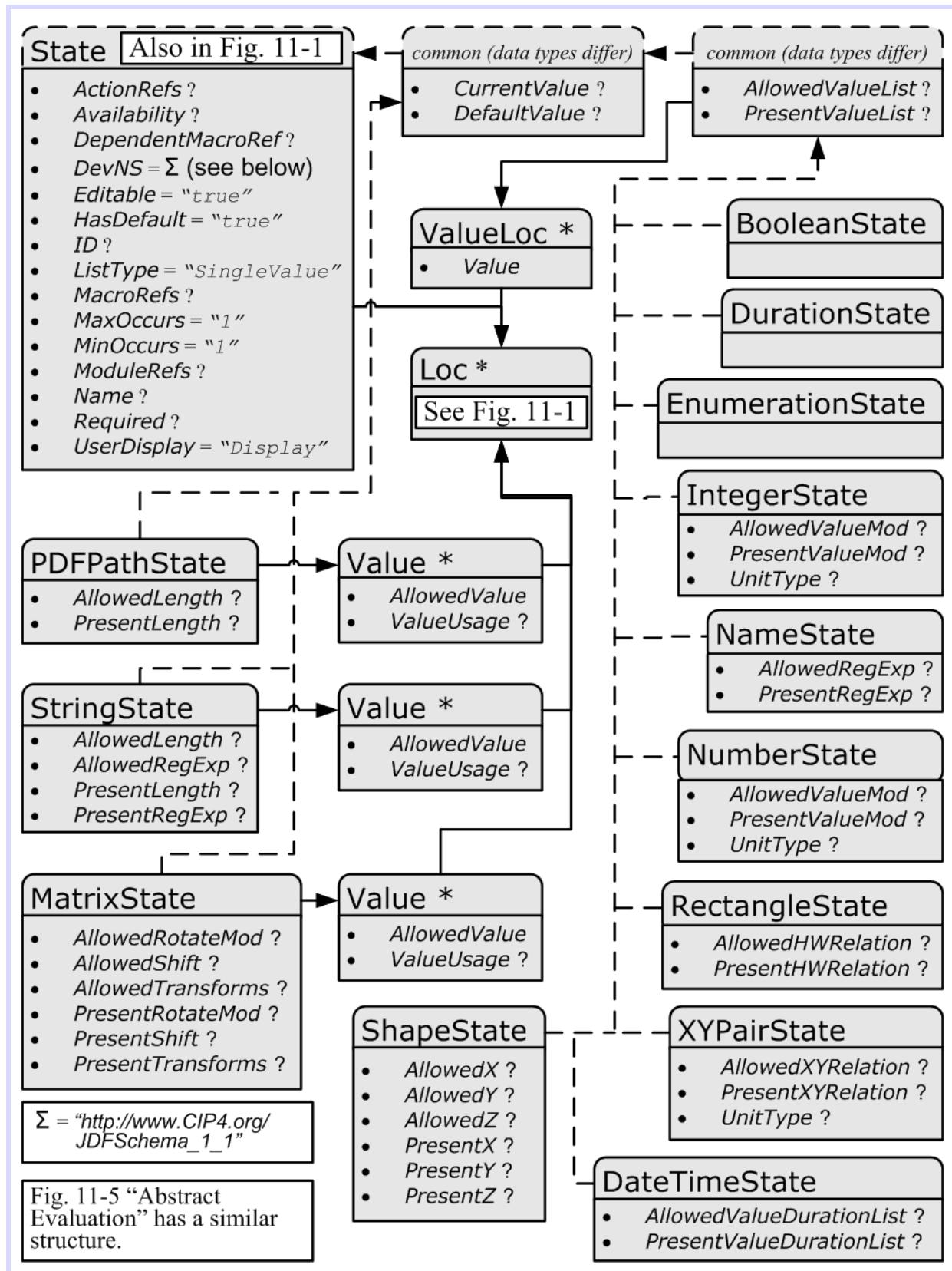
Name	Data Type	Description
<i>Name</i> ?	NMTOKEN	<p>Name of the Resource that is described. Default, if this DevCap is the direct child of a DevCaps Element: the value of the parent DevCaps/<i>@Name</i>.@<i>Name</i> SHALL be specified for all direct DevCap child Elements in DevCapPool or DevCap Elements.</p> <p><b>Modification note:</b> starting with JDF 1.3, @<i>Name</i> SHALL always specify the actual Resource name. Before JDF 1.3 @<i>ResourceUsage</i> of a Resource was specified in this Attribute.</p> <p><b>Values include those from:</b> Chapter 9, “Device Capabilities”.</p>
<i>ResourceUsage</i> ? <i>New in JDF 1.3</i>	NMTOKEN	<p>Resource/@<i>ResourceUsage</i> of the Resource that is described by this DevCap.</p> <p><b>Values include those from:</b> FileSpec/@<i>ResourceUsage</i></p>
DevCap *	element	Definition of the accepted parameter space for the Messages or Resources Subelements. If Multiple DevCap Elements with the same @ <i>Name</i> exist, they describe individual Subelements with different properties. The properties SHALL each be fulfilled by individual Subelements of the Element that is described by this DevCap. For instance, if two DevCap Elements with the @ <i>MinOccurs</i> = "1" are specified, the JDF Element SHALL contain two Elements with a Node name = DevCap/@ <i>Name</i> .
<i>Loc</i> * <i>New in JDF 1.2</i>	element	The localization(s) of the Element name. See Section 9.1.5.1, “Loc” on page 958.
State *	element	<b>Abstract State Elements</b> <b>State Elements</b> that define the parameter space that is covered by the Device. One State Element SHALL be defined for each supported Attribute or Intent Span Element of the Element that this DevCap defines that is not specified DeviceCap/@ <i>GenericAttributes</i> .

### 9.1.7 State

*New in JDF 1.1*

Figure 9-2 shows all State Elements.

**Figure 9-2: Abstract State Element – a diagram of its structure**



### 9.1.7.1 Abstract State Element

Table 9-10 describes the common, data type-independent parameters of all State Elements. The State Elements that contain no value restriction Attributes (e.g., `@AllowedValueList`) or Elements (e.g., `ValueLoc`) have no further restrictions other than the data type of their values. If value restrictions are specified in addition to a list of explicit values in `@AllowedValueList`, `@CurrentValue`, `Value` or `ValueLoc`, the State Element describes the union of restrictions (i.e., the State Element matches an Attribute that matches either the explicit list or the additional restrictions).

**Table 9-10: Abstract State Element (Sheet 1 of 2)**

Name	Data Type	Description
<code>ActionRefs ?</code> <a href="#">New in JDF 1.2</a>	IDREFS	Zero or more references to Action Elements that operate on the parameter. All Action Elements referenced SHALL evaluate to " <code>false</code> " for the value of the State Element to be valid. Any Action Elements referenced in <code>@ActionRefs</code> SHOULD be evaluated whenever the Attribute described by this State Element is manipulated or changed in order to catch any Attributes that become invalid due to the manipulation.
<code>Availability ?</code> <a href="#">New in JDF 1.2</a>	enumeration	<p>Specifies whether the feature described by this State Element is available on the Device.</p> <p><b>Default behavior:</b> the value specified or implied by the parent Element</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Installed</i> – The feature is installed on the Device and is available for use.</li> <li><i>Module</i> – The feature is provided by a module specified in <code>@ModuleRefs</code>. If and only if all modules that are listed in ModuleRefs are available, the feature is available. <a href="#">New in JDF 1.3</a></li> <li><i>Not Installed</i> – The feature has not been installed on the Device.</li> <li><i>Not Licensed</i> – The feature has been installed on the Device but can not be used until licensed.</li> <li><i>Disabled</i> – The feature is installed and licensed on the Device, but has been disabled.</li> </ul>
<code>DependentMacroRef ?</code> <a href="#">New in JDF 1.2</a>	IDREF	A reference to a macro that conditionally modifies the <code>@UserDisplay</code> Attribute of this State Element. If present, this referenced macro is to be executed when the <code>State/@UserDisplay</code> is " <code>Dependent</code> " and the user interface is being initialized. It is RECOMMENDED that the macro referenced by <code>@DependentMacroRef</code> only change the value of <code>@UserDisplay</code> or <code>@Editable</code> Attributes. For more information on macro definitions, see Section 9.1.10, "MacroPool" on page 989.
<code>DevNS = "http://www.CIP4.org/JDFSchema_1_1"</code>	URI	Namespace of the Attribute or Element that is described by this State Element.
<code>Editable = "true"</code> <a href="#">New in JDF 1.2</a>	boolean	When " <code>true</code> ", the feature and its current value can be edited by the user. If " <code>false</code> ", the user interface SHALL NOT allow user modification of the State Element's current value.
<code>HasDefault = "true"</code>	boolean	A flag that describes whether the parameter has a default supplied by the Device. If set, <code>@DefaultValue</code> SHALL be set.
<code>ID ?</code> <a href="#">New in JDF 1.2</a>	ID	An identification value to allow external reference.

**Table 9-10: Abstract State Element (Sheet 2 of 2)**

Name	Data Type	Description
<a href="#"><i>ListType = "SingleValue"</i></a> <a href="#"><u>New in JDF 1.2</u></a> <a href="#"><u>Modified in JDF 1.3</u></a>	enumeration	Specifies what type of list or object the <b>State</b> variable describes. <b>Allowed values are from:</b> Table 9-11, “ListType Attribute Values” on page 964.
<a href="#"><i>MacroRefs ?</i></a> <a href="#"><u>New in JDF 1.2</u></a>	IDREFS	Zero or more references to <b>macro</b> Elements that operate on the parameter. These <b>macro</b> Elements set other <b>State</b> Attribute Values as appropriate. Any <b>macro</b> Elements referenced in <b>@MacroRefs</b> is to be evaluated whenever the Attribute described by this <b>State</b> Element is manipulated or changed to affect any necessary changes to other Attributes. The <b>macro</b> Elements can change Attributes such as the <b>@CurrentValue</b> Attribute of a <b>State</b> or its <b>@UserDisplay</b> Attribute. For more information on <b>macro</b> definitions, see Section 9.1.10, “MacroPool” on page 989.
<a href="#"><i>MaxOccurs = "1"</i></a> <a href="#"><u>New in JDF 1.2</u></a>	integer	Maximum number of Elements in the list described by this <b>State</b> (e.g., the maximum number of integers in an integer list). If <b>@MaxOccurs</b> is not “1”, the <b>State</b> Element refers to a list or a range of list values (e.g., a <b>NameState</b> will allow a list of NMTOKENS).
<a href="#"><i>MinOccurs = "1"</i></a> <a href="#"><u>New in JDF 1.2</u></a>	integer	Minimum number of Elements in the list described by this <b>State</b> . If <b>@MinOccurs</b> is not “1”, the <b>State</b> Element refers to a list or a range of list values (e.g., a <b>NameState</b> will allow a list of NMTOKENS).
<a href="#"><i>ModuleRefs ?</i></a> <a href="#"><u>New in JDF 1.3</u></a>	IDREFS	List of modules that are needed for this feature to be available. At least one entry SHALL be specified if <b>@Availability = "Module"</b> . The list of Modules is specified in <b>DeviceCap/ModulePool</b> .
<a href="#"><i>Name ?</i></a>	NMTOKEN	Name of the Attribute that is described by this <b>State</b> . If <b>@Name</b> is omitted this <b>State</b> describes the Element’s text (i.e., the text between the XML start and end tag).
<a href="#"><i>Required ?</i></a> <a href="#"><u>New in JDF 1.2</u></a>	boolean	If “true”, then the Attribute or Span Element described by this <b>State</b> Element is REQUIRED to be present in a <b>JDF</b> or <b>XJDF</b> or <b>JMF</b> (as appropriate) submitted to the Device. Note that this does not override the cardinality specified by the <b>JDF</b> specification where the specification requires the Element to be specified. Deprecation note: starting with <b>JDF 1.6</b> , replaced by <b>@Cardinality</b> .
<a href="#"><i>Span ?</i></a> <a href="#"><u>New in JDF 1.1A</u></a> <a href="#"><u>Deprecated in JDF 1.2</u></a>	boolean	A flag that describes whether the parameter is an intent span data type. For example a <b>State</b> Element describing an XYPairSpan would have <b>@DataType = "XYPairState"</b> and <b>@Span = "true"</b> . Replaced with <b>@ListType = "Span"</b> in <b>JDF 1.2</b> and beyond.
<a href="#"><i>UserDisplay = "Display"</i></a> <a href="#"><u>New in JDF 1.2</u></a>	enumeration	Indicates whether the feature is to be displayed in user interfaces. <b>Allowed values are:</b> <i>Display</i> – The feature is to be displayed. <i>Hide</i> – The feature is not to be displayed. <i>Dependent</i> – The feature is to be conditionally displayed depending on the action specified by the <b>macro</b> referenced by <b>@DependentMacroRef</b> . <b>Note:</b> this action is only taken when the user interface is first initialized.
<a href="#"><i>Loc *</i></a> <a href="#"><u>New in JDF 1.2</u></a>	element	The localization(s) of the <b>@Name</b> of the Attribute that is described by this <b>State</b> Element. See Section 9.1.5.1, “Loc” on page 958.

**— Attribute: ListType****Table 9-11: ListType Attribute Values**

<b>Value</b>	<b>Description</b>
<i>CompleteList</i>	The <b>State</b> describes a list of individual values. Each value SHALL occur exactly once.
<i>CompleteOrderedList</i>	The <b>State</b> describes an ordered list of individual values. Each value SHALL occur exactly once and in the specified order.
<i>ContainedList</i>	The <b>State</b> describes a list of individual values. The <b>State</b> = "true" if at least one of the values occurs. <b>This value is only expected to be used in BasicPreflightTest Elements.</b>
<i>List</i>	The <b>State</b> describes a list of individual values.
<i>OrderedList</i>	The <b>State</b> describes an ordered list of individual values.
<i>OrderedRangeList</i>	The <b>State</b> describes an ordered RangeList of individual values.
<i>Range</i>	The <b>State</b> describes an individual Range of values.
<i>New in JDF 1.3</i>	
<i>RangeList</i>	The <b>State</b> describes a RangeList of values.
<i>SingleValue</i>	The <b>State</b> describes an individual value.
<i>Span</i>	The <b>State</b> describes a Span Element in an Intent Resource.
<i>UniqueList</i>	The <b>State</b> describes a list of individual values. Each value SHALL NOT occur more than once.
<i>UniqueOrderedList</i>	The <b>State</b> describes an ordered list of individual values. Each value SHALL NOT occur more than once.
<i>UniqueOrderedRangeList</i>	The <b>State</b> describes an ordered RangeList of individual values. Each explicit or implied value SHALL NOT occur more than once.
<i>UniqueRangeList</i>	The <b>State</b> describes a RangeList of values. Each explicit or implied value SHALL NOT occur more than once.

**9.1.7.2 State Elements**

The following types of State Elements are defined:

**Table 9-12: List of State Elements (Sheet 1 of 2)**

<b>Name</b>	<b>Description</b>
<i>BooleanState</i>	Describes a set of boolean values.
<i>DateTimeState</i> <i>New in JDF 1.2</i>	Describes a set of dateTime values.
<i>DurationState</i> <i>New in JDF 1.2</i>	Describes a set of duration values.
<i>ElementState</i>	ElementState describes the cardinality constraints of elements.
<i>EnumerationState</i>	Describes a set of enumeration values.
<i>IntegerState</i>	Describes a numerical range of integer values.
<i>MatrixState</i>	Describes a range of matrices. Generally used to define valid orientations of Component Resources.

**Table 9-12: List of State Elements (Sheet 2 of 2)**

Name	Description
NameState	Describes a set of NMOKEN values.
NumberState	Describes a numerical range of values.
PDFPathState <a href="#">New in JDF 1.2</a>	Describes a set of PDFPaths.
RectangleState <a href="#">New in JDF 1.2</a>	Describes a set of 4 value rectangle values.
ShapeState	Describes a set of 3 value shape values.
StringState	Describes a set of string values.
XYPairState	Describes a set of XYPair values.

**9.1.7.2.1 BooleanState**[New in JDF 1.1](#)

This State Subelement is used to describe ranges of Boolean values. It inherits from the Abstract State Element described above.

**Table 9-13: BooleanState Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>AllowedValueList</i> ? <a href="#">New in JDF 1.1A</a>	enumerations	A list of all legal values. <b>Allowed values are:</b> <i>true</i> <i>false</i>
<i>Availability</i> ?	enumeration	Specifies whether the feature described by this State Element is available on the Device. <b>Default behavior:</b> the value specified or implied by the parent Element <b>Allowed values are:</b> <i>Installed</i> – The feature is installed on the Device and is available for use. <i>Module</i> – The feature is provided by a module specified in <i>@ModuleRefs</i> . If and only if all modules that are listed in ModuleRefs are available, the feature is available. <i>NotInstalled</i> – The feature has not been installed on the Device. <i>NotLicensed</i> – The feature has been installed on the Device but can not be used until licensed. <i>Disabled</i> – The feature is installed and licensed on the Device, but has been disabled.

**Table 9-13: BooleanState Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Cardinality</i> ?	enumeration	<p><i>Required</i> – The attribute that is described by this <b>State</b> Element SHALL exist in any conforming JDF or JMF.</p> <p><i>Parent</i> – The attribute that is described by this <b>State</b> Element SHALL exist in any parent element of the attribute specified by <i>@XPath</i> in any conforming JDF or JMF. Note that this does not imply any requirements for said parent element.</p> <p><i>Optional</i> – The attribute that is described by this <b>State</b> Element MAY exist in any conforming JDF or JMF and SHALL be evaluated by the Device.</p>
<i>CurrentValue</i> ?	boolean	Current value for the current running Job set in the Device.
<i>DefaultValue</i> ?	boolean	Default value which will be supplied by the Device if not specified in a submitted JDF. <i>@DefaultValue</i> SHALL be specified if <i>@HasDefault = "true"</i> .
<i>ListType</i> ?	enumeration	<p>Specifies what type of list or object the <b>State</b> variable describes.</p> <p><b>Allowed values are from:</b> Table 9-11, “ListType Attribute Values” on page 964.</p>
<i>MaxOccurs</i> ?	integer	Maximum number of Elements in the list described by this <b>State</b> (e.g., the maximum number of integers in an integer list). If <i>@MaxOccurs</i> is not “1”, the <b>State</b> Element refers to a list or a range of list values (e.g., a <b>NameState StringState</b> will allow a list of <b>NMTOKEN string</b> values).
<i>MinOccurs</i> ?	integer	Minimum number of Elements in the list described by this <b>State</b> . If <i>@MinOccurs</i> is not “1”, the <b>State</b> Element refers to a list or a range of list values (e.g., a <b>NameState StringState</b> will allow a list of <b>NMTOKEN string</b> values).
<i>ModuleRefs</i> ?	IDREFS	List of modules that are needed for this feature to be available. At least one entry SHALL be specified if <i>@Availability = "Module"</i> . The list of Modules is specified in <b>DeviceCap/ModulePool</b> .
<i>PresentValueList</i> ? <i>New in JDF 1.1A</i>	enumerations	<p>A list of all supported values that can be chosen without operator intervention.</p> <p><b>Default value is from:</b> <i>@AllowedValueList</i>.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>true</i></li> <li><i>false</i></li> </ul>
<i>XPath</i> ?	NMTOKEN	XPath of the Attribute or Element that is described by this <b>State</b> .
<i>ValueLoc</i> * <i>New in JDF 1.2</i>	element	Localization(s) of “ <i>true</i> ” and/or “ <i>false</i> ” values. See Section 9.1.7.2.1.1, “ValueLoc” on page 966.

**9.1.7.2.1.1 ValueLoc***New in JDF 1.2*

Each **ValueLoc** Element describes one or more localizations for an Attribute Value. Note that the **ValueLoc** Element occurs in the definition of all **State** Elements except **MatrixState**, **PDFPathState** and **StringState**.

**Table 9-14: ValueLoc Element**

Name	Data Type	Description
Value	string	The Attribute Value to be localized. If the data type of the allowed value is not string (e.g., if <b>ValueLoc</b> is used in the context of a <b>MatrixState</b> ), <b>@Value</b> SHALL be an instance of the appropriate data type.
Loc *	element	The localization(s) of the Attribute Value. See Section 9.1.5.1, “Loc” on page 958.

**9.1.7.2.2 DateTimeState**[New in JDF 1.2](#)

This **State** Subelement is used to describe ranges of **dateTime** values. It inherits from the Abstract **State Element** described above.

**Table 9-15: DateTimeState Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>AllowedValueDurationList</i> ?	DurationRangeList	List of inclusive minimum and maximum allowed values relative to the current system time.
<i>AllowedValueList</i> ?	DateTimeRangeList	A list of all supported values.
<i>Availability</i> ?	enumeration	<p>Specifies whether the feature described by this <b>State Element</b> is available on the Device.</p> <p><b>Default behavior:</b> the value specified or implied by the parent Element</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Installed</i> – The feature is installed on the Device and is available for use.</li> <li><i>Module</i> – The feature is provided by a module specified in <b>@ModuleRefs</b>. If and only if all modules that are listed in ModuleRefs are available, the feature is available.</li> <li><i>Not Installed</i> – The feature has not been installed on the Device.</li> <li><i>Not Licensed</i> – The feature has been installed on the Device but can not be used until licensed.</li> <li><i>Disabled</i> – The feature is installed and licensed on the Device, but has been disabled.</li> </ul>
<i>Cardinality</i> ?	enumeration	<p><i>Required</i> – The attribute that is described by this <b>State Element</b> SHALL exist in any conforming JDF or JMF.</p> <p><i>Parent</i> – The attribute that is described by this <b>State Element</b> SHALL exist in any parent element of the attribute specified by <b>@XPath</b> in any conforming JDF or JMF. Note that this does not imply any requirements for said parent element.</p> <p><i>Optional</i> – The attribute that is described by this <b>State Element</b> MAY exist in any conforming JDF or JMF and SHALL be evaluated by the Device.</p>

**Table 9-15: DateTimeState Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>CurrentValue</i> ?	dateTime	Current value for the current running Job set in the Device.
<i>DefaultValue</i> ?	dateTime	Default value which will be supplied by the Device if not specified in a submitted JDF. @ <i>DefaultValue</i> SHALL be specified if @ <i>HasDefault</i> = "true".
<i>ListType</i> ?	enumeration	Specifies what type of list or object the State variable describes. <b>Allowed values are from:</b> Table 9-11, "ListType Attribute Values" on page 964.
<i>MaxOccurs</i> ?	integer	Maximum number of Elements in the list described by this State (e.g., the maximum number of integers in an integer list). If @ <i>MaxOccurs</i> is not "1", the State Element refers to a list or a range of list values (e.g., a <b>NameState StringState</b> will allow a list of NMOKEN string values).
<i>MinOccurs</i> ?	integer	Minimum number of Elements in the list described by this State. If @ <i>MinOccurs</i> is not "1", the State Element refers to a list or a range of list values (e.g., a <b>NameState StringState</b> will allow a list of NMOKEN string values).
<i>ModuleRefs</i> ?	IDREFS	List of modules that are needed for this feature to be available. At least one entry SHALL be specified if @ <i>Availability</i> = "Module". The list of Modules is specified in DeviceCap/ModulePool.
<i>PresentValueDurationList</i> ?	DurationRangeList	List of inclusive minimum and maximum allowed values that can be chosen without operator intervention relative to the current system time. If not specified, the value of @ <i>AllowedValueDurationList</i> is applied.
<i>PresentValueList</i> ?	DateTimeRangeList	Inclusive minimum and maximum allowed value that can be chosen without operator intervention. If not specified, the value of @ <i>AllowedValueList</i> is applied.
<i>XPath</i> ?	NMOKEN	XPath of the Attribute or Element that is described by this State.
<i>ValueLoc</i> *	element	Localization(s) of specific dates. See Section 9.1.7.2.1.1, "ValueLoc" on page 966.

**9.1.7.2.3 DurationState**New in JDF 1.2

This State Subelement is used to describe ranges of duration values. It inherits from the Abstract State Element described above.

**Table 9-16: DurationState Element (Sheet 1 of 3)**

Name	Data Type	Description
<i>AllowedValueList</i> ?	DurationRangeList	A list of all supported values.

**Table 9-16: DurationState Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>Availability</i> ?	enumeration	<p>Specifies whether the feature described by this State Element is available on the Device.</p> <p><b>Default behavior:</b> the value specified or implied by the parent Element</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Installed</i> – The feature is installed on the Device and is available for use.</li> <li><i>Module</i> – The feature is provided by a module specified in <i>@ModuleRefs</i>. If and only if all modules that are listed in ModuleRefs are available, the feature is available.</li> <li><i>NotInstalled</i> – The feature has not been installed on the Device.</li> <li><i>NotLicensed</i> – The feature has been installed on the Device but can not be used until licensed.</li> <li><i>Disabled</i> – The feature is installed and licensed on the Device, but has been disabled.</li> </ul>
<i>Cardinality</i> ?	enumeration	<p><i>Required</i> – The attribute that is described by this State Element SHALL exist in any conforming JDF or JMF.</p> <p><i>Parent</i> – The attribute that is described by this State Element SHALL exist in any parent element of the attribute specified by <i>@XPath</i> in any conforming JDF or JMF. Note that this does not imply any requirements for said parent element.</p> <p><i>Optional</i> – The attribute that is described by this State Element MAY exist in any conforming JDF or JMF and SHALL be evaluated by the Device.</p>
<i>CurrentValue</i> ?	duration	Current value for the current running Job set in the Device.
<i>DefaultValue</i> ?	duration	Default value which will be supplied by the Device if not specified in a submitted JDF. <i>@DefaultValue</i> SHALL be specified if <i>@HasDefault = "true"</i> .
<i>ListType</i> ?	enumeration	<p>Specifies what type of list or object the State variable describes.</p> <p><b>Allowed values are from:</b> Table 9-11, “ListType Attribute Values” on page 964.</p>
<i>MaxOccurs</i> ?	integer	Maximum number of Elements in the list described by this State (e.g., the maximum number of integers in an integer list). If <i>@MaxOccurs</i> is not "1", the State Element refers to a list or a range of list values (e.g., a NameState StringState will allow a list of NMTOKEN string values).
<i>MinOccurs</i> ?	integer	Minimum number of Elements in the list described by this State. If <i>@MinOccurs</i> is not "1", the State Element refers to a list or a range of list values (e.g., a NameState StringState will allow a list of NMTOKEN string values).
<i>ModuleRefs</i> ?	IDREFS	List of modules that are needed for this feature to be available. At least one entry SHALL be specified if <i>@Availability = "Module"</i> . The list of Modules is specified in DeviceCap/ModulePool.

**Table 9-16: DurationState Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>PresentValueList</i> ?	DurationRangeList	Inclusive minimum and maximum allowed value that can be chosen without operator intervention. If not specified, the value of <i>@AllowedValueList</i> is applied.
<i>XPath</i> ?	NMTOKEN	XPath of the Attribute or Element that is described by this State.
<i>ValueLoc</i> *	element	Localization(s) of specific durations. See Section 9.1.7.2.1.1, “ValueLoc” on page 966.

#### 9.1.7.2.4 EnumerationState

[New in JDF 1.1](#)

This State Subelement is used to describe ranges of enumerative values. It inherits from the Abstract State Element described above. It is identical to the NameState Element except that it describes a closed list of enumeration values.

**Table 9-17: EnumerationState Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>AllowedValueList</i> ?	enumerations	A list of all supported values. The values specified in <i>@AllowedValueList</i> SHALL be a subset of the enumeration specified by <i>@Name</i> . If not specified, all enumerations defined by the XML schema are valid. In order to enable capabilities to be specified without access to the JDF XML schema, it is strongly RECOMMENDED to specify <i>@AllowedValueList</i> , even when the entire range of schema-valid values is supported.
<i>Cardinality</i> ?	enumeration	<p><i>Required</i> – The attribute that is described by this State Element SHALL exist in any conforming JDF or JMF.</p> <p><i>Parent</i> – The attribute that is described by this State Element SHALL exist in any parent element of the attribute specified by <i>@XPath</i> in any conforming JDF or JMF. Note that this does not imply any requirements for said parent element.</p> <p><i>Optional</i> – The attribute that is described by this State Element MAY exist in any conforming JDF or JMF and SHALL be evaluated by the Device.</p>
<i>CurrentValue</i> ?	enumeration	Current value <a href="#">for the current running Job</a> set in the Device. <i>@CurrentValue</i> SHALL match the enumeration defined in the Resource.
<i>DefaultValue</i> ?	enumeration	Default value <a href="#">which will be supplied by the Device</a> if not specified in a submitted JDF. <i>@DefaultValue</i> SHALL match the enumeration defined in the Resource, and SHALL be specified if <i>@HasDefault = "true"</i> .
<i>PresentValueList</i> ?	enumerations	<p>A list of values that can be chosen without operator intervention. <i>@PresentValueList</i> SHALL match the enumeration defined in the Resource.</p> <p><b>Default value is from: <i>@AllowedValueList</i>.</b></p>

**Table 9-17: EnumerationState Element (Sheet 2 of 2)**

Name	Data Type	Description
ValueLoc * <a href="#">New in JDF 1.2</a>	element	Localizations of the enumerations listed in <i>@AllowedValueList</i> and <i>@PresentValueList</i> . See Section 9.1.7.2.1.1, “ValueLoc” on page 966.

**9.1.7.2.5 IntegerState**[New in JDF 1.1](#)

This State Subelement is used to describe ranges of integer values. It inherits from the Abstract State Element described above.

**Table 9-18: IntegerState Element (Sheet 1 of 3)**

Name	Data Type	Description
<i>AllowedValueList</i> ? <a href="#">Modified in JDF 1.2</a>	IntegerRangeList	A list of all supported values.
<i>AllowedValueMax</i> ? <a href="#">Deprecated in JDF 1.2</a>	integer	Inclusive maximum allowed value. Replaced by <i>@AllowedValueList</i> in JDF 1.2 and beyond.
<i>AllowedValueMin</i> ? <a href="#">Deprecated in JDF 1.2</a>	integer	Inclusive minimum allowed value. Replaced by <i>@AllowedValueList</i> in JDF 1.2 and beyond.
<i>AllowedValueMod</i> ? <a href="#">New in JDF 1.2</a>	XYPair	X defines the Modulo and Y the offset of the allowed value. In other words, if <i>@AllowedValueMod = "10 2"</i> , only the values ... - 8,2,12,22 ... are allowed. If not specified, all values in the range are valid. If ((N%X)-Y = 0) then N is a valid value. <b>Note:</b> “Modulo” is the remainder of an integer division. For example: 4 mod 3 = 4 -3 = 1; 17 mod 3 = 17-5*3 = 2; and 3 mod 3 = 3-3 = 0.
<i>Availability</i> ?	enumeration	Specifies whether the feature described by this State Element is available on the Device. <b>Default behavior:</b> the value specified or implied by the parent Element <b>Allowed values are:</b> <i>Installed</i> – The feature is installed on the Device and is available for use. <i>Module</i> – The feature is provided by a module specified in <i>@ModuleRefs</i> . If and only if all modules that are listed in ModuleRefs are available, the feature is available. <i>Not Installed</i> – The feature has not been installed on the Device. <i>Not Licensed</i> – The feature has been installed on the Device but can not be used until licensed. <i>Disabled</i> – The feature is installed and licensed on the Device, but has been disabled.

**Table 9-18: IntegerState Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>Cardinality</i> ?	enumeration	<p><i>Required</i> – The attribute that is described by this <b>State</b> Element SHALL exist in any conforming JDF or JMF.</p> <p><i>Parent</i> – The attribute that is described by this <b>State</b> Element SHALL exist in any parent element of the attribute specified by <i>@XPath</i> in any conforming JDF or JMF. Note that this does not imply any requirements for said parent element.</p> <p><i>Optional</i> – The attribute that is described by this <b>State</b> Element MAY exist in any conforming JDF or JMF and SHALL be evaluated by the Device.</p>
<i>CurrentValue</i> ?	integer	Current value <a href="#">for the current running Job</a> set in the Device.
<i>DefaultValue</i> ?	integer	Default value <a href="#">which will be supplied by the Device</a> if not specified in a submitted JDF. <i>@DefaultValue</i> SHALL be specified if <i>@HasDefault = "true"</i> .
<i>ListType</i> ?	enumeration	Specifies what type of list or object the State variable describes. <b>Allowed values are from:</b> Table 9-11, “ListType Attribute Values” on page 964.
<i>MaxOccurs</i> ?	integer	Maximum number of Elements in the list described by this State (e.g., the maximum number of integers in an integer list). If <i>@MaxOccurs</i> is not “1”, the State Element refers to a list or a range of list values (e.g., a <a href="#">NameState StringState</a> will allow a list of <a href="#">NMOKEN string</a> values).
<i>MinOccurs</i> ?	integer	Minimum number of Elements in the list described by this State. If <i>@MinOccurs</i> is not “1”, the State Element refers to a list or a range of list values (e.g., a <a href="#">NameState StringState</a> will allow a list of <a href="#">NMOKEN string</a> values).
<i>ModuleRefs</i> ?	IDREFS	List of modules that are needed for this feature to be available. At least one entry SHALL be specified if <i>@Availability = "Module"</i> . The list of Modules is specified in <a href="#">DeviceCap/ModulePool</a> .
<i>PresentValueList</i> ? <a href="#">Modified in JDF 1.2</a>	IntegerRangeList	A list of values that can be chosen without operator intervention. If not specified, the value of <i>@AllowedValueList</i> is applied.
<i>PresentValueMax</i> ? <a href="#">Deprecated in JDF 1.2</a>	integer	Inclusive maximum allowed value that can be chosen without operator intervention. If not specified, the value of <i>@AllowedValueMax</i> is applied. Replaced by <i>@PresentValueList</i> in JDF 1.2 and beyond.
<i>PresentValueMin</i> ? <a href="#">Deprecated in JDF 1.2</a>	integer	Inclusive minimum allowed value that can be chosen without operator intervention. If not specified, the value of <i>@AllowedValueMin</i> is applied. Replaced by <i>@PresentValueList</i> in JDF 1.2 and beyond.
<i>PresentValueMod</i> ? <a href="#">New in JDF 1.2</a>	XYPair	X defines the Modulo and Y the offset of the present value. In other words, if <i>@AllowedValueMod = "10 2"</i> , only the values ... - 8,2,12,22 ... are allowed. If not specified, the value of <i>@AllowedValueMod</i> is applied. If ((N%X)-Y = 0) then N is a valid value.

**Table 9-18: IntegerState Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>UnitType</i> ? <a href="#">New in JDF 1.2</a>	NMTOKEN	<p>Specifies the unit type that this State Element represents. Used to enable an application to localize the representation of the units. @<i>UnitType</i> SHOULD be specified if the IntegerState represents a value that has units. User interfaces might not display correctly if @<i>UnitType</i> is not specified for Attributes with units.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Angle</i> – The Attribute is defined in degrees.</li> <li><i>AngularVelocity</i> – Rotations / minute.</li> <li><i>Area</i> – Area in square meters (<math>m^2</math>).</li> <li><i>Currency</i> – The local currency.</li> <li><i>Length</i> – In points (1/72 inch).</li> <li><i>LengthMu</i> – Length in microns (used for paper thickness).</li> <li><i>LineScreen</i> – The lines per inch (lpi) for conventionally screened halftone, screened grayscale and screened monotone bitmap images.</li> <li><i>PaperWeight</i> – In grams per square meter (<math>g/m^2</math>).</li> <li><i>Percentage</i> – A percentage value.</li> <li><i>Pressure</i> – In Pascals.</li> <li><i>Resolution</i> – The dots per inch (dpi) for print output and bitmap image (e.g., TIFF or BMP) file resolution.</li> <li><i>ScreenResolution</i> – The pixels per inch (ppi) for screen display (e.g., softproof display and user interface display), scanner capture settings and digital camera settings.</li> <li><i>SpotResolution</i> – For imaging Devices such as filmsetters, platemakers and proofers, the fundamental imaging unit (e.g., one “on” laser or imaging-head imaged unit). Note that many imaging Devices construct dots from multiple imaging spots, so dpi and spots per inch (spi) are not equivalent.</li> <li><i>Temperature</i> – Temperature in degrees Centigrade.</li> <li><i>Velocity</i> – Defined as meters/hour.</li> <li><i>Weight</i> – Weight in grams.</li> </ul>
<i>XPath</i> ?	NMTOKEN	XPath of the Attribute or Element that is described by this State.
<i>ValueLoc</i> * <a href="#">New in JDF 1.2</a>	element	Localization(s) of specific values. See Section 9.1.7.2.1.1, “ValueLoc” on page 966.

**9.1.7.2.6 MatrixState**[New in JDF 1.1](#)

This State Subelement is used to describe ranges of matrix values. It inherits from the Abstract State Element described above. It is primarily intended to specify orientations and manipulation capabilities of PhysicalResources (e.g., in finishing Devices).

**Table 9-19: MatrixState Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>AllowedRotateMod</i> ? <a href="#">New in JDF 1.2</a>	double	Allowed Modulo of the allowed rotations and offset in degrees. <b>Values include:</b> 360 – No rotation 90 – Any orthogonal rotation. 0 – Any rotation is allowed.
<i>AllowedShift</i> ? <a href="#">New in JDF 1.2</a>	DoubleList	Minimum and maximum allowed shift of the matrix. If not specified, any shift is valid. If <i>@AllowedTransforms</i> is specified, the implied shift defined in Table 2-4, “Matrices and Orientation values for describing the orientation of a Component” on page 39 is subtracted from <i>@AllowedShift</i> , thus all in-place rotations have an implied <i>@AllowedShift</i> value of "0 0 0 0". (No shift = "0 0 0 0".) The first pair of numbers is the XY pair that defines the minimum shift, and the second pair is the XY pair that defines the maximum shift.
<i>AllowedTransforms</i> ? <a href="#">New in JDF 1.2</a>	Orientations	List of valid orthogonal transformations of the matrix. Any of the eight predefined transforms for PhysicalResources as defined in Table 2-4, “Matrices and Orientation values for describing the orientation of a Component” on page 39.
<i>Availability</i> ?	enumeration	Specifies whether the feature described by this State Element is available on the Device. <b>Default behavior:</b> the value specified or implied by the parent Element <b>Allowed values are:</b> <i>Installed</i> – The feature is installed on the Device and is available for use. <i>Module</i> – The feature is provided by a module specified in <i>@ModuleRefs</i> . If and only if all modules that are listed in ModuleRefs are available, the feature is available. <i>NotInstalled</i> – The feature has not been installed on the Device. <i>NotLicensed</i> – The feature has been installed on the Device but can not be used until licensed. <i>Disabled</i> – The feature is installed and licensed on the Device, but has been disabled.
<i>Cardinality</i> ?	enumeration	<i>Required</i> – The attribute that is described by this State Element SHALL exist in any conforming JDF or JMF. <i>Parent</i> – The attribute that is described by this State Element SHALL exist in any parent element of the attribute specified by <i>@XPath</i> in any conforming JDF or JMF. Note that this does not imply any requirements for said parent element. <i>Optional</i> – The attribute that is described by this State Element MAY exist in any conforming JDF or JMF and SHALL be evaluated by the Device.
<i>CurrentValue</i> ?	matrix	Current value <a href="#">for the current running Job</a> set in the Device.
<i>DefaultValue</i> ?	matrix	Default value <a href="#">which will be supplied by the Device</a> if not specified in a submitted JDF. <i>@DefaultValue</i> SHALL be specified if <i>@HasDefault</i> = "true".

**Table 9-19: MatrixState Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>ListType</i> ?	enumeration	Specifies what type of list or object the State variable describes. <b>Allowed values are from:</b> Table 9-11, “ListType Attribute Values” on page 964.
<i>MaxOccurs</i> ?	integer	Maximum number of Elements in the list described by this State (e.g., the maximum number of integers in an integer list). If @ <i>MaxOccurs</i> is not “1”, the State Element refers to a list or a range of list values (e.g., a NameState StringState will allow a list of NMTOKEN string values).
<i>MinOccurs</i> ?	integer	Minimum number of Elements in the list described by this State. If @ <i>MinOccurs</i> is not “1”, the State Element refers to a list or a range of list values (e.g., a NameState StringState will allow a list of NMTOKEN string values).
<i>ModuleRefs</i> ?	IDREFS	List of modules that are needed for this feature to be available. At least one entry SHALL be specified if @ <i>Availability</i> = “Module”. The list of Modules is specified in DeviceCap/ModulePool.
<i>PresentRotateMod</i> ? <a href="#">New in JDF 1.2</a>	double	Present Modulo of the allowed rotations and offset in degrees that can be chosen without operator intervention. If not specified, the value of @ <i>AllowedRotateMod</i> is applied. <b>Values include:</b> 360 – No rotation is allowed. 90 – Any orthogonal rotation. 0 – Any rotation is allowed.
<i>PresentShift</i> ? <a href="#">New in JDF 1.2</a>	DoubleList	If @ <i>PresentTransforms</i> is specified, the implied shift defined in Table 2-4, “Matrices and Orientation values for describing the orientation of a Component” on page 39 is subtracted from @ <i>PresentShift</i> , thus all in-place rotations have an implied @ <i>PresentShift</i> value of “0 0 0 0”. If not specified, the value of @ <i>AllowedShift</i> is applied.
<i>PresentTransforms</i> ? <a href="#">New in JDF 1.2</a>	Orientations	Any of the eight predefined transforms for PhysicalResources as defined in Table 2-4, “Matrices and Orientation values for describing the orientation of a Component” on page 39. If not specified, the value of @ <i>AllowedTransforms</i> is applied.
<i>XPath</i> ?	NMTOKEN	XPath of the Attribute or Element that is described by this State.
Value *	element	A list legal values. See Section 9.1.7.2.6.1, “Value”.

**9.1.7.2.6.1      Value****Table 9-20: MatrixState/Value Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>AllowedValue</i>	matrix	A legal value for a matrix variable.
<i>PresentValue</i> ? <a href="#">Deprecated in JDF 1.2</a>	matrix	A legal value for a matrix variable that can be chosen without operator intervention. If not specified, the value of @ <i>AllowedValue</i> is applied. In JDF 1.2 and beyond, use @ <i>ValueUsage</i> .

**Table 9-20: MatrixState/Value Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>ValueUsage</i> ? <a href="#">New in JDF 1.2</a>	enumeration	Defines whether the value defined in <i>@AllowedValue</i> means "Present", "Allowed" or both. <b>Default behavior:</b> valid for both "Present" and "Allowed". <b>Allowed values are:</b> Present – Present configuration is supported. Allowed – Allowed configuration is supported.
<i>Loc</i> * <a href="#">New in JDF 1.2</a>	element	The localization(s) of the string defined in <i>@AllowedValue</i> . See Section 9.1.5.1, "Loc" on page 958.

**9.1.7.2.7 NameState**[New in JDF 1.1](#)

This **State** Subelement is used to describe ranges of NMTOKEN values. It inherits from the Abstract **State** Element described above.

**Table 9-21: NameState Element**

Name	Data Type	Description
<i>AllowedRegExp</i> ? <a href="#">New in JDF 1.2</a>	regExp	Regular expression that limits the allowed values.
<i>AllowedValueList</i> ?	NMTOKENS	A list legal values.
<i>Cardinality</i> ?	enumeration	<p><i>Required</i> – The attribute that is described by this <b>State</b> Element SHALL exist in any conforming JDF or JMF.</p> <p><i>Parent</i> – The attribute that is described by this <b>State</b> Element SHALL exist in any parent element of the attribute specified by <i>@XPath</i> in any conforming JDF or JMF. Note that this does not imply any requirements for said parent element.</p> <p><i>Optional</i> – The attribute that is described by this <b>State</b> Element MAY exist in any conforming JDF or JMF and SHALL be evaluated by the Device.</p>
<i>CurrentValue</i> ?	NMTOKEN	Current value <a href="#">for the current running Job</a> set in the Device.
<i>DefaultValue</i> ?	NMTOKEN	Default value if <a href="#">which will be supplied by the Device</a> not specified in a submitted JDF. <i>@DefaultValue</i> SHALL be specified if <i>@HasDefault = "true"</i> .
<i>PresentRegExp</i> ? <a href="#">New in JDF 1.2</a>	regExp	Regular expression that limits the values that can be chosen without operator intervention. If not specified, the value of <i>@AllowedRegExp</i> is applied.
<i>PresentValueList</i> ?	NMTOKENS	A list of values that can be chosen without operator intervention. If not specified, the value of <i>@AllowedValueList</i> is applied.
<i>ValueLoc</i> * <a href="#">New in JDF 1.2</a>	element	Localization(s) of the NMTOKENS listed in <i>@AllowedValueList</i> or <i>@PresentValueList</i> or implied by <i>@AllowedRegExp</i> or <i>@PresentRegExp</i> . See Section 9.1.7.2.1.1, "ValueLoc" on page 966.

**9.1.7.2.8 NumberState**[New in JDF 1.1](#)

This **State** Subelement is used to describe ranges of double values. It inherits from the Abstract **State** Element described above.

**Table 9-22: NumberState Element (Sheet 1 of 2)**

Name	Data Type	Description
<a href="#">AllowedValueList ? Modified in JDF 1.2</a>	DoubleRangeList	A list of supported values.
<a href="#">AllowedValueMax ? Deprecated in JDF 1.2</a>	double	Inclusive maximum allowed value. Replaced by @AllowedValueList in JDF 1.2 and beyond.
<a href="#">AllowedValueMin ? Deprecated in JDF 1.2</a>	double	Inclusive minimum allowed value. Replaced by @AllowedValueList in JDF 1.2 and beyond.
<a href="#">AllowedValueMod ? New in JDF 1.2</a>	XYPair	X defines the Modulo and Y the offset of the allowed value. In other words, if @AllowedValueMod = "10 2", only the values ... - 8,2,12,22 ... are allowed. If not specified, all values in the range are valid.  If ((N%X)-Y = 0) then N is a valid value.  <b>Note:</b> "Modulo" is the remainder of an integer division. For example: 4 mod 3 = 4 -3 = 1; 17 mod 3 = 17-5*3 = 2; and 3 mod 3 = 3-3 = 0.
<a href="#">Availability ?</a>	enumeration	Specifies whether the feature described by this State Element is available on the Device.  <b>Default behavior:</b> the value specified or implied by the parent Element <b>Allowed values are:</b> <i>Installed</i> – The feature is installed on the Device and is available for use. <i>Module</i> – The feature is provided by a module specified in @ModuleRefs. If and only if all modules that are listed in ModuleRefs are available, the feature is available. <i>NotInstalled</i> – The feature has not been installed on the Device. <i>NotLicensed</i> – The feature has been installed on the Device but can not be used until licensed. <i>Disabled</i> – The feature is installed and licensed on the Device, but has been disabled.
<a href="#">Cardinality ?</a>	enumeration	<i>Required</i> – The attribute that is described by this State Element SHALL exist in any conforming JDF or JMF.  <i>Parent</i> – The attribute that is described by this State Element SHALL exist in any parent element of the attribute specified by @XPath in any conforming JDF or JMF. Note that this does not imply any requirements for said parent element.  <i>Optional</i> – The attribute that is described by this State Element MAY exist in any conforming JDF or JMF and SHALL be evaluated by the Device.
<a href="#">CurrentValue ?</a>	double	Current value for the current running Job set in the Device.
<a href="#">DefaultValue ?</a>	double	Default value which will be supplied by the Device if not specified in a submitted JDF. @DefaultValue SHALL be specified if @HasDefault = "true".
<a href="#">ListType ?</a>	enumeration	Specifies what type of list or object the State variable describes.  <b>Allowed values are from:</b> Table 9-11, "ListType Attribute Values" on page 964.

**Table 9-22: NumberState Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>MaxOccurs</i> ?	integer	Maximum number of Elements in the list described by this State (e.g., the maximum number of integers in an integer list). If <i>@MaxOccurs</i> is not "1", the State Element refers to a list or a range of list values (e.g., a NameState StringState will allow a list of NMTOKEN string values).
<i>MinOccurs</i> ?	integer	Minimum number of Elements in the list described by this State. If <i>@MinOccurs</i> is not "1", the State Element refers to a list or a range of list values (e.g., a NameState StringState will allow a list of NMTOKEN string values).
<i>ModuleRefs</i> ?	IDREFS	List of modules that are needed for this feature to be available. At least one entry SHALL be specified if <i>@Availability</i> = "Module". The list of Modules is specified in DeviceCap/ModulePool.
<i>PresentValueList</i> ? <i>Modified in JDF 1.2</i>	DoubleRange-List	A list of values that can be chosen without operator intervention. If not specified, the value of <i>@AllowedValueList</i> is applied.
<i>PresentValueMax</i> ? <i>Deprecated in JDF 1.2</i>	double	Inclusive maximum allowed value that can be chosen without operator intervention. If not specified, the value of <i>@AllowedValueMax</i> is applied. Replaced by <i>@PresentValueList</i> in JDF 1.2 and beyond.
<i>PresentValueMin</i> ? <i>Deprecated in JDF 1.2</i>	double	Inclusive minimum allowed value that can be chosen without operator intervention. If not specified, the value of <i>@AllowedValueMin</i> is applied. Replaced by <i>@PresentValueList</i> in JDF 1.2 and beyond.
<i>PresentValueMod</i> ? <i>New in JDF 1.2</i>	XYPair	X defines the Modulo and Y the offset of the allowed value. In other words, if <i>@AllowedValueMod</i> = "10 2", only the values ... - 8,2,12,22 ... are allowed. If not specified, the value of <i>@AllowedValueMod</i> is applied. If ((N%X)-Y = 0) then N is a valid value.
<i>UnitType</i> ? <i>New in JDF 1.2</i>	NMTOKEN	Specifies the unit type that this State Element represents. Used to enable an application to localize the representation of the units. <i>@UnitType</i> SHALL be specified if the NumberState represents a value that has units. NumberState has the values as IntegerState plus a few more: <b>Values include:</b> <i>CMYKColor</i> – Four values representing a CMYK color. <i>LabColor</i> – Three values representing a Lab color. <i>sRGBColor</i> – Three values representing a sRGB color. <b>Values include those from:</b> IntegerState/ <i>@UnitType</i> (Table 9-18, "IntegerState Element" on page 971).
<i>XPath</i> ?	NMTOKEN	XPath of the Attribute or Element that is described by this State.
<i>ValueLoc</i> * <i>New in JDF 1.2</i>	element	Localization(s) of specific values. See Section 9.1.7.2.1.1, "ValueLoc" on page 966.

**9.1.7.2.9 PDFPathState***New in JDF 1.2*

This State Subelement is used to describe ranges of PDF paths. It inherits from the Abstract State Element described above.

**Table 9-23: PDFPathState Element**

Name	Data Type	Description
<i>AllowedLength</i> ?	IntegerRange	Inclusive minimum and maximum length of valid PDF path in multi-byte characters. Note that this is the length in characters and not in bytes of the internal encoding of an application.
<i>Cardinality</i> ?	enumeration	<p><i>Required</i> – The attribute that is described by this <a href="#">State</a> Element SHALL exist in any conforming JDF or JMF.</p> <p><i>Parent</i> – The attribute that is described by this <a href="#">State</a> Element SHALL exist in any parent element of the attribute specified by <i>@XPath</i> in any conforming JDF or JMF. Note that this does not imply any requirements for said parent element.</p> <p><i>Optional</i> – The attribute that is described by this <a href="#">State</a> Element MAY exist in any conforming JDF or JMF and SHALL be evaluated by the Device.</p>
<i>Cardinality</i> ?	enumeration	<p><i>Required</i> – The attribute that is described by this <a href="#">State</a> Element SHALL exist in any conforming JDF or JMF.</p> <p><i>Parent</i> – The attribute that is described by this <a href="#">State</a> Element SHALL exist in any parent element of the attribute specified by <i>@XPath</i> in any conforming JDF or JMF. Note that this does not imply any requirements for said parent element.</p> <p><i>Optional</i> – The attribute that is described by this <a href="#">State</a> Element MAY exist in any conforming JDF or JMF and SHALL be evaluated by the Device.</p>
<i>CurrentValue</i> ?	PDFPath	Current value <a href="#">for the current running Job</a> set in the Device.
<i>DefaultValue</i> ?	PDFPath	Default value <a href="#">which will be supplied by the Device</a> if not specified in a submitted JDF. <i>@DefaultValue</i> SHALL be specified if <i>@HasDefault</i> = "true".
<i>PresentLength</i> ?	IntegerRange	Inclusive minimum and maximum length of valid PDF path in characters that can be chosen without operator intervention. If not specified, the value of <i>@AllowedLength</i> is applied.
<i>Value</i> *	element	The localization(s) of the PDF path defined in <i>@AllowedValue</i> . See Section 9.1.7.2.9.1, "Value".

#### 9.1.7.2.9.1 [Value](#)

**Table 9-24: PDFPathState/Value Element**

Name	Data Type	Description
<i>AllowedValue</i>	PDFPath	A legal value for a matrix variable.
<i>ValueUsage</i> ?	enumeration	<p>Defines whether the value defined in <i>@AllowedValue</i> means "<i>Present</i>", "<i>Allowed</i>" or both.</p> <p><b>Default behavior:</b> valid for both "<i>Present</i>" and "<i>Allowed</i>".</p> <p><b>Allowed values are:</b></p> <p><i>Present</i> – Present configuration is supported.</p> <p><i>Allowed</i> – Allowed configuration is supported.</p>
<i>Loc</i> *	element	The localization(s) of the string defined in <i>@AllowedValue</i> . See Section 9.1.5.1, "Loc" on page 958.

**9.1.7.2.10 RectangleState**New in JDF 1.2

This State Subelement is used to describe ranges of rectangle values. It inherits from the Abstract State Element described above.

**Table 9-25: RectangleState Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>AllowedHWRelation</i> ?	XYRelation	Allowed relative value of width (X) vs. Height (Y).
<i>AllowedValueList</i> ?	RectangleRangeList	A list of ranges of allowed values that can be chosen.
<i>Availability</i> ?	enumeration	<p>Specifies whether the feature described by this State Element is available on the Device.</p> <p><b>Default behavior:</b> the value specified or implied by the parent Element</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Installed</i> – The feature is installed on the Device and is available for use.</li> <li><i>Module</i> – The feature is provided by a module specified in <i>@ModuleRefs</i>. If and only if all modules that are listed in ModuleRefs are available, the feature is available.</li> <li><i>NotInstalled</i> – The feature has not been installed on the Device.</li> <li><i>NotLicensed</i> – The feature has been installed on the Device but can not be used until licensed.</li> <li><i>Disabled</i> – The feature is installed and licensed on the Device, but has been disabled.</li> </ul>
<i>Cardinality</i> ?	enumeration	<p><i>Required</i> – The attribute that is described by this <b>State</b> Element SHALL exist in any conforming JDF or JMF.</p> <p><i>Parent</i> – The attribute that is described by this <b>State</b> Element SHALL exist in any parent element of the attribute specified by <i>@XPath</i> in any conforming JDF or JMF. Note that this does not imply any requirements for said parent element.</p> <p><i>Optional</i> – The attribute that is described by this <b>State</b> Element MAY exist in any conforming JDF or JMF and SHALL be evaluated by the Device.</p>
<i>CurrentValue</i> ?	rectangle	Current value for the current running Job set in the Device.
<i>DefaultValue</i> ?	rectangle	Default value which will be supplied by the Device if not specified in a submitted JDF. <i>@DefaultValue</i> SHALL be specified if <i>@HasDefault</i> = "true".
<i>ListType</i> ?	enumeration	<p>Specifies what type of list or object the State variable describes.</p> <p><b>Allowed values are from:</b> Table 9-11, “ListType Attribute Values” on page 964.</p>

**Table 9-25: RectangleState Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>MaxOccurs</i> ?	integer	Maximum number of Elements in the list described by this State (e.g., the maximum number of integers in an integer list). If <i>@MaxOccurs</i> is not "1", the State Element refers to a list or a range of list values (e.g., a <b>NameState</b> <b>StringState</b> will allow a list of <b>NMTOKEN</b> string values).
<i>MinOccurs</i> ?	integer	Minimum number of Elements in the list described by this State. If <i>@MinOccurs</i> is not "1", the State Element refers to a list or a range of list values (e.g., a <b>NameState</b> <b>StringState</b> will allow a list of <b>NMTOKEN</b> string values).
<i>ModuleRefs</i> ?	IDREFS	List of modules that are needed for this feature to be available. At least one entry SHALL be specified if <i>@Availability</i> = "Module". The list of Modules is specified in DeviceCap/ModulePool.
<i>PresentHWRelation</i> ?	XYRelation	Allowed relative value of width (X) vs. Height (Y). If not specified, the value of <i>@AllowedHWRelation</i> is applied.
<i>PresentValueList</i> ?	RectangleRangeList	A list of ranges of values that can be chosen without operator intervention. If not specified, the value of <i>@AllowedValueList</i> is applied.
<i>XPath</i> ?	NMTOKEN	XPath of the Attribute or Element that is described by this State.
<i>ValueLoc</i> *	element	A list of supported values. The <i>ValueLoc/@Value</i> Attribute SHALL be a representation of a rectangle. This can also be used to localize (or provide names for) specific rectangles. See Section 9.1.7.2.1.1, "ValueLoc" on page 966.

### 9.1.7.2.11 ShapeState

New in JDF 1.1

This State Subelement is used to describe ranges of shape values. It inherits from the Abstract State Element described above.

**Table 9-26: ShapeState Element (Sheet 1 of 3)**

Name	Data Type	Description
<i>AllowedValueList</i> ? <u>Modified in JDF 1.2</u>	ShapeRangeList	A list of values that can be chosen.
<i>AllowedValueMax</i> ? <u>Deprecated in JDF 1.2</u>	shape	Inclusive maximum allowed value. Replaced by <i>@AllowedValueList</i> in JDF 1.2 and beyond.
<i>AllowedValueMin</i> ? <u>Deprecated in JDF 1.2</u>	shape	Inclusive minimum allowed value. Replaced by <i>@AllowedValueList</i> in JDF 1.2 and beyond.
<i>AllowedX</i> ? <u>New in JDF 1.2</u>	DoubleRangeList	Allowed X-axis of the <i>@Shape</i> .
<i>AllowedY</i> ? <u>New in JDF 1.2</u>	DoubleRangeList	Allowed Y-axis of the <i>@Shape</i> .
<i>AllowedZ</i> ? <u>New in JDF 1.2</u>	DoubleRangeList	Allowed Z-axis of the <i>@Shape</i> .

Table 9-26: ShapeState Element (Sheet 2 of 3)

Name	Data Type	Description
<i>Availability</i> ?	enumeration	<p>Specifies whether the feature described by this <b>State</b> Element is available on the Device.</p> <p><b>Default behavior:</b> the value specified or implied by the parent Element</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Installed</i> – The feature is installed on the Device and is available for use.</li> <li><i>Module</i> – The feature is provided by a module specified in <b>@ModuleRefs</b>. If and only if all modules that are listed in ModuleRefs are available, the feature is available.</li> <li><i>Not Installed</i> – The feature has not been installed on the Device.</li> <li><i>Not Licensed</i> – The feature has been installed on the Device but can not be used until licensed.</li> <li><i>Disabled</i> – The feature is installed and licensed on the Device, but has been disabled.</li> </ul>
<i>Cardinality</i> ?	enumeration	<p><i>Required</i> – The attribute that is described by this <b>State</b> Element SHALL exist in any conforming JDF or JMF.</p> <p><i>Parent</i> – The attribute that is described by this <b>State</b> Element SHALL exist in any parent element of the attribute specified by <b>@XPath</b> in any conforming JDF or JMF. Note that this does not imply any requirements for said parent element.</p> <p><i>Optional</i> – The attribute that is described by this <b>State</b> Element MAY exist in any conforming JDF or JMF and SHALL be evaluated by the Device.</p>
<i>CurrentValue</i> ?	shape	Current value for the current running Job set in the Device.
<i>DefaultValue</i> ?	shape	Default value which will be supplied by the Device if not specified in a submitted JDF. <b>@DefaultValue</b> SHALL be specified if <b>@HasDefault = "true"</b> .
<i>ListType</i> ?	enumeration	<p>Specifies what type of list or object the <b>State</b> variable describes.</p> <p><b>Allowed values are from:</b> Table 9-11, “ListType Attribute Values” on page 964.</p>
<i>MaxOccurs</i> ?	integer	Maximum number of Elements in the list described by this <b>State</b> (e.g., the maximum number of integers in an integer list). If <b>@MaxOccurs</b> is not “1”, the <b>State</b> Element refers to a list or a range of list values (e.g., a <b>NameState StringState</b> will allow a list of <b>NMTOKEN string</b> values).
<i>MinOccurs</i> ?	integer	Minimum number of Elements in the list described by this <b>State</b> . If <b>@MinOccurs</b> is not “1”, the <b>State</b> Element refers to a list or a range of list values (e.g., a <b>NameState StringState</b> will allow a list of <b>NMTOKEN string</b> values).
<i>ModuleRefs</i> ?	IDREFS	List of modules that are needed for this feature to be available. At least one entry SHALL be specified if <b>@Availability = "Module"</b> . The list of Modules is specified in <b>DeviceCap/ModulePool</b> .

**Table 9-26: ShapeState Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>PresentValueList ?</i> <i>Modified in JDF 1.2</i>	ShapeRangeList	A list of values that can be chosen without operator intervention. If not specified, the value of <i>@AllowedValueList</i> is applied.
<i>PresentValueMax ?</i> <i>Deprecated in JDF 1.2</i>	shape	Inclusive maximum allowed value that can be chosen without operator intervention. If not specified, the value of <i>@AllowedValueMax</i> is applied. Replaced by <i>@AllowedValueList</i> in JDF 1.2 and beyond.
<i>PresentValueMin ?</i> <i>Deprecated in JDF 1.2</i>	shape	Inclusive minimum allowed value that can be chosen without operator intervention. If not specified, the value of <i>@AllowedValueMin</i> is applied. Replaced by <i>@AllowedValueList</i> in JDF 1.2 and beyond.
<i>PresentX ?</i> <i>New in JDF 1.2</i>	DoubleRangeList	Present X-axis of the <i>@Shape</i> that can be chosen without operator intervention. If not specified, the value of <i>@AllowedX</i> is applied.
<i>PresentY ?</i> <i>New in JDF 1.2</i>	DoubleRangeList	Present Y-axis of the <i>@Shape</i> that can be chosen without operator intervention. If not specified, the value of <i>@AllowedY</i> is applied.
<i>PresentZ ?</i> <i>New in JDF 1.2</i>	DoubleRangeList	Present Z-axis of the <i>@Shape</i> that can be chosen without operator intervention. If not specified, the value of <i>@AllowedZ</i> is applied.
<i>XPath ?</i>	NMTOKEN	XPath of the Attribute or Element that is described by this State.
<i>ValueLoc *</i> <i>New in JDF 1.2</i>	element	A list of supported shapes. See Section 9.1.7.2.1.1, “ValueLoc” on page 966.

**9.1.7.2.12 StringState***New in JDF 1.1*

This State Subelement is used to describe ranges of string values. It inherits from the Abstract State Element described above.

**Table 9-27: StringState Element (Sheet 1 of 3)**

Name	Data Type	Description
<i>AllowedLength ?</i> <i>New in JDF 1.2</i>	IntegerRange	Inclusive minimum and maximum length of valid string in multi-byte characters. Note that this is the length in characters, and not in bytes of the internal encoding of an application. For instance, the length of the string "Grün" is 4 and not 6 (UTF-8 with a terminating 0 and a double byte "ü").
<i>AllowedRegExp ?</i> <i>New in JDF 1.2</i>	regExp	Regular expression that limits the allowed values.

**Table 9-27: StringState Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>Availability</i> ?	enumeration	<p>Specifies whether the feature described by this <b>State</b> Element is available on the Device.</p> <p><b>Default behavior:</b> the value specified or implied by the parent Element</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Installed</i> – The feature is installed on the Device and is available for use.</li> <li><i>Module</i> – The feature is provided by a module specified in <b>@ModuleRefs</b>. If and only if all modules that are listed in ModuleRefs are available, the feature is available.</li> <li><i>NotInstalled</i> – The feature has not been installed on the Device.</li> <li><i>NotLicensed</i> – The feature has been installed on the Device but can not be used until licensed.</li> <li><i>Disabled</i> – The feature is installed and licensed on the Device, but has been disabled.</li> </ul>
<i>Cardinality</i> ?	enumeration	<p><i>Required</i> – The attribute that is described by this <b>State</b> Element SHALL exist in any conforming JDF or JMF.</p> <p><i>Parent</i> – The attribute that is described by this <b>State</b> Element SHALL exist in any parent element of the attribute specified by <b>@XPath</b> in any conforming JDF or JMF. Note that this does not imply any requirements for said parent element.</p> <p><i>Optional</i> – The attribute that is described by this <b>State</b> Element MAY exist in any conforming JDF or JMF and SHALL be evaluated by the Device.</p>
<i>CurrentValue</i> ?	string	Current value <b>for the current running Job</b> set in the Device.
<i>Datatype</i> ?	enumeration	<p>Datatype that the string represents.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>NMTOKEN</i></li> <li><i>enumerartion</i></li> <li><i>string</i></li> <li><i>PDFPath</i></li> </ul> <p>list data types from appendix A.</p>
<i>DefaultValue</i> ?	string	Default value <b>which will be supplied by the Device</b> if not specified in a submitted JDF. <b>@DefaultValue</b> SHALL be specified if <b>@HasDefault = "true"</b> .
<i>ListType</i> ?	enumeration	<p>Specifies what type of list or object the <b>State</b> variable describes.</p> <p><b>Allowed values are from:</b> Table 9-11, “ListType Attribute Values” on page 964.</p>
<i>MaxOccurs</i> ?	integer	Maximum number of Elements in the list described by this <b>State</b> (e.g., the maximum number of integers in an integer list). If <b>@MaxOccurs</b> is not “1”, the <b>State</b> Element refers to a list or a range of list values (e.g., a <b>NameState StringState</b> will allow a list of <b>NMTOKEN string</b> values).

**Table 9-27: StringState Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>MinOccurs</i> ?	integer	Minimum number of Elements in the list described by this State. If <i>@MinOccurs</i> is not "1", the State Element refers to a list or a range of list values (e.g., a <b>NameState StringState</b> will allow a list of <b>NMTOKEN string</b> values).
<i>ModuleRefs</i> ?	IDREFS	List of modules that are needed for this feature to be available. At least one entry SHALL be specified if <i>@Availability</i> = "Module". The list of Modules is specified in <b>DeviceCap/ModulePool</b> .
<i>PresentLength</i> ? <i>New in JDF 1.2</i>	IntegerRange	Inclusive minimum and maximum length of valid string in characters that can be chosen without operator intervention. If not specified, the value of <i>@AllowedLength</i> is applied.
<i>PresentRegExp</i> ? <i>New in JDF 1.2</i>	regExp	Regular expression that limits the present values that can be chosen without operator intervention. If not specified, the value of <i>@AllowedRegExp</i> is applied.
<i>XPath</i> ?	NMTOKEN	XPath of the Attribute or Element that is described by this State.
<i>Value</i> * <i>Modified in JDF 1.2</i>	element	A list legal values. See Section 9.1.7.2.12.1, "Value".

**9.1.7.2.12.1 Value**[New in JDF 1.1](#)**Table 9-28: StringState/Value Element**

Name	Data Type	Description
<i>AllowedValue</i>	string	A legal value for a string variable.
<i>PresentValue</i> ? <i>Deprecated in JDF 1.2</i>	string	A legal value for a string variable that can be chosen without operator intervention. If not specified, the value of <i>@AllowedValue</i> is applied. In JDF 1.2 and beyond, use <i>@ValueUsage</i> .
<i>ValueUsage</i> ? <i>New in JDF 1.2</i>	enumeration	Defines whether the value defined in <i>@AllowedValue</i> means "Present", "Allowed" or both. <b>Default behavior:</b> valid for both "Present" and "Allowed". <b>Allowed values are:</b> <i>Present</i> – Present configuration is supported. <i>Allowed</i> – Allowed configuration is supported.
<i>Loc</i> * <i>New in JDF 1.2</i>	element	The localization(s) of the string defined in <i>@AllowedValue</i> . See Section 9.1.5.1, "Loc" on page 958.

**9.1.7.2.13 XYPairState**[New in JDF 1.1](#)

This State Subelement is used to describe ranges of XYPair values. It inherits from the Abstract State Element described above.

**Table 9-29: XYPairState Element (Sheet 1 of 3)**

Name	Data Type	Description
<i>AllowedValueList</i> ? <i>Modified in JDF 1.2</i>	XYPairRangeList	A list of values that can be chosen.

**Table 9-29: XYPairState Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>AllowedValueMax</i> ? <i>Deprecated in JDF 1.2</i>	XYPair	Inclusive maximum allowed value. Replaced with <i>@AllowedValueList</i> in JDF 1.2 and beyond.
<i>AllowedValueMin</i> ? <i>Deprecated in JDF 1.2</i>	XYPair	Inclusive minimum allowed value. Replaced with <i>@AllowedValueList</i> in JDF 1.2 and beyond.
<i>AllowedXYRelation</i> ? <i>New in JDF 1.2</i>	XYRelation	Relative value of X vs. Y.
<i>Availability</i> ?	enumeration	<p>Specifies whether the feature described by this <b>State</b> Element is available on the Device.</p> <p><b>Default behavior:</b> the value specified or implied by the parent Element</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Installed</i> – The feature is installed on the Device and is available for use.</li> <li><i>Module</i> – The feature is provided by a module specified in <i>@ModuleRefs</i>. If and only if all modules that are listed in ModuleRefs are available, the feature is available.</li> <li><i>Not Installed</i> – The feature has not been installed on the Device.</li> <li><i>Not Licensed</i> – The feature has been installed on the Device but can not be used until licensed.</li> <li><i>Disabled</i> – The feature is installed and licensed on the Device, but has been disabled.</li> </ul>
<i>Cardinality</i> ?	enumeration	<p><i>Required</i> – The attribute that is described by this <b>State</b> Element SHALL exist in any conforming JDF or JMF.</p> <p><i>Parent</i> – The attribute that is described by this <b>State</b> Element SHALL exist in any parent element of the attribute specified by <i>@XPath</i> in any conforming JDF or JMF. Note that this does not imply any requirements for said parent element.</p> <p><i>Optional</i> – The attribute that is described by this <b>State</b> Element MAY exist in any conforming JDF or JMF and SHALL be evaluated by the Device.</p>
<i>CurrentValue</i> ?	XYPair	Current value for the current running Job set in the Device.
<i>DefaultValue</i> ?	XYPair	Default value which will be supplied by the Device if not specified in a submitted JDF. <i>@DefaultValue</i> SHALL be specified if <i>@HasDefault = "true"</i> .
<i>ListType</i> ?	enumeration	<p>Specifies what type of list or object the <b>State</b> variable describes.</p> <p><b>Allowed values are from:</b> Table 9-11, “ListType Attribute Values” on page 964.</p>
<i>MaxOccurs</i> ?	integer	Maximum number of Elements in the list described by this <b>State</b> (e.g., the maximum number of integers in an integer list). If <i>@MaxOccurs</i> is not “1”, the <b>State</b> Element refers to a list or a range of list values (e.g., a <b>NameState StringState</b> will allow a list of <b>NMTOKEN string</b> values).

**Table 9-29: XYPairState Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>MinOccurs</i> ?	integer	Minimum number of Elements in the list described by this State. If <i>@MinOccurs</i> is not "1", the State Element refers to a list or a range of list values (e.g., a <b>NameState StringState</b> will allow a list of <b>NMTOKEN string</b> values).
<i>ModuleRefs</i> ?	IDREFS	List of modules that are needed for this feature to be available. At least one entry SHALL be specified if <i>@Availability</i> = "Module". The list of Modules is specified in DeviceCap/ModulePool.
<i>PresentValueList</i> ? <a href="#">Modified in JDF 1.2</a>	XYPairRangeList	A list of values that can be chosen without operator intervention. If not specified, the value of <i>@AllowedValueList</i> is applied.
<i>PresentValueMax</i> ? <a href="#">Deprecated in JDF 1.2</a>	XYPair	Inclusive maximum allowed value that can be chosen without operator intervention. If not specified, the value of <i>@AllowedValueMax</i> is applied. Replaced with <i>@PresentValueList</i> in JDF 1.2 and beyond.
<i>PresentValueMin</i> ? <a href="#">Deprecated in JDF 1.2</a>	XYPair	Inclusive minimum allowed value that can be chosen without operator intervention. If not specified, the value of <i>@AllowedValueMin</i> is applied. Replaced with <i>@PresentValueList</i> in JDF 1.2 and beyond.
<i>PresentXYRelation</i> ? <a href="#">New in JDF 1.2</a>	XYRelation	Relative value of X vs. Y that can be chosen without operator intervention. If not specified, the value of <i>@AllowedXYRelation</i> is applied.
<i>UnitType</i> ? <a href="#">New in JDF 1.2</a>	NMTOKEN	Specifies the unit type that this State Element represents. Used to enable an application to localize the representation of the units. <i>@UnitType</i> SHALL be specified if the IntegerState represents a value that has units. <b>Values include those from:</b> IntegerState/ <i>@UnitType</i> (Table 9-18, "IntegerState Element" on page 971).
<i>XPath</i> ?	NMTOKEN	XPath of the Attribute or Element that is described by this State.
<i>ValueLoc</i> * <a href="#">New in JDF 1.2</a>	element	A list of supported shapes. See Section 9.1.7.2.1.1, "ValueLoc" on page 966.

### 9.1.8 DisplayGroupPool

[New in JDF 1.2](#)

The DisplayGroupPool Element declares set(s) of related features that are intended to be displayed as a group in user interfaces. These declarations are references to individual features declared in State Elements.

**Table 9-30: DisplayGroupPool Element**

Name	Data Type	Description
<i>DisplayGroup</i> *	element	Declares a set of references to State Elements that are intended to be displayed as a group in user interfaces.

#### Example 9-1: DisplayGroupPool

In this example, a single DisplayGroup is specified. This DisplayGroup declares that the State Attributes with *@ID*'s "bta", "cmp", "mag", "colorspace" and "outputres" are all to be grouped together in any user interface. The English string "ScanningParameters" is associated with this DisplayGroup, though no explicit

assumptions are made about how to display this group of Attributes. The **DisplayGroup** Element merely states that there is a user-significant relationship between the Attributes.

```
<Device Class="Implementation" ID="Link0003" Status="Available">
  <DeviceCap>
    <DisplayGroupPool>
      <DisplayGroup rRefs="btd cmp mag colorspace outputres">
        <Loc HelpText="Parameters for scanning configuration" Lang="en"
          Value="ScanningParameters"/>
      </DisplayGroup>
    </DisplayGroupPool>
  </DeviceCap>
</Device>
```

### 9.1.8.1 DisplayGroup

Each **DisplayGroup** Element declares a group of features that are intended to be displayed together in user interfaces.

**Table 9-31: DisplayGroup Element**

Name	Data Type	Description
rRefs	IDREFS	References to State Elements. See Section 9.1.7, “State” on page 960 for details of the State Element.
Loc *	element	Localized strings describing the DisplayGroup. See Section 9.1.5.1, “Loc” on page 958.

### 9.1.9 FeaturePool

New in JDF 1.2

Modified in JDF 1.5

The **FeaturePool** Element describes Message or Resource Subelements that represent composite features for user manipulation when describing capabilities. These features typically do not directly represent any JDF Resources or parameters., but rather trigger macros that manipulate related sets of parameters. For more information on macro definitions, see Section 9.1.10, “MacroPool” on page 989.

These features can be mapped to **NamedFeatures** (see **NamedFeature** in Table 1-5, “Glossary” on page 9). A feature from **NamedFeatures** is selected by specifying a **GeneralID[@DataType="NamedFeature"]** where **GeneralID/@IDUsage** maps to **@Name** and **GeneralID/@IDValue** is restricted by the **State** elements in the **FeaturePool**.that matches entries from **FeaturePool/State/@Name** and **FeaturePool/State/@AllowedValueList**.

**Table 9-32: FeaturePool Element**

Name	Data Type	Description
State *	element	State Elements that define the accepted parameter space for the Messages or Resources Subelements. These <b>State</b> Subelements are identical in form to other <b>State</b> Elements, but typically are only “macro” features that control other features through <b>macro</b> Elements. For more information on <b>macro</b> definitions, see Section 9.1.10, “MacroPool” on page 989. For details of the <b>State</b> Element, see Section 9.1.7, “State” on page 960.

### Example 9-2: FeaturePool

In this example, *ScanMode* is a feature that doesn't map directly to any JDF Resource or Attribute, but provides a "shell" feature that allows users to control a set of JDF Resources and/or Attributes to indicate a common or preferred grouping based on the user's desired task. The actual corresponding JDF Resource Attribute Values are determined and set by the *ScanModeMacro* macro that is called when the *ScanMode* feature is manipulated.

```
<Device Class="Implementation" ID="Link0003" Status="Available">
  <DeviceCap>
    <FeaturePool>
      <EnumerationState
        AllowedValueList="Mono ColorTransparency Photo" ID="sm"
        HasDefault="false" MacroRefs="ScanModeMac" Name="ScanMode"
        UserDisplay="Display" />
    </FeaturePool>
  </DeviceCap>
</Device>
```

### 9.1.10 MacroPool

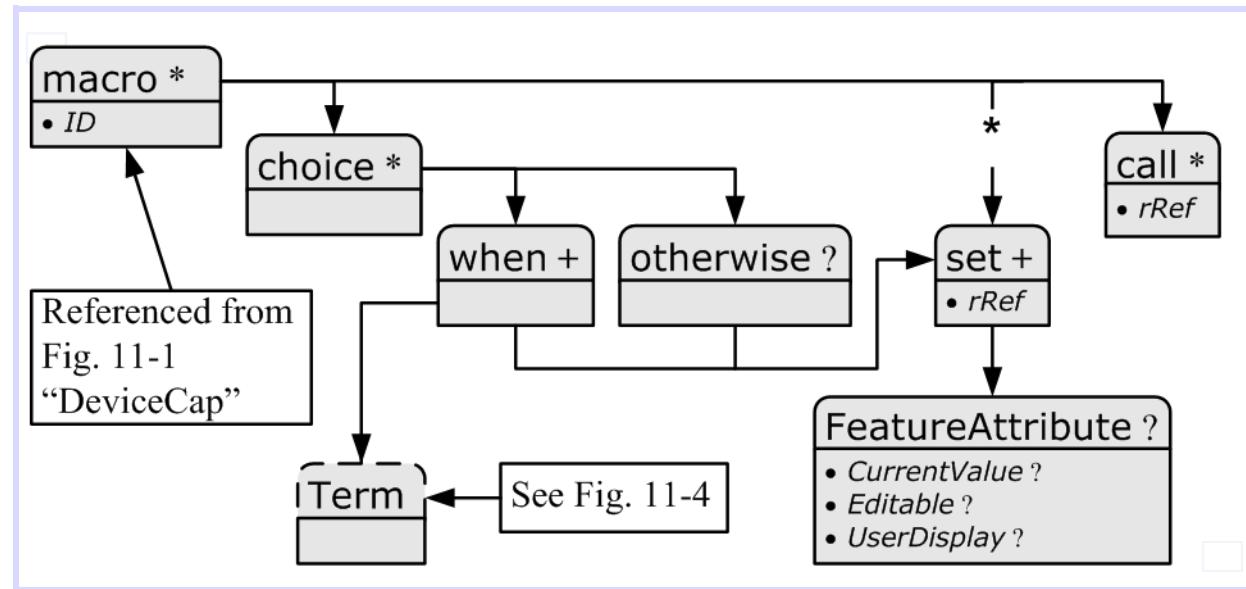
New in JDF 1.2

The MacroPool Element is used to contain descriptions of macro expressions. Each macro declares a set of conditional operations that are used to change State Element Attribute Values.

Table 9-33: MacroPool Element

Name	Data Type	Description
macro *	element	A list of independent macros.

Figure 9-3: macro Element – a diagram of its structure



#### 9.1.10.1 macro

New in JDF 1.2

The macro Subelement is used to contain a set of conditional operations that are used to change State Element Attribute Values. Each macro contains one or more of the following Elements:

- choice** — Declares one or more **when** statements, each of which contains a Boolean expression (as defined in Section 9.1.13, “Term” on page 993) and a **set** Element. When the expression evaluates to “*true*”, the action specified in the **set** Element is to be performed. If no evaluation in any **when** Element in a **choice** evaluates to “*true*”, the action(s) specified in the **otherwise** Element is to be performed.
- set** — sets the condition of one or more **State** Element Attributes.
- call** — calls another macro to be executed.

When executing a **macro**, consumers SHALL execute **choice**, **set** and **call** Elements in the order in which they are specified in the actual XML document. Note that the ordering provided in the actual capabilities description SHOULD be honored. The following shows the logical layout of the **macro** Subelement:

**Table 9-34: macro Element**

Name	Data Type	Description
<i>ID</i>	ID	Unique identifier of a <b>macro</b> Element. This <i>@ID</i> is used to refer to the <b>macro</b> Element.
choice *	element	A set of conditional operations that set (or not) feature values. At least one of choice, set or call SHALL be specified in macro.
set *	element	An Element that sets one or more <b>State</b> Attribute Values. At least one of choice, set or call SHALL be specified in macro.
call *	element	An Element that calls another <b>macro</b> , allowing for <b>macro</b> reuse and chaining. At least one of choice, set or call SHALL be specified in macro.

### 9.1.10.2 choice

The **choice** Subelement is used to contain expressions that declare conditional operations that can cause **State** Element Attribute Values to be changed. The **choice** includes one or more **when** statements that are evaluated in order, each of which contains a Boolean expression (as defined in Section 9.1.13, “Term” on page 993) and a **set** Element. When the expression evaluates to “*true*”, the action specified in the **set** Element is to be performed and no further **when** statements are evaluated. If no evaluation in any **when** Element in a **choice** evaluates to “*true*”, the action(s) specified in the **otherwise** Element is to be performed.

**Table 9-35: choice Element**

Name	Data Type	Description
when +	element	A set of conditional operations that set (or not) feature values.
otherwise ?	element	An Element that sets one or more <b>State</b> Element Attribute Values if none of the <b>when</b> expressions evaluate to “ <i>true</i> ”.

### 9.1.10.3 otherwise

The **otherwise** Subelement sets one or more feature values if none of the **when** expressions in a **choice** Element evaluate to “*true*”.

**Table 9-36: otherwise Element**

Name	Data Type	Description
set +	element	An element that sets one or more feature values.

### 9.1.10.4 when

The **when** Subelement is used to contain expressions that declare conditional operations to enforce sets of feature behaviors. The **when** Element includes a Boolean expression (as defined in Section 9.1.13, “Term” on page 993) and a **set** Element. When the **Term** evaluates to “*true*”, the action specified in the **set** Element is to be performed.

**Table 9-37: when Element**

Name	Data Type	Description
Term	element	A Boolean expression that evaluates a set of feature values.
set +	element	An Element that sets one or more feature values.

**9.1.10.5 set**

The **set** Subelement sets one or more **State Element Attribute Values**.

**Table 9-38: set Element**

Name	Data Type	Description
rRef	IDREF	Reference to a <b>State Element</b> referring to the feature value to set
FeatureAttribute ?	element	Specifies one or more Attributes within the <b>State Element</b> that are to have their value changed (along with the value they change to).

**9.1.10.6 FeatureAttribute**

**FeatureAttribute** specifies one or more **Attributes** of a **State Element** that are to have their value changed. The following Attributes can be changed:

**Table 9-39: FeatureAttribute Element**

Name	Data Type	Description
CurrentValue ?	string	The value to change the <b>@CurrentValue</b> Attribute of the <b>State Element</b> to. Note that the mapping of the string to the actual data type of the <b>State Element</b> SHALL be performed by the application processing the capabilities.
Editable ?	boolean	When "true", the feature and its current value can be edited by the user. If "false", the user interface SHALL NOT allow user modification of the current value of the <b>State Element</b> .
UserDisplay ?	enumeration	Indicates under which conditions the feature is to be displayed in user interfaces. Allowed values are from: <b>State/@UserDisplay</b> .

**9.1.10.7 call**

The **call** Subelement is used to call other **macro Elements**, effectively using them as macro “templates”.

**Table 9-40: call Element**

Name	Data Type	Description
rRef	IDREF	Reference to a <b>macro</b> .

**9.1.11 Performance**

New in JDF 1.1

The **Performance Element** describes speed as the capability to consume or produce a JDF Resource.

**Table 9-41: Performance Element (Sheet 1 of 2)**

Name	Data Type	Description
AverageAmount ?	double	Average amount produced/consumed per hour assuming an average Job.

**Table 9-41: Performance Element (Sheet 2 of 2)**

Name	Data Type	Description
AverageCleanup ?	duration	Average time needed to clean the Device after a Job.
AverageSetup ?	duration	Average time needed to setup the Device before a Job.
DevCapsRef ? <i>New in JDF 1.2</i>	IDREF	Reference to the DevCaps Element that describes the Resource whose performance is specified by this Performance Element.
MaxAmount ?	double	Maximum amount produced/consumed per hour, assuming an ideal Job. The default value of "0" translates to the value of @AverageAmount.
MaxCleanup ?	duration	Maximum time needed to clean the Device after a Job, assuming a worst case Job. Defaults to @AverageCleanup.
MaxSetup ?	duration	Maximum time needed to setup the Device before a Job, assuming a worst case Job. Defaults to @AverageSetup.
MinAmount ?	double	Minimum amount produced/consumed per hour, assuming a worst case Job. Defaults to @AverageAmount.
MinCleanup ?	duration	Minimum time needed to clean the Device after a Job, assuming an ideal Job. Defaults to @AverageCleanup.
MinSetup ?	duration	Minimum time needed to setup the Device before a Job, assuming an ideal Job. Defaults to @AverageSetup.
Name ? <i>Deprecated in JDF 1.2</i>	NMTOKEN	Name of the Input Resource type that is processed by the Device (e.g., <b>Media</b> , <b>Ink</b> , <b>RunList</b> ). <b>Deprecation note:</b> starting with JDF 1.2, use @DevCapsRef.
Unit ?	NMTOKEN	Unit of measure of Resource consumption per hour. <b>Default value is from:</b> Resource's generic units as defined in Table 1-8, "Units Used in JDF XJDF" on page 23.

### 9.1.12 TestPool

*New in JDF 1.2*

The TestPool Subelement is used to contain Boolean expressions that are used to describe “templates” for use in Action Elements.

**Table 9-42: TestPool Element**

Name	Data Type	Description
Test *	element	A list of independent Test Elements.

#### 9.1.12.1 Test

The Test Subelement is used to contain Boolean expressions that are for use only when referenced by another Test or Action and are not evaluated independently. Its purpose is to simplify the description of other Test Elements and macro Elements by representing a commonly used Boolean expression.

**Table 9-43: Test Element (Sheet 1 of 2)**

Name	Data Type	Description
ID	ID	Unique identifier of a Test Element. This ID is used to refer to the Test Element.
DescriptiveName ?	string	Human readable description of the Test.

Table 9-43: Test Element (Sheet 2 of 2)

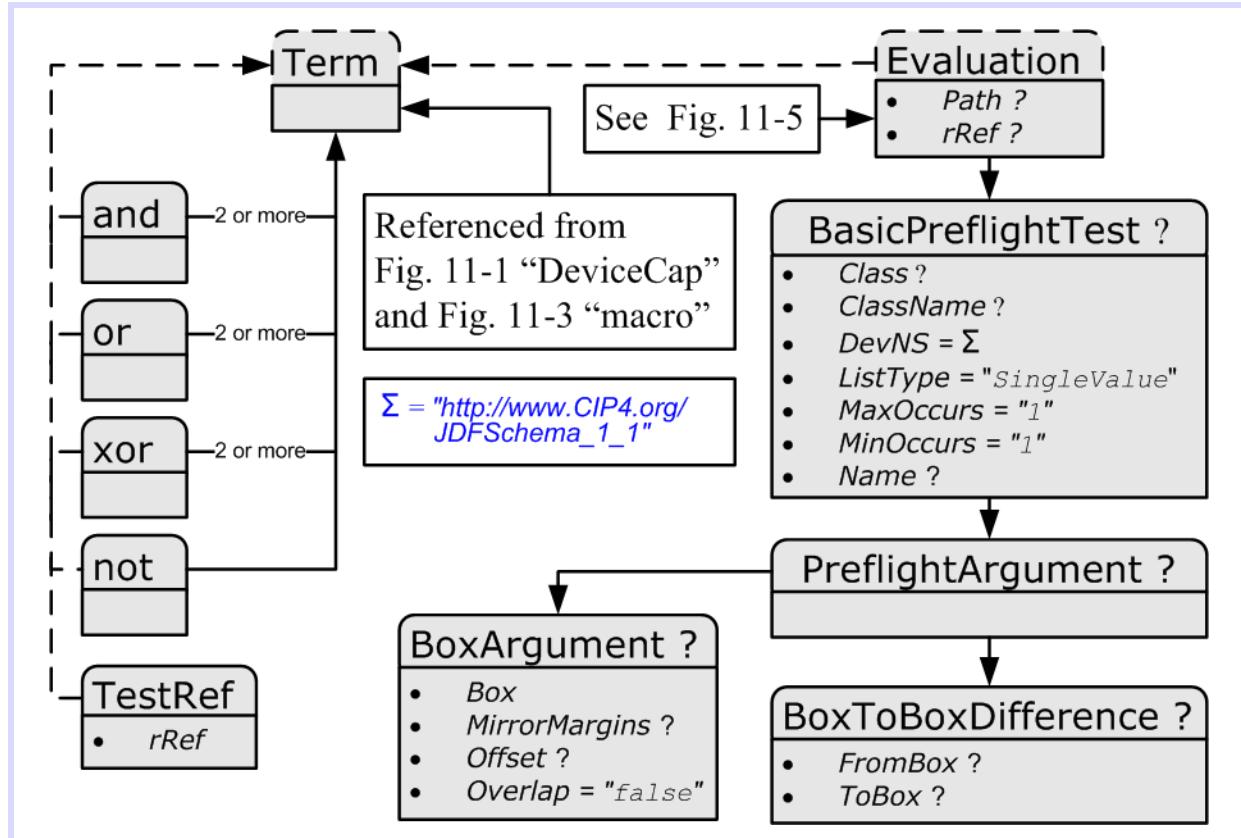
Name	Data Type	Description
Severity ? = "Error"	enumeration	<p>Indicates how the severity of the failure is to be treated when the expression defined by <code>@TestRef</code> the Term is violated.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Error</i> – The client is to display an error message and not allow the conflicting settings to persist.</li> <li><i>Warning</i> – The client is to notify the user of the condition but allow the settings to persist if the user requests.</li> <li><i>Information</i> – The client is to allow the settings to persist but inform the user of the issue.</li> </ul>
XPath ?	XPath	Context in which to evaluate this Test the Term. If not specified, the context is inherited from the referring term. If this is a root test and <code>@XPath</code> is not specified, the <code>@XPath</code> attribute in the child or referred Test elements and Term elements are element is evaluated globally.
Term	element	Any Element derived from an Abstract Term (e.g., “not”, “and” or one of the explicit Evaluation Elements).

## 9.1.13 Term

### 9.1.13.1 Abstract Term

Figure 9-4 shows the Abstract Term and all Term Elements

Figure 9-4: Abstract Term Element – a diagram of its structure



### 9.1.13.2 Term Elements

The **Term Element** serves as the basis for all constraint expressions and conditional macro expressions. It describes a (potentially) nested Boolean expression that evaluates as a whole to either "*true*" or "*false*". This expression is then used inside constraint or **macro** Elements to determine proper action given the evaluation of the **Term**. **Term Elements** are composed of Boolean combinations of Elements in Table 9-44. The **Term Elements** that are Boolean operators MAY be nested. They are used both in Device capabilities and preflighting context.

**Note:** in the actual JDF schema, several Abstract Element definitions are used to create an appropriate inheritance structure. Rather than reproduce this here, only the actual non-Abstract Elements that will appear in JDF files will be described.

**Table 9-44: List of Term Elements**

Name	Page	Description
and	page 995	Boolean AND operator.
not	page 996	Boolean negation.
or	page 995	Boolean OR operator.
xor	page 995	Boolean exclusive or (XOR) operator.
TestRef	page 996	Reference to a constraint <b>Test Element</b> to be evaluated as a nested Boolean expression inside a larger expression.
EvaluationState	page 996	Elements, which evaluate a JDF <b>State Attribute Value</b> to create a simple Boolean expression (e.g., "Is the value of <i>@BitDepth</i> equal to 8?"). Each <b>XXXExpression Element</b> is derived from the <b>Abstract Evaluation Element</b> .  Any <b>State element</b> listed in Table 9-12, "List of State Elements" MAY be used as a Term. <b>State elements</b> SHALL be evaluated with a <i>@ValueUsage</i> = " <i>Allowed</i> " or using the respective <i>@AllowedXXX</i> attributes.

### Example 9-3: ActionPool and TestPool

**Term** is an Abstract Element, so it will never appear in a JDF document. In this "*ctcmp*" constraint example, the **Term** is represented by the **and** Element. Since the **Term Element** itself is Abstract, what will actually appear in constraints will be Boolean expressions. In this example, the logic is, "We can not use CCITT compression if the bit depth is not 1 bit." The check for compression type uses an **EnumerationEvaluation Element**, which evaluates an **EnumerationState** value against "*CCITTFaxEncode*". If the value of the **EnumerationState** Element referred to by "*cmp*" = "*CCITTFaxEncode*", the **EnumerationEvaluation** evaluates as "*true*". The check for "*btd*" is accomplished through a *@TestRef* to the "*is1bit*" constraint. The **and** and **not** Elements behave according to the standard semantics for Boolean combinatorial logic.

```

<TestPool>
  <Test DescriptiveName="Transparencies cannot print duplex" Severity="Error">
    <and>
      <StringState AllowedRegExp="(Transparency)" XPath="/XJDF/ResourceSet/Resource/Media/@MediaType"/>
      <StringState AllowedRegExp="(TwoSided)" XPath="/XJDF/ParameterSet/Parameter/DigitalPrintingParams/@Sides"/>
    </and>
  </Test>
</TestPool>

<Device Class="Implementation" ID="Link0003" Status="Available">
  <DeviceCap>
    <ActionPool>
      <Action ID="MyAction" TestRef="ctcmp">
        <Loc HelpText="Only select CCITTFaxEncoding for 1 bit documents">

```

```

Lang="en" ShortValue="Ouch!"
Value="CCITTFaxEncoding not supported on
grayscale images"/>
</Action>
</ActionPool>
<TestPool>
<Test ID="ctcmp">
<!-- Can't CCITT compress anything but 1 bit grayscale --&gt;
&lt;and&gt;
&lt;not&gt;
&lt;TestRef rRef="is1bit"/&gt;
&lt;/not&gt;
&lt;EnumerationEvaluation ValueList="CCITTFaxEncode" rRef="cmp"/&gt;
&lt;/and&gt;
&lt;/Test&gt;
&lt;Test ID="is1bit"&gt;
&lt;IntegerEvaluation ValueList="1" rRef="btd"/&gt;
&lt;/Test&gt;
&lt;/TestPool&gt;
&lt;/DeviceCap&gt;
&lt;/Device&gt;
</pre>

```

### 9.1.13.3 and

The **and** Element evaluates two or more **Term** Elements to determine if, as a set, they evaluate to "true" when combined in a Boolean "and" function.

**Table 9-45: and Element**

Name	Data Type	Description
Term	element	Any Element derived from an Abstract Term. Any Term listed in Table 9-44, "List of Term Elements".
Term +	element	Any Element derived from an Abstract Term. Any Terms listed in Table 9-44, "List of Term Elements".

### 9.1.13.4 or

The **or** Element evaluates two or more **Term** Elements to determine if, as a set, they evaluate to "true" when combined in a Boolean "or" function.

**Table 9-46: or Element**

Name	Data Type	Description
Term	element	Any Element derived from an Abstract Term. Any Term listed in Table 9-44, "List of Term Elements".
Term +	element	Any Element derived from an Abstract Term. Any Terms listed in Table 9-44, "List of Term Elements".

### 9.1.13.5 xor

The **xor** Element evaluates two or more **Term** Elements to determine if, as a set, they evaluate to "true" when combined in a Boolean "xor" function. For more than two arguments, exactly one **Term** SHALL evaluate to "true" for the **xor** to evaluate to "true". Note that this is different from the mathematical behavior of "xor".

**Table 9-47: xor Element**

Name	Data Type	Description
Term	element	Any Element derived from an Abstract Term. <a href="#">Any Term listed in Table 9-44, "List of Term Elements"</a> .
Term +	element	Any Element derived from an Abstract Term. <a href="#">Any Terms listed in Table 9-44, "List of Term Elements"</a> .

**9.1.13.6 not**

The **not** Element inverts the Boolean state of a **Term**.

**Table 9-48: not Element**

Name	Data Type	Description
Term	element	Any Element derived from an Abstract Term. <a href="#">Any Term listed in Table 9-44, "List of Term Elements"</a> .

**9.1.13.7 TestRef**

The **TestRef** Element refers to another constraint that is to be evaluated as part of the parent constraint.

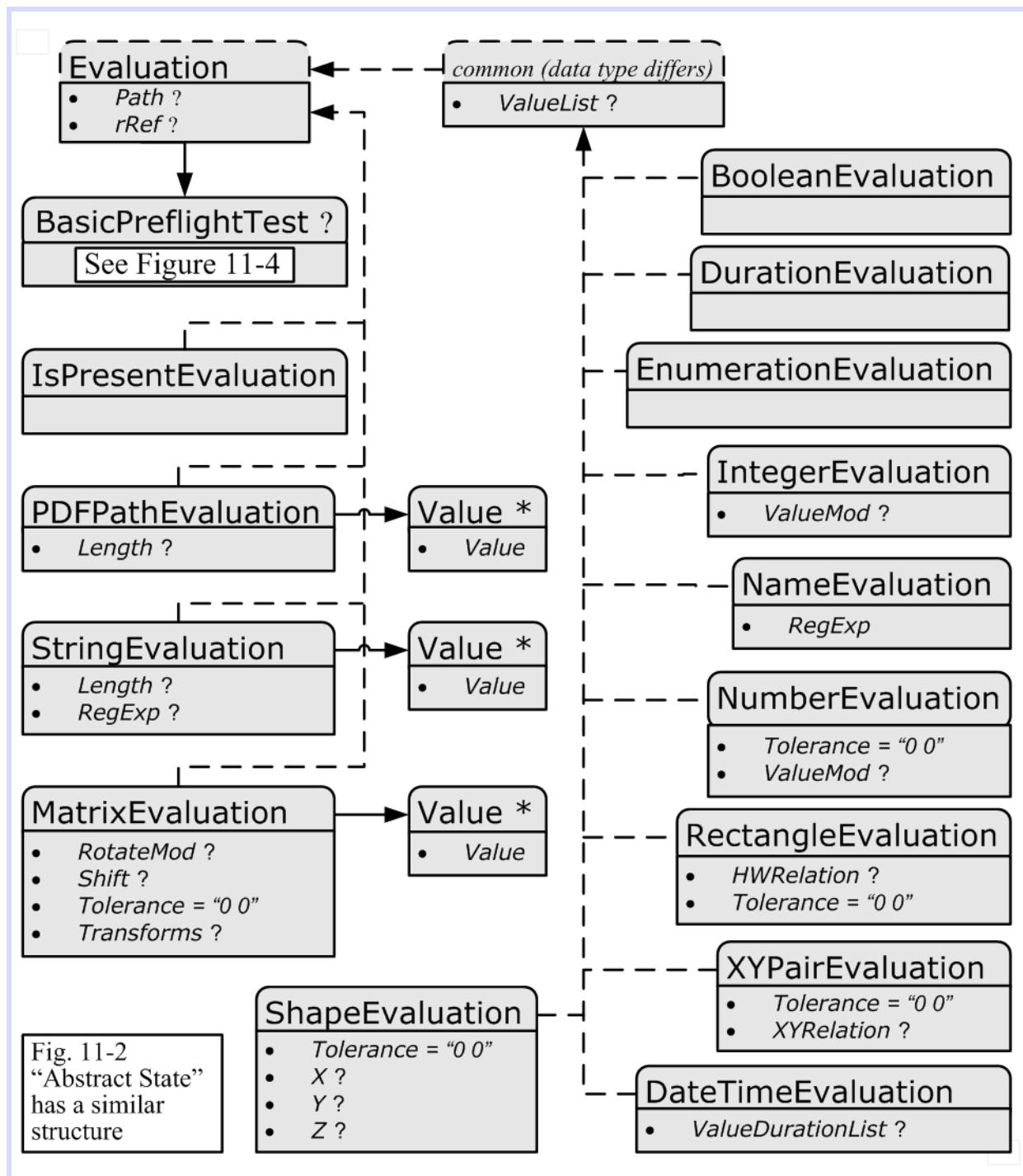
**Table 9-49: TestRef Element**

Name	Data Type	Description
rRef	IDREF	Reference to a <b>Test</b> to be evaluated as a nested Boolean expression inside a larger expression.

**9.1.13.8 Evaluation**

Figure 9-5 shows all Evaluation Elements.

Figure 9-5: Abstract Evaluation Element – a diagram of its structure



#### 9.1.13.8.1 Abstract Evaluation

The following table describes the common, data type-independent parameters of all Evaluation Elements.

**Table 9-50: Abstract Evaluation Element**

Name	Data Type	Description
<i>Path</i> ? <a href="#">New in JDF 1.4</a>	XPath	When present, describes an XPath within the file where the value to be evaluated may be found. <b>Constraint:</b> Exactly one of <i>@Path</i> , <i>@rRef</i> or <i>BasicPreflightTest</i> SHALL be specified.
<i>rRef</i> ? <a href="#">Modified in JDF 1.4</a>	IDREF	A reference to State, DevCap, DevCaps or Module Elements when used in the context of Device capability descriptions. <b>Constraint:</b> Exactly one of <i>@Path</i> , <i>@rRef</i> or <i>BasicPreflightTest</i> SHALL be specified. <b>Modification note:</b> starting with JDF 1.4, DevCap and DevCaps can also be referenced and <i>@Path</i> added to the all constraints in this table.
<i>BasicPreflightTest</i> ?	element	Definition of the preflight basic test to which the <i>Evaluation</i> refers. <i>BasicPreflightTest</i> is only valid when <i>Evaluation</i> Elements are used in the context of preflighting. The <i>Evaluation</i> Elements in capability descriptions SHALL reference the appropriate <i>State</i> Element using <i>@rRef</i> . For details of the <i>BasicPreflightTest</i> , see Section 8.115, “PreflightParams” on page 832. <b>Constraint:</b> Exactly one of <i>@Path</i> , <i>@rRef</i> or <i>BasicPreflightTest</i> SHALL be specified.

**9.1.13.8.2 Evaluation Elements**

*Evaluation* Elements map generalized tests against a condition to form a true or false Boolean state that can be evaluated using the Boolean logic defined below.

**Table 9-51: List of Evaluation Elements**

Name	Page	Description
BooleanEvaluation	page 999	Describes operations on a set of Boolean values.
DateTimeEvaluation	page 1000	Describes operations on a set of dateTime values.
DurationEvaluation	page 1000	Describes operations on a set of duration values.
EnumerationEvaluation	page 1000	Describes operations on a set of enumeration values.
IntegerEvaluation	page 1000	Describes operations on a numerical range of integer values.
IsPresentEvaluation	page 1001	Checks for the existence of a tag, Element or feature.
MatrixEvaluation	page 1001	Describes operations on a range of matrices. Generally used to define valid orientations of <b>Component</b> Resources.
NameEvaluation	page 1002	Describes operations on a set of NMOKEN values
NumberEvaluation	page 1002	Describes operations on a numerical range of values.
PDFPathEvaluation	page 1003	Describes operations on PDFPath.
RectangleEvaluation	page 1003	Describes operations on a set of four-value rectangle values.
ShapeEvaluation	page 1003	Describes operations on a set of three-value shape values.
StringEvaluation	page 1004	Describes operations on a set of string values.
XYPairEvaluation	page 1004	Describes operations on a set of XYPair values.

## Mapping of Evaluation Element to State Element

When used in a Device capabilities context, the Evaluation Elements map to the State Elements (i.e., BooleanState, IntegerState, etc.). These Elements each declare individual JDF Attributes for a Device capabilities description. The Evaluation Elements are instances of Term Elements that compare the value of a given State Attribute against a condition to form a true or false Boolean statement. The form of the condition depends on the type of the Evaluation–State Element pairing — different types of pairings need different condition declarations, depending on the structure of the logic and the data type of the Evaluation and State Elements.

When used in a preflighting context, Evaluation Elements map named preflight tests against a condition to form a true or false Boolean statement.

**Table 9-52: Mapping of Evaluation Element to State Element**

Name	Corresponding State Element	Description
BooleanEvaluation	BooleanState	Describes operations on a set of Boolean values.
DateTimeEvaluation	DateTimeState	Describes operations on a set of dateTime values.
DurationEvaluation	DurationState	Describes operations on a set of duration values.
EnumerationEvaluation	EnumerationState	Describes operations on a set of enumeration values.
IntegerEvaluation	IntegerState	Describes operations on a numerical range of integer values.
IsPresentEvaluation	State (all, IsPresent-State (ElementState))	Checks for the existence of a tag, Element or feature.
MatrixEvaluation	MatrixState	Describes operations on a range of matrices. Generally used to define valid orientations of Component Resources.
NameEvaluation	NameState	Describes operations on a set of NMOKEN values
NumberEvaluation	NumberState	Describes operations on a numerical range of values.
PDFPathEvaluation	PDFPathState	Describes operations on PDFPath.
RectangleEvaluation	RectangleState	Describes operations on a set of four-value rectangle values.
ShapeEvaluation	ShapeState	Describes operations on a set of three-value shape values.
StringEvaluation	StringState	Describes operations on a set of string values.
XYPairEvaluation	XYPairState	Describes operations on a set of XYPair values.

### 9.1.13.8.2.1 BooleanEvaluation

The BooleanEvaluation Element declares a Boolean value for comparison in an expression to a BooleanState Element in constraints. It inherits from the Abstract Evaluation Element described above.

**Table 9-53: BooleanEvaluation Element**

Name	Data Type	Description
Path ?	XPath	When present, describes an XPath within the file where the value to be evaluated may be found.
ValueList ?	enumerations	A list of all supported values. <b>Allowed values are:</b> true false

**9.1.13.8.2.2 DateTimeEvaluation**

The **DateTimeEvaluation** Element declares a Boolean value for comparison in an expression to a **DateTimeState** Element in constraints. It inherits from the **Abstract Evaluation Element** described above.

**Table 9-54: DateTimeEvaluation Element**

Name	Data Type	Description
<i>Path</i> ?	XPath	When present, describes an XPath within the file where the value to be evaluated may be found.
<i>ValueDurationList</i> ?	DurationRangeList	List of inclusive minimum and maximum allowed values relative to the current system time.
<i>ValueList</i> ?	DateTimeRangeList	A list of all supported values.

**9.1.13.8.2.3 DurationEvaluation**

The **DurationEvaluation** Element declares a Boolean value for comparison in an expression to a **DurationState** Element in constraints. It inherits from the **Abstract Evaluation Element** described above.

**Table 9-55: DurationEvaluation Element**

Name	Data Type	Description
<i>Path</i> ?	XPath	When present, describes an XPath within the file where the value to be evaluated may be found.
<i>ValueList</i> ?	DurationRangeList	A list of all supported values.

**9.1.13.8.2.4 EnumerationEvaluation**

The **EnumerationEvaluation** Element declares an enumeration value for comparison in an expression to an **EnumerationState** Element in constraints. It inherits from the **Abstract Evaluation Element** described above.

**Table 9-56: EnumerationEvaluation Element**

Name	Data Type	Description
<i>ValueList</i> ?	enumerations	A list of all potential supported values. If not specified all enumerations defined by the XML schema are valid. In order to enable capabilities to be specified without access to the JDF XML schema, it is strongly RECOMMENDED to specify <i>@ValueList</i> , even when the entire range of schema-valid values is supported.

**9.1.13.8.2.5 IntegerEvaluation**

The **IntegerEvaluation** Element declares an integer value for comparison in an expression to a **IntegerState** Element in constraints.

**Table 9-57: IntegerEvaluation Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Path</i> ?	XPath	When present, describes an XPath within the file where the value to be evaluated may be found.
<i>ValueList</i> ?	IntegerRangeList	A list of all supported values.

**Table 9-57: IntegerEvaluation Element (Sheet 2 of 2)**

Name	Data Type	Description
ValueMod ?	XYPair	<p>X defines the Modulo and Y the offset of the allowed value. In other words, if <code>@AllowedValueMod = "10 2"</code>, only the values ... - 8,2,12,22 ... are allowed. If not specified all values in the range are valid.</p> <p>If <math>((N\%X)-Y = 0)</math> then N is a valid value.</p> <p><b>Note:</b> “Modulo” is the remainder of an integer division. For example: <math>4 \bmod 3 = 4 - 3 = 1</math>; <math>17 \bmod 3 = 17 - 5*3 = 2</math>; and <math>3 \bmod 3 = 3 - 3 = 0</math>.</p>

**9.1.13.8.2.6 IsPresentEvaluation**

The **IsPresentEvaluation** Element checks for the existence of a tag, module or feature. It inherits from the **Abstract Evaluation Element** described above and has no additional Attributes. **IsPresentEvaluation/@rRef** MAY reference a **DevCap** Element in order to test for the existence of an Element.

**IsPresentEvaluation/@rRef** MAY reference a **DevCaps** Element in order to test for the existence of a Resource.

**Table 9-58: IsPresentEvaluation Element**

Name	Data Type	Description
Path ?	XPath	When present, describes an XPath within the file where the value to be evaluated may be found.

**9.1.13.8.2.7 MatrixEvaluation**

The **MatrixEvaluation** Element declares a matrix value for comparison in an expression to a **MatrixState** Element in constraints. It inherits from the **Abstract Evaluation Element** described above.

**Table 9-59: MatrixEvaluation Element (Sheet 1 of 2)**

Name	Data Type	Description
Path ?	XPath	When present, describes an XPath within the file where the value to be evaluated may be found.
RotateMod ?	double	<p>Allowed Modulo of the allowed rotations and offset in degrees.</p> <p><b>Note:</b> Although this seems counter-intuitive and contrary to the convention set in JDF coordinate systems, the application of <code>@RotateMod</code> in practice will involve subtracting values by the value of the <code>@RotateMod</code>. Hence, any number is reduced by <code>"0"</code> and is unaffected by the subtraction.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li>360 – No rotation is allowed.</li> <li>90 – Any orthogonal rotation.</li> <li>0 – Interpreted to mean that any rotation is allowed.</li> </ul>
Shift ?	DoubleList	If <code>@Transforms</code> is specified, the implied shift defined in Table 2-4, “Matrices and Orientation values for describing the orientation of a Component” on page 39 is subtracted from <code>@Shift</code> , thus all in-place rotations have an implied Shift value of <code>"0 0 0 0"</code> .

**Table 9-59: MatrixEvaluation Element (Sheet 2 of 2)**

Name	Data Type	Description
Tolerance <i>?= "0 0"</i>	XYPair	The tolerance between the real and actual values that are defined as equal. Used to account for rounding errors and such. The first value is a positive value representing the negative tolerance, and the second value represents the positive tolerance. The tolerance applies to all of the matrix values.
Transforms ?	Orientations	Any of the eight predefined transforms for PhysicalResources as defined in Table 2-4, “Matrices and Orientation values for describing the orientation of a Component” on page 39.
Value *	element	A list supported values. The Value/@Value Attribute SHALL be a representation of a matrix. See Section 9.1.13.8.2.7.1, “Value”.

**9.1.13.8.2.7.1    Value****Table 9-60: MatrixEvaluation/Value Element**

Name	Data Type	Description
Value	matrix	A supported value for a matrix variable.

**9.1.13.8.2.8    NameEvaluation**

The NameEvaluation Element declares a NMOKEN value for comparison in an expression to a NameState Element in constraints. It inherits from the Abstract Evaluation Element described above.

**Table 9-61: NameEvaluation Element**

Name	Data Type	Description
RegExp	regExp	Regular expression that limits the allowed values.
ValueList ?	NMOKENS	A list of supported values.

**9.1.13.8.2.9    NumberEvaluation**

The NumberEvaluation Element declares a number value for comparison in an expression to a NumberState Element in constraints. It inherits from the Abstract Evaluation Element described above.

**Table 9-62: NumberEvaluation Element (Sheet 1 of 2)**

Name	Data Type	Description
Path ?	XPath	When present, describes an XPath within the file where the value to be evaluated may be found.
Tolerance <i>?= "0 0"</i>	XYPair	The tolerance between the real and actual values that are defined as equal. Used to account for rounding errors and such. The first value is a positive value representing the negative tolerance, and the second represents the positive tolerance.
ValueList ?	DoubleRangeList	A list of supported values.

**Table 9-62: NumberEvaluation Element (Sheet 2 of 2)**

Name	Data Type	Description
ValueMod ?	XYPair	X defines the Modulo and Y the offset of the allowed value. In other words, if $@AllowedValueMod = "10 2"$ , only the values ... - 8,2,12,22 ... are allowed. If not specified all values in the range are valid. If $((N \% X) - Y = 0)$ then N is a valid value. <b>Note:</b> “Modulo” is the remainder of an integer division. For example: $4 \bmod 3 = 4 - 3 = 1$ ; $17 \bmod 3 = 17 - 5 * 3 = 2$ ; and $3 \bmod 3 = 3 - 3 = 0$ .

**9.1.13.8.2.10 PDFPathEvaluation**

The PDFPathEvaluation Element declares a PDF path value for comparison in an expression to a PDFPathState Element in constraints. It inherits from the Abstract Evaluation Element described above.

**Table 9-63: PDFPathEvaluation Element**

Name	Data Type	Description
Length ?	IntegerRange	Inclusive minimum and maximum length of valid PDF path in characters.
Value *	element	PDF path values for comparison in an expression to a PDFPathState Element. See Section 9.1.13.8.2.10.1, “Value”.

**9.1.13.8.2.10.1 Value****Table 9-64: PDFPathEvaluation/Value Element**

Name	Data Type	Description
Value	PDFPath	A supported value for a PDF path Attribute.

**9.1.13.8.2.11 RectangleEvaluation**

The RectangleEvaluation Element declares a Boolean value for comparison in an expression to a RectangleState Element in constraints. It inherits from the Abstract Evaluation Element described above.

**Table 9-65: RectangleEvaluation Element**

Name	Data Type	Description
HWRelation ?	XYRelation	Allowed relative value of width (X) versus height (Y).
Path ?	XPath	When present, describes an XPath within the file where the value to be evaluated may be found.
Tolerance ?= "0 0"	XYPair	The tolerance between the real and actual values that are defined as equal. Used to account for rounding errors and such. The first value is a positive value representing the negative tolerance, and the second represents the positive tolerance. The tolerance applies to both sides of the rectangle.
ValueList ?	RectangleRangeList	A list of ranges of allowed values that can be chosen.

**9.1.13.8.2.12 ShapeEvaluation**

The ShapeEvaluation Element declares a shape value for comparison in an expression to a ShapeState Element in constraints. It inherits from the Abstract Evaluation Element described above.

**Table 9-66: ShapeEvaluation Element**

Name	Data Type	Description
<i>Path</i> ?	XPath	When present, describes an XPath within the file where the value to be evaluated may be found.
<i>Tolerance</i> ?= "0 0"	XYPair	The tolerance between the real and actual values that are defined as equal. Used to account for rounding errors and such. The first value is a positive value representing the negative tolerance, and the second represents the positive tolerance. The tolerance applies to all values tested.
<i>ValueList</i> ?	ShapeRangeList	A list of ranges of values that can be chosen.
<i>X</i> ?	DoubleRangeList	Allowed X-axis of the <b>Shape</b> .
<i>Y</i> ?	DoubleRangeList	Allowed Y-axis of the <b>Shape</b> .
<i>Z</i> ?	DoubleRangeList	Allowed Z-axis of the <b>Shape</b> .

**9.1.13.8.2.13 StringEvaluation**

The **StringEvaluation** Element declares a string value for comparison in an expression to a **StringState** Element in constraints. It inherits from the **Abstract Evaluation Element** described above.

**Table 9-67: StringEvaluation Element**

Name	Data Type	Description
<i>Length</i> ?	IntegerRange	Inclusive minimum and maximum length of valid string in characters. Note that this is the length in characters, and not in bytes of the internal encoding of an application. For instance, the length of the string "Grün" is 4 and not 6 (UTF-8 with a terminating 0 and a double byte "ü").
<i>Path</i> ?	XPath	When present, describes an XPath within the file where the value to be evaluated may be found.
<i>RegExp</i> ?	regExp	Regular expression that limits the allowed values.
<i>Value</i> *	element	A string value for comparison in an expression to a <b>StringEvaluation</b> Element. See Section 9.1.13.8.2.13.1, "Value".

**9.1.13.8.2.13.1 Value****Table 9-68: StringEvaluation/Value Element**

Name	Data Type	Description
<i>Value</i>	string	A supported value for a string Attribute.

**9.1.13.8.2.14 XYPairEvaluation**

The **XYPairEvaluation** Element declares a XYPair value for comparison in an expression to a **XYPairState** Element in constraints. It inherits from the **Abstract Evaluation Element** described above.

**Table 9-69: XYPairEvaluation Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Path</i> ?	XPath	When present, describes an XPath within the file where the value to be evaluated may be found.

**Table 9-69: XYPairEvaluation Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Tolerance</i> ?= "0 0"	XYPair	The tolerance between the real and actual values that are defined as equal. Used to account for rounding errors and such. The first value is a positive value representing the negative tolerance, and the second represents the positive tolerance. These tolerance values apply to both the X and Y values of the evaluation being performed.
<i>ValueList</i> ?	XYPairRangeList	A list of values that can be chosen.
<i>XYRelation</i> ?	XYRelation	Relative value of X vs. Y.

## 9.1.14 Examples of Device Capabilities

New in JDF 1.1

All of the examples in this section are based on a simple definition of a scanner. The JMF based hand shaking is also illustrated. **NodeInfo**, **ExposedMedia** and **ScanParams** are restricted.

### 9.1.14.1 Device Description of a Scanner

This first example shows the general structure and provides an example of user interface localization (the query requests localization for the French language, and localizations are returned for the **ScanParams** Resource).

#### Example 9-4: KnownDevices Query for a Scanner

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.4" Version="1.4"
     TimeStamp="2005-04-05T16:45:43+02:00" SenderID="Controller"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
  <Query ID="DeviceQuery" Type="KnownDevices" xsi:type="QueryKnownDevices">
    <DeviceFilter DeviceDetails="Capability" Localization="fre"/>
  </Query>
</JMF>
```

#### Example 9-5: KnownDevices Response for a Scanner

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="Scanner"
     TimeStamp="2005-06-05T16:45:43+02:00" MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
  <Response ID="xyz" Type="KnownDevices" refID="DeviceQuery"
             xsi:type="ResponseKnownDevices" >
    <DeviceList>
      <DeviceInfo DeviceStatus="Idle">
        <Device Class="Implementation" DeviceID="Joe the Drum"
               KnownLocalizations="En Fre" ModelName="Bongo" >
          <DeviceCap GenericAttributes="ID Class SettingsPolicy
                                         BestEffortExceptions OperatorInterventionExceptions
                                         MustHonorExceptions PartIDKeys DocIndex"
                     Lang="Fre" Type="Scanning">
            <!-- the scanner takes a minute to set up and scans an average
                of 2 sheets a min. -->
          <Performance AverageAmount="120" AverageSetup="PT2M"
                        Name="ExposedMedia"/>
          <DevCaps Name="NodeInfo">
            <DevCap>
              <!--NodeInfo only supports JobPriority and
                  TargetRoute Attributes -->
            <StringState Name="TargetRoute" HasDefault="false"/>
            <IntegerState Name="JobPriority" HasDefault="false"/>
          </DevCaps>
        </DeviceCap>
      </DeviceInfo>
    </DeviceList>
  </Response>
```

```

        </DevCap>
    </DevCaps>
    <DevCaps Name="ExposedMedia">
        <DevCap>
            <!-- ExposedMedia restrictions -->
            <DevCap Name="Media">
                <NameState DefaultValue="Sheet" Name="MediaUnit"/>
                <XYPairState AllowedValueMax="600 1200"
                    AllowedValueMin="0 0"
                    Name="Dimension" HasDefault="false"/>
            </DevCap>
        </DevCap>
    </DevCaps>
    <DevCaps Name="ScanParams">
        <Loc HelpText="Les parametres pour commander le
            procede de balayage."
            Value="Les parametres de module de balayage"/>
        <DevCap>
            <!-- Black and white 1 bit mode -->
            <IntegerState AllowedValueMax="1" AllowedValueMin="1"
                DefaultValue="8" Name="BitDepth"/>
            <EnumerationState AllowedValueList="CCITTFaxEncode None"
                Name="CompressionFilter" HasDefault="false">
                <Loc HelpText="Choisissez la compression pour reduire la
                    taille de donnees."
                    Value="La compression de donnees"/>
                <ValueLoc Value="CCITTFaxEncode">
                    <Loc Value="Compression de CCITT Fax"/>
                </ValueLoc>
                <ValueLoc Value="None">
                    <Loc Value="Aucun compression"/>
                </ValueLoc>
            </EnumerationState>
            <NumberState AllowedValueMax="10" AllowedValueMin="1.e-002"
                Name="Magnification" HasDefault="false">
                <Loc ShortValue="Rapport optique"
                    Value="Rapport de rapport optique d'image"/>
            </NumberState>
            <EnumerationState AllowedValueList="GrayScale"
                Name="OutputColorSpace" HasDefault="false">
                <Loc ShortValue="Format de couleur"
                    Value="Configurez le format de couleur de
                    module de balayage"/>
                <ValueLoc Value="GrayScale">
                    <Loc Value="echelle de gris"/>
                </ValueLoc>
            </EnumerationState>
            <XYPairState DefaultValue="2400 2400"
                Name="OutputResolution">
                <Loc ShortValue="resolution"
                    Value="Resolution de module de balayage"/>
            </XYPairState>
        </DevCap>
        <DevCap>
            <!-- Grayscale 12 bit mode -->
            <IntegerState AllowedValueMax="12" AllowedValueMin="12"
                DefaultValue="8" Name="BitDepth">
                <Loc Value="Le profondeur de bit"/>

```

```

</IntegerState>
<EnumerationState
    AllowedValueList="FlateEncode DCTEncode None"
    Name="CompressionFilter" HasDefault="false">
    <Loc HelpText="Choisissez la compression pour
        reduire la taille de donnees."
        Value="La compression de donnees"/>
    <ValueLoc Value="FlateEncode">
        <Loc Value="Compression de Flate"/>
    </ValueLoc>
    <ValueLoc Value="DCTEEncode">
        <Loc Value="Compression de DCTE"/>
    </ValueLoc>
    <ValueLoc Value="None">
        <Loc Value="Aucun compression"/>
    </ValueLoc>
</EnumerationState>
<NumberState AllowedValueMax="10" AllowedValueMin="0.001"
    Name="Magnification" DefaultValue="1.0">
    <Loc ShortValue="Rapport optique"
        Value="Rapport de rapport optique d'image"/>
</NumberState>
<EnumerationState AllowedValueList="GrayScale"
    Name="OutputColorSpace" HasDefault="false">
    <Loc ShortValue="Format de couleur"
        Value="Configurez le format de couleur de
        module de balayage"/>
    <ValueLoc Value="GrayScale">
        <Loc Value="Echelle de gris"/>
    </ValueLoc>
</EnumerationState>
<XYPairState AllowedValueMax="2400 2400"
    AllowedValueMin="100 100" DefaultValue="600 600"
    Name="OutputResolution">
    <Loc ShortValue="resolution"
        Value="Resolution de module de balayage"/>
</XYPairState>
</DevCap>
<DevCap>
    <!-- Color 10 bit mode -->
    <IntegerState AllowedValueMax="10" AllowedValueMin="10"
        DefaultValue="8" Name="BitDepth">
        <Loc Value="Le profondeur de bit"/>
    </IntegerState>
    <EnumerationState
        AllowedValueList="FlateEncode DCTEncode None"
        Name="CompressionFilter">
        <Loc HelpText="Choisissez la compression pour reduire
            la taille de donnees."
            Value="La compression de donnees"/>
        <ValueLoc Value="FlateEncode">
            <Loc Value="Compression de Flate"/>
        </ValueLoc>
        <ValueLoc Value="DCTEEncode">
            <Loc Value="Compression de DCTE"/>
        </ValueLoc>
        <ValueLoc Value="None">
            <Loc Value="Aucun compression"/>
        </ValueLoc>
    </EnumerationState>
</DevCap>

```

```

        </ValueLoc>
    </EnumerationState>
    <NumberState AllowedValueMax="10" AllowedValueMin="1.e-002"
                  Name="Magnification">
        <Loc ShortValue="Rapport optique"
              Value="Rapport de rapport optique d'image"/>
    </NumberState>
    <EnumerationState AllowedValueList="CMYK RGB LAB"
                      Name="OutputColorSpace">
        <Loc ShortValue="Format de couleur"
              Value="Configurez le format de couleur de
                     module de balayage"/>
        <ValueLoc Value="CMYK">
            <Loc Value="Couleur de CMYK"/>
        </ValueLoc>
        <ValueLoc Value="RGB">
            <Loc Value="Couleur de RGB"/>
        </ValueLoc>
        <ValueLoc Value="LAB">
            <Loc Value="Couleur de LAB"/>
        </ValueLoc>
    </EnumerationState>
    <XYPairState AllowedValueMax="2400 2400"
                  AllowedValueMin="100 100"
                  DefaultValue="600 600" Name="OutputResolution">
        <Loc ShortValue="resolution"
              Value="Resolution de module de balayage"/>
    </XYPairState>
    </DevCap>
</DevCaps>
</DeviceCap>
</Device>
</DeviceInfo>
</DeviceList>
</Response>
</JMF>

```

### 9.1.14.2 Device Description of a Scanner #2

This second example illustrates the use of constraints, macros and DisplayGroup Elements in a capability response. For the sake of simplicity, the only localizations returned are for the constraints.

#### Example 9-6: KnownDevices Query for a Scanner #2

```

<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="Controller"
     TimeStamp="2005-04-05T16:45:43+02:00" MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
    <Query ID="DeviceQuery" Type="KnownDevices" xsi:type="QueryKnownDevices">
        <DeviceFilter DeviceDetails="Capability" Localization="en"/>
    </Query>
</JMF>

```

#### Example 9-7: KnownDevices Response for a Scanner #2

```

<JMF SenderID="Scanner"TimeStamp="2004-10-17T14:30:47Z"
      xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.4" Version="1.4"
      DescriptiveName="Example from JDF 1.2 Spec Document"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
    <Response ID="xyz" Type="KnownDevices" refID="DeviceQuery" ReturnCode="0" >

```

```

    Acknowledged="false" xsi:type="ResponseKnownDevices" >
<DeviceList>
    <DeviceInfo DeviceStatus="Idle">
        <Device DeviceID="Joe the Drum" ModelName="Bongo">
            <DeviceCap GenericAttributes="ID Class SettingsPolicy
                BestEffortExceptions OperatorInterventionExceptions
                MustHonorExceptions PartIDKeys DocIndex"
                Type="Scanning" CombinedMethod="None"
                ExecutionPolicy="AllFound">
                <Performance AverageAmount="120.0" Name="ExposedMedia" />
            <FeaturePool>
                <EnumerationState MinOccurs="1"
                    AllowedValueList="Mono ColorTransparency Photo"
                    UserDisplay="Display" Editable="true" ID="sm"
                    ListType="SingleValue" HasDefault="true" Name="ScanMode"
                    DevNS="http://www.CIP4.org/JDFSchema_1_1" MaxOccurs="1"
                    MacroRefs="ScanModeMacro" />
            </FeaturePool>
        <DisplayGroupPool>
            <DisplayGroup rRefs="btd cmp mag colorspace outputres">
                <Loc HelpText="Parameters for scanning configuration"
                    Lang="en" ShortValue="ScanningParameters" />
            </DisplayGroup>
        </DisplayGroupPool>
    <ActionPool>
        <Action Severity="Error" TestRef="BD-bw" ID="BD-bw-action">
            <Loc HelpText="For 1 bit grayscale, please select
                CCITTFaxEncoding"
                Lang="en" ShortValue="Ouch!"
                Value="Flate and DCT Encoding not allowed
                on 1 bit images" />
        </Action>
        <Action Severity="Error" TestRef="ctcmp" ID="ctcmp-action">
            <Loc HelpText="Only select CCITTFaxEncoding for
                1 bit documents"
                Lang="en" ShortValue="Ouch!"
                Value="CCITTFaxEncoding not supported on
                grayscale images" />
        </Action>
        <Action Severity="Error" TestRef="cd" ID="cd-action">
            <Loc HelpText="Choose a bit depth of 10 or less
                for color images"
                Lang="en" ShortValue="Ouch!"
                Value="Bit depths higher than 10 are not
                supported for color" />
        </Action>
    </ActionPool>
    <TestPool>
        <Test ID="iscolor">
            <EnumerationEvaluation
                ValueList="RGB LAB CMYK" rRef="colorspace" />
        </Test>
        <Test ID="islbit">
            <IntegerEvaluation ValueList="1" rRef="btd" />
        </Test>
        <Test ID="BD-bw">
            <and>
                <TestRef rRef="islbit" />

```

```

<EnumerationEvaluation
    ValueList="FlateEncode DCTEncode"
    rRef="cmp" />
</and>
</Test>
<Test ID="ctcmp">
<and>
<not>
<TestRef rRef="is1bit" />
</not>
<EnumerationEvaluation ValueList="CCITTFaxEncode"
    rRef="cmp" />
</and>
</Test>
<Test ID="cd">
<and>
<TestRef rRef="iscolor" />
<IntegerEvaluation ValueList="1 10" rRef="btd" />
</and>
</Test>
</TestPool>
<MacroPool>
<macro ID="ScanModeMacro">
<choice>
<when>
<EnumerationEvaluation ValueList="Mono" rRef="sm" />
<set rRef="btd">
<FeatureAttribute CurrentValue="1" />
</set>
<set rRef="colorspace">
<FeatureAttribute CurrentValue="GrayScale" />
</set>
<set rRef="outputres">
<FeatureAttribute CurrentValue="1200 1200" />
</set>
</when>
<when>
<EnumerationEvaluation ValueList="ColorTransparency"
    rRef="sm" />
<set rRef="btd">
<FeatureAttribute CurrentValue="8" />
</set>
<set rRef="colorspace">
<FeatureAttribute CurrentValue="RGB" />
</set>
<set rRef="outputres">
<FeatureAttribute CurrentValue="600 600" />
</set>
</when>
<when>
<EnumerationEvaluation ValueList="Photo" rRef="sm" />
<set rRef="btd">
<FeatureAttribute CurrentValue="10" />
</set>
<set rRef="colorspace">
<FeatureAttribute CurrentValue="LAB" />
</set>
<set rRef="outputres">

```

```

        <FeatureAttribute CurrentValue="200 200" />
    </set>
</when>
</choice>
</macro>
</MacroPool>
<DevCaps Required="false" Context="Resource"
    DevNS="http://www.CIP4.org/JDFSchema_1_1"
    Availability="Installed"
    Name="NodeInfo" ResourceUpdate="None">
<DevCap MinOccurs="1" Name="NodeInfo"
    DevNS="http://www.CIP4.org/JDFSchema_1_1" MaxOccurs="1">
<StringState UserDisplay="Display"
    DevNS="http://www.CIP4.org/JDFSchema_1_1"
    Editable="true" MinOccurs="1" MaxOccurs="1"
    Name="TargetRoute" HasDefault="true"
    ListType="SingleValue" />
<IntegerState Name="JobPriority"
    DevNS="http://www.CIP4.org/JDFSchema_1_1"
    Editable="true" MinOccurs="1" MaxOccurs="1"
    UserDisplay="Display" HasDefault="true"
    ListType="SingleValue" />
</DevCap>
</DevCaps>
<DevCaps Required="false" ResourceUpdate="None" Context="Resource"
    Availability="Installed" Name="ExposedMedia"
    DevNS="http://www.CIP4.org/JDFSchema_1_1">
<DevCap MinOccurs="1" Name="ExposedMedia"
    DevNS="http://www.CIP4.org/JDFSchema_1_1" MaxOccurs="1">
<DevCap MinOccurs="1" Name="Media"
    DevNS="http://www.CIP4.org/JDFSchema_1_1"
    MaxOccurs="1">
<NameState MinOccurs="1" DefaultValue="Sheet"
    UserDisplay="Display" Editable="true"
    ListType="SingleValue" HasDefault="true"
    Name="MediaUnit" MaxOccurs="1"
    DevNS="http://www.CIP4.org/JDFSchema_1_1"/>
<XYPairState MinOccurs="1" UserDisplay="Display"
    Editable="true" AllowedValueMax="600.0 1200.0"
    ListType="SingleValue" HasDefault="true"
    Name="Dimension" AllowedValueMin="0.0 0.0"
    DevNS="http://www.CIP4.org/JDFSchema_1_1"
    MaxOccurs="1" />
</DevCap>
</DevCap>
</DevCaps>
<DevCaps Required="false" Context="Resource"
    DevNS="http://www.CIP4.org/JDFSchema_1_1"
    Availability="Installed" Name="ScanParams"
    ResourceUpdate="None">
<DevCap MinOccurs="1" Name="ScanParams"
    DevNS="http://www.CIP4.org/JDFSchema_1_1" MaxOccurs="1">
<IntegerState MinOccurs="1" DefaultValue="1"
    AllowedValueList="1 4 8 10 12" UserDisplay="Hide"
    ActionRefs="BD-bw ctcmp cd" Editable="true"
    ID="btd" ListType="SingleValue" HasDefault="true"
    Name="BitDepth" MaxOccurs="1"
    DevNS="http://www.CIP4.org/JDFSchema_1_1"/>

```

```

<EnumerationState ActionRefs="BD-bw ctcmp" MinOccurs="1"
    AllowedValueList=
        "CCITTFaxEncode FlateEncode DCTEncode None"
    UserDisplay="Hide" Editable="true" ID="cmp"
    ListType="SingleValue" HasDefault="true"
    Name="CompressionFilter" MaxOccurs="1"
    DevNS="http://www.CIP4.org/JDFSchema_1_1" />
<NumberState MinOccurs="1" UserDisplay="Display"
    Editable="true" ID="mag" ListType="SingleValue"
    HasDefault="true" AllowedValueMax="100.0"
    AllowedValueMin="0.01" MaxOccurs="1"
    Name="Magnification"
    DevNS="http://www.CIP4.org/JDFSchema_1_1"/>
<EnumerationState ActionRefs="cd" MinOccurs="1"
    AllowedValueList="GrayScale CMYK RGB LAB"
    UserDisplay="Display" Editable="true"
    ID="colorspace" ListType="SingleValue"
    HasDefault="true" Name="OutputColorSpace"
    MaxOccurs="1"
    DevNS="http://www.CIP4.org/JDFSchema_1_1" />
<XYPairState MinOccurs="1" DefaultValue="600.0 600.0"
    AllowedValueList="100.0 100.0 300.0 300.0 600.0 600.0
        1200.0 1200.0 2400.0 2400.0"
    UserDisplay="Display" Editable="true" ID="outputs"
    ListType="SingleValue" HasDefault="true"
    Name="OutputResolution" MaxOccurs="1"
    DevNS="http://www.CIP4.org/JDFSchema_1_1" />
</DevCap>
</DevCaps>
</DeviceCap>
</Device>
</DeviceInfo>
</DeviceList>
</Response>
</JMF>

```

### Example 9-8: JDF Accepted by Previous Scanner

Example of JDF Node that is accepted by the scanner of the previous example. All parameters of the following Scanning Node are compliant with the capabilities.

```

<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="GoodScan"
    Status="Waiting" Type="Scanning" JobPartID="ID300" Version="1.4">
<ResourcePool>
    <ScanParams BitDepth="8" Class="Parameter" ID="Link0007"
        OutputColorSpace="RGB" OutputResolution="600. 600." Status="Available"/>
    <ExposedMedia Class="Handling" ID="Link0008" Status="Available">
        <Media Dimension="425.196850394 566.929133858"/>
    </ExposedMedia>
    <RunList Class="Parameter" ID="Link0014" Status="Available"/>
</ResourcePool>
<ResourceLinkPool>
    <ScanParamsLink Usage="Input" rRef="Link0007"/>
    <ExposedMediaLink Usage="Input" rRef="Link0008"/>
    <RunListLink Usage="Output" rRef="Link0014"/>
</ResourceLinkPool>
</JDF>

```

### Example 9-9: JDF Rejected by Previous Scanner

Example of JDF Node that is rejected by the scanner of the previous example. All s of the following Scanning Node except Magnification are compliant with the Device capabilities. Therefore, the Device can not execute the Job.

```
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="BadScan" Status="Waiting"
      Type="Scanning" JobPartID="ID300" Version="1.4">
  <ResourcePool>
    <ScanParams BitDepth="8" Class="Parameter" ID="Link0012"
      Magnification="1000. 1000."
      OutputColorSpace="RGB" OutputResolution="600. 600." Status="Available"/>
    <ExposedMedia Class="Handling" ID="Link0013" Status="Available">
      <Media Dimension="425.196850394 566.929133858"/>
    </ExposedMedia>
    <RunList Class="Parameter" ID="Link0014" Status="Available"/>
  </ResourcePool>
  <ResourceLinkPool>
    <ScanParamsLink Usage="Input" rRef="Link0012"/>
    <ExposedMediaLink Usage="Input" rRef="Link0013"/>
    <RunListLink Usage="Output" rRef="Link0014"/>
  </ResourceLinkPool>
</JDF>
```

## 9.2 Concept of the Preflight Process

New in JDF 1.2

**Note:** This section establishes Elements, Attributes and Attribute Values that are used by the Resources referenced by the **Preflight** Process, including **PreflightParams**, **PreflightReportRulePool** and **PreflightReport**, as well as extensions of testing methodology established Action and Test functions defined in Section 9.1.1, “DeviceCap” on page 949.

In order to define one **Test**, you can combine one or more basic tests using the Boolean logic as defined in Section 9.1, “Device Capability Definitions” on page 949. Each basic test is applied to one defined property with a given data type. Note that document properties defined in this section include one or more Attributes that are extracted from documents (e.g., a client’s PDF file) and used by one or more evaluations as part of a preflight test. Each data type can be tested on an object using its matching **Evaluation**. A document that is preflighted is made of objects. Some of them, like virtual boxes (**TrimBox** or **MediaBox**) are not visible. In order to combine basic tests together, they have been classified by groups of properties. These groups do not necessarily match a class of an object. However, each class of object will implement one or more groups of properties.

The rules to combine basic tests into a **Test** can be built on both object classes and groups of properties. Each basic test takes an object as an input and has four different states in output: “*false*”, “*true*”, “*TestWrongPDL*” or “*TestNotSupported*”. The two last values occur when a basic test has no meaning for the given object or when the application that is executing the test does not support that test. These four different states lead to a more open way of dealing with Boolean logic

“ <i>false</i> ”	AND	“ <i>TestWrongPDL</i> ”	=	“ <i>false</i> ”
“ <i>true</i> ”	OR	“ <i>TestWrongPDL</i> ”	=	“ <i>true</i> ”
“ <i>false</i> ”	AND	“ <i>TestNotSupported</i> ”	=	“ <i>false</i> ”
“ <i>true</i> ”	OR	“ <i>TestNotSupported</i> ”	=	“ <i>true</i> ”
“ <i>true</i> ”	AND	“ <i>TestWrongPDL</i> ”	=	“ <i>TestWrongPDL</i> ”
“ <i>false</i> ”	OR	“ <i>TestWrongPDL</i> ”	=	“ <i>TestWrongPDL</i> ”
“ <i>true</i> ”	AND	“ <i>TestNotSupported</i> ”	=	“ <i>TestNotSupported</i> ”
“ <i>false</i> ”	OR	“ <i>TestNotSupported</i> ”	=	“ <i>TestNotSupported</i> ”

"TestWrongPDL"	OR	"TestNotSupported" = "TestNotSupported"
"TestWrongPDL"	AND	"TestNotSupported" = "TestNotSupported"
if ("true")	Report according to action.	
if ("false")	Do not report.	
if ("TestWrongPDL")	Report problem if specified in PRRule.	
if ("TestNotSupported")	Report problem if specified in PRRule.	

For instance, "TestWrongPDL" would occur when a test about font size is made on a page. "TestNotSupported" would happen when a JDF preflight agent does not support the concept of font size.

## 9.2.1 Object Classes

Table 9-70, “Object Classes for a Document” below has a list of the real objects that can be preflighted in a document. The objects are identified by their class name specified in the “Name” column:

**Table 9-70: Object Classes for a Document**

Name	Description
Annotation	An annotation is a complex object that adds information to the page of a document. The characteristic of such object is that it is optional to print it. When an annotation is set to be printed, the graphical objects making the annotation are considered separated objects.
Document	The document, which is preflighted.
Font	A font is a set of characters that can be used to draw text. A font can be in a document without being used by any text of the document.
Image	An image is a graphic object drawn with colored pixels.
MaskUsingImage	This object is an object that masks another object using an image.
MaskUsingVector	This object is an object that masks another object using a vector path.
MaskUsingText	This object is an object that masks another object using text components.
Mask	A mask is an object used to mask or clip a graphic object.
Page	A document can be made of finished pages (but could be empty as well).
PageBox	In each finished page, some virtual boxes can be defined (page size and margins). Some tests can be done with these boxes.
PDL	A PDL object is a generic kind of object that can be specific to some types of documents. It is just a way to detect presence or not of such objects.
Shading	A shading is a graphic object drawn using a smooth color change from one point to another.
Text	A text is a set of characters that have exactly the same style (i.e., same size, same font, same fill and stroke, etc.).
Vector	A vector is a graphic object drawn with vector curves. It is made of a fill and a stroke.

### 9.2.1.1 Properties Implemented by each Class of Object

Table 9-71, “Properties Implemented by each Class of Object” below, has columns of object Classes and rows of Properties Categories. An “X” in a cell means that an object of the specified Class implements the specified Properties (see Table 9-73, “List of Properties Categories”).

Table 9-71: Properties Implemented by each Class of Object

Properties	Classes													
	Document	Page	Image	Vector	Text	Shading	ImageMask	Annotation	PageBox	Font	MaskUsingImage	MaskUsingVector	MaskUsingText	PDL
Logical	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Class	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Document	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Page		X	X	X	X	X	X	X	X	X	X	X	X	X
Reference			X	X										
Colorant	X		X	X	X	X	X							
Box		X	X	X	X	X	X	X	X		X	X	X	X
Graphic			X	X	X	X	X							
Fill				X	X		X							
Stroke					X	X								
Image			X				X				X			
Vector					X							X		
Text						X							X	
Shading							X							
Font						X					X			
Annotation								X						
Page Box									X					
PDL Object														X

### 9.2.1.2 Checking for the Presence of a Property

In most of the **Preflight** Process, only the “values” of properties are needed. Please note that a property MAY incorporate one or more Attributes, and it is the values (e.g., string or enumeration) of these Attributes that are collectively referred to here as the “value” of the property. In some cases, it is also useful to be able to check if a property has been defined. This happens in some types of documents where the property definition is optional. Before checking its value, you just want to check that this property was defined.

For all the basic tests described in this document where it makes sense to check if they are defined, they are checked “Yes” in the Tag column of properties definition tables below. Use the IsPresentEvaluation to check for the presence of a property.

#### Example 9-10: Test for Existence of TrappedKey

This example checks if the @TrappedKey is defined in a PDF document.

```
<Device Class="Implementation" ID="Link0003" Status="Available">
  <DeviceCap>
    <TestPool>
      <Test ID="PT01">
        <IsPresentEvaluation>
```

```

        <BasicPreflightTest Name="TrappedKey" />
    </IsPresentEvaluation>
</Test>
</TestPool>
</DeviceCap>
</Device>

```

### Example 9-11: Test for TrappedKey Equal to “Unknown”

This example checks if the value of the @TrappedKey = "Unknown" in a PDF document.

```

<Device Class="Implementation" ID="Link0003" Status="Available">
    <DeviceCap>
        <TestPool>
            <Test ID="PT02">
                <EnumerationEvaluation ValueList="Unknown">
                    <BasicPreflightTest Name="TrappedKey" />
                </EnumerationEvaluation>
            </Test>
        </TestPool>
    </DeviceCap>
</Device>

```

**Table 9-72: Mapping between property types (in the preflight spec) and evaluations**

Property Type	Evaluation	Expected usage for BasicPreflightTest ListType
presence	IsPresentEvaluation	-
boolean	BooleanEvaluation	SingleValue.
BooleanList	BooleanEvaluation	Any of @ListType's value that refers to a list.
DateTime	DateTimeEvaluation	SingleValue.
DateTimeList	DateTimeEvaluation	Any of @ListType's value that refers to a list.
enumeration	NameEvaluation	SingleValue.
enumerations	NameEvaluation	Any of @ListType's value that refers to a list.
integer	IntegerEvaluation	SingleValue.
IntegerList	IntegerEvaluation	Any of @ListType's value that refers to a list.
Name	NameEvaluation	SingleValue.
NameList	NameEvaluation	Any of @ListType's value that refers to a list.
double	NumberEvaluation	SingleValue.
DoubleList	NumberEvaluation	Any of @ListType's value that refers to a list.
rectangle	RectangleEvaluation	SingleValue.
RectangleList	RectangleEvaluation	Any of @ListType's value that refers to a list.
string	StringEvaluation	SingleValue.
StringList	StringEvaluation	Any of @ListType's value that refers to a list.
XYPair	XYPairEvaluation	SingleValue.
XYPairList	XYPairEvaluation	Any of @ListType's value that refers to a list.

#### 9.2.1.3 Basic tests on set of objects

Some properties can be applied to more than one object and have a value when applied to a list of objects which differs from their value when applied to a single object. For instance, this allows you to make tests on the number of separations of objects included in a given area. These properties have the column “Set” checked with “Yes”. In order to

define a **Test** using such properties, a list of objects is filtered first, before applying the test. This is achieved using the **PreflightArgument Element**.

## 9.2.2 Properties

Table 9-73, “List of Properties Categories” specifies the Properties Categories. In each of the following subsections, there is a table with a list of Attributes belonging to the specified Properties Category. Each such Attribute can be found, extracted, and evaluated from a document. The Attributes of each Properties Category apply to Objects of certain specified Classes (see Table 9-72, “Mapping between property types (in the preflight spec) and evaluations” on page 1016).

**Note:** each table of Properties in the subsections below has a different meaning from a table for an Element or Resource, which describes an XML element along with its member attributes or subelements. A Properties table does not describe an XML element or any other structure. Rather each table row describes an Attribute that is a potential Attribute of some Element derived from **Abstract PRGroupOccurrenceBase Element** (see Table 8-235, “List of PRGroupOccurrenceBase Elements” on page 842).

**Note also:** for each Properties tables, the “Set” column is described in Section 9.2.1.3, “Basic tests on set of objects”, and the “Tag” column is described in Section 9.2.1.2, “Checking for the Presence of a Property”.

**Table 9-73: List of Properties Categories**

Name	Page	Description
Annotation Properties	page 1017	Describes Annotations.
Box Properties	page 1018	Describes a container box
Class Properties	page 1019	Describes the Class name and Property name
Colorant Properties	page 1019	Describes color and separation information.
Document Properties	page 1020	Describes a document.
Fill Properties	page 1024	Describes fill for graphic objects
Font Properties	page 1025	Describes fonts in a document:
Graphic Properties	page 1026	Describes display and graphic information
Image Properties	page 1027	Describes images displayed using pixels
Logical Properties	page 1030	Mainly used with “Set” to count the number of objects
PageBox Properties	page 1030	Describes virtual boxes for each page.
Pages Properties	page 1030	Describes a page in a document
PDLObject Properties	page 1031	Describes particular PDF objects in a document
Reference Properties	page 1032	Describes references to external objects.
Shading Properties	page 1032	Describes shading that is applied graphic objects.
Stroke Properties	page 1033	Describes strokes applied to graphic objects with vector primitives
Text Properties	page 1033	Describes text.
Vector Properties	page 1034	Describes graphic objects with vector primitives.

### 9.2.2.1 Annotation Properties

Annotation objects are specific objects that can be displayed or printed according to the user’s choice. When they are displayed or printed, they add graphical objects to the document that can be preflighted.

**Table 9-74: Annotation Properties (Sheet 1 of 2)**

Name	Type	Description	Set	Tag	Documents
<i>AnnotationPrintFlag</i>	boolean	Is “true” when it will be printed on the final document.	—	—	PDF

**Table 9-74: Annotation Properties (Sheet 2 of 2)**

Name	Type	Description	Set	Tag	Documents
<i>AnnotationType</i>	NMTOKEN	The type of annotations. <b>Values include those from:</b> Table 9-75, “AnnotationType Attribute Values”.	—	—	PDF
<i>TrapnetAnnotationPDFX</i>	NMTOKENS	The PDF/X versions to which the <i>@TrapNet</i> annotation complies (e.g., “PDF/X-1a:2003”).	—	—	PDF

— Attribute: [AnnotationType](#)

**Table 9-75: AnnotationType Attribute Values**

Value	Description	Value	Description
<i>Circle</i>		<i>Sound</i>	
<i>FileAttachment</i>		<i>Square</i>	
<i>FreeText</i>		<i>Squiggly</i>	
<i>Highlight</i>		<i>Stamp</i>	
<i>Ink</i>		<i>StrikeOut</i>	
<i>Link</i>		<i>Text</i>	
<i>Line</i>		<i>TrapNet</i>	
<i>Movie</i>		<i>Underline</i>	
<i>Popup</i>		<i>Widget</i>	
<i>PrinterMark</i>			

### 9.2.2.2 Box Properties

All visible objects can be described at least by a box in which they can be contained. In a page, some kind of boxes can define some basic Box Properties that are extracted as Attributes for use in a test.

**Table 9-76: Box Properties**

Name	Type	Description	Set	Tag	Documents
<i>BoundingBox</i>	rectangle	The bounding box of the object is the smallest rectangle containing the object. When used with group of objects, this is the smallest box containing boxes of all objects.	Yes	—	—
<i>DifferentBoxSize</i>	enumerations	This is the list of boxes, which are different on one page from the same boxes on another page. <b>Allowed values are from:</b> BoxArgument/ <i>@Box</i> (Table 8-226, “BoxArgument Element” on page 836).	Only	—	—
<i>InsideBox</i>	boolean	Is “true” when an object is inside a given box. <i>@InsideBox</i> SHALL be qualified by BoxArgument Subelement.	—	—	—
<i>OutsideBox</i>	boolean	Is “true” when an object is outside a given box. <i>@OutsideBox</i> SHALL be qualified by BoxArgument Subelement.	—	—	—

### 9.2.2.3 Class Properties

Each object can define the name of the class of objects it belongs to:

**Table 9-77: Class Properties**

Name	Type	Description	Set	Tag	Documents
<i>ClassName</i>	NMTOKEN	The name of the class to which the object belongs. <b>Values include those from:</b> Table 9-78, “ClassName Attribute Values” on page 1019.	—	—	—
<i>PropertyList</i>	enumerations	The list of Properties the object has. <b>Allowed values are from:</b> Table 9-79, “PropertyList Attribute Values” on page 1019.	—	—	—

— Attribute: **ClassName**

**Table 9-78: ClassName Attribute Values**

Value	Description	Value	Description
<i>Annotation</i>		<i>MaskUsingVector</i>	
<i>Document</i>		<i>Page</i>	
<i>Font</i>		<i>PageBox</i>	
<i>Image</i>		<i>PDL</i>	
<i>ImageMask</i>		<i>Shading</i>	
<i>MaskUsingImage</i>		<i>Text</i>	
<i>MaskUsingText</i>		<i>Vector</i>	

— Attribute: **PropertyList**

**Table 9-79: PropertyList Attribute Values**

Value	Description	Value	Description
<i>Annotation</i>		<i>Logical</i>	
<i>Box</i>		<i>Page</i>	
<i>Class</i>		<i>PageBox</i>	
<i>Colorant</i>		<i>PDLObject</i>	
<i>Document</i>		<i>Reference</i>	
<i>Fill</i>		<i>Shading</i>	
<i>Font</i>		<i>Stroke</i>	
<i>Graphic</i>		<i>Text</i>	
<i>Image</i>		<i>Vector</i>	

### 9.2.2.4 Colorant Properties

Every visible object or group of objects will imply a given number of separations.

**Table 9-80: Colorant Properties**

Name	Type	Description	Set	Tag	Documents
<i>AliasSeparations</i>	boolean	Is "true" when some of the separations have different names but the same color values.	Yes	—	—
<i>AmbiguousSeparations</i>	boolean	Is "true" when some of the separations have the same name but different color values.	Yes	—	—
<i>InkCoverage</i>	double	This is the maximum percentage of ink coverage for one object. In case of a group of objects, this is the maximum amount of ink coverage for the list of objects. The method of calculation can be application-dependant and can differ from one application to another. Some applications MAY check the coverage object by object without taking into account overprint or transparencies between objects; some others MAY use a rasterization Process to get the coverage of the combined objects.	Yes	—	—
<i>SeparationList</i>	string	List of all separations necessary to print one object or a group of objects.	Yes	—	—

**9.2.2.5 Document Properties**

This is the list of Properties (Attributes) that define parts of a document.

**Table 9-81: Document Properties (Sheet 1 of 5)**

Name	Type	Description	Set	Tag	Documents
<i>Author</i>	string	A string describing the author of the document.	—	Yes	—
<i>Binding</i>	enumeration	The binding of the document: <b>Allowed values are:</b> <i>Left</i> <i>Right</i>	—	Yes	PDF
<i>CreationDate</i>	dateTime	The date when the document was created according to the file system.	—	—	—
<i>CreationDateInDocument</i>	dateTime	The date when the document was created according to data inside the document.	—	Yes	—
<i>CreationID</i>	NMTOKEN	An NMTOKEN which identifies a document when created. The @ <i>CreationID</i> SHALL be unique within the workflow. In case of a PDF, it matches exactly the first element of ID array.	—	Yes	—

Table 9-81: Document Properties (Sheet 2 of 5)

Name	Type	Description	Set	Tag	Documents
<i>Creator</i>	string	A string describing the creator of the document. This is usually the name and version of the authoring application used. In case of PS and PDF files, it matches exactly the Creator key.	—	Yes	—
<i>DocumentCompression</i>	enumerations	A list of all compression types used in the document (including image compression referenced by <i>@CompressionTypes</i> in Image Properties).  <b>Allowed values are from:</b> <i>@CompressionTypes</i> in Table 9-87, “Image Properties”.	—	—	—
<i>DocumentCorruption</i>	NMTOKENS	The list of recoverable errors against the document format that were found in this document.  An empty list means the document is not corrupted.  <b>Values include:</b> <i>InvalidOffsets</i> – Some offsets are invalid, but the preflight agent was able to load the document nonetheless. Note that the absence of this value does not mean that all document structures are valid, only that the offsets are correct)	—	—	—
<i>DocumentEncoding</i>	enumeration	The document encoding which can be either:  <b>Allowed values are:</b> <i>ASCII</i> <i>Binary</i>	—	—	PS, PDF
<i>DocumentIsGoodCompression</i>	boolean	Is “true” when a strong compression algorithm is used (not just an ASCII filter) for all objects in the document where it makes sense to have compression.	—	—	—
<i>EncryptedDocument</i>	boolean	Is “true” if document is encrypted.	—	—	—
<i>EncryptionFilter</i>	NMTOKEN	The Filter name of encryption for a PDF file.	—	Yes	PDF
<i>EncryptionLength</i>	integer	The length of the encryption key of a PDF file in bits.	—	Yes	PDF

Table 9-81: Document Properties (Sheet 3 of 5)

Name	Type	Description	Set	Tag	Documents
<i>EncryptionRestrictions</i>	NMTOKENS	<p>The actions that are forbidden by the encryption.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Assembly</i> – Inserting or removing pages.</li> <li><i>Copying</i> – Extracting part of the content.</li> <li><i>DisabledAccess</i> – Allowing copying specifically for providing access to the disabled.</li> <li><i>EditingAnnotations</i></li> <li><i>EditingContent</i></li> <li><i>FillingIn</i> – Filling in forms.</li> <li><i>HighResPrinting</i></li> <li><i>Printing</i></li> </ul>	—	—	PDF
<i>EncryptionSubFilter</i>	NMTOKEN	The SubFilter name of encryption for a PDF file.	—	Yes	PDF
<i>EncryptionV</i>	integer	The V integer of encryption for a PDF file.	—	Yes	PDF
<i>FileName</i>	string	The file name, including file extension, in the file system. This is not the full path.	—	—	—
<i>FileSize</i>	integer	The file size expressed in bytes.	—	—	—
<i>Keywords</i>	string	A string made of keywords describing the document.	—	Yes	—
<i>Linearized</i>	boolean	Is "true" if the document is linearized (i.e., prepared for web download).	—	—	PDF
<i>ModificationDate</i>	dateTime	The date when the document was last modified according to the file system.	—	—	—
<i>ModificationDateInDocument</i>	dateTime	The date when the document was last modified according to data inside the document.	—	Yes	—
<i>ModificationID</i>	NMOKEN	A name that which can uniquely identify the current document instance. In case of a PDF, it matches exactly the second element of ID array.	—	Yes	—
<i>NumberOfPages</i>	integer	The number of finished pages contained in the document.	—	—	—

Table 9-81: Document Properties (Sheet 4 of 5)

Name	Type	Description	Set	Tag	Documents
<i>OutputIntentColorSpace</i> <small>?= "None"</small>	NMTOKEN	The color space belonging to the output intent of the document.  <b>Values include:</b> <i>None</i> – The default value to be used if this property is not present. <i>CMYK</i> <i>Gray</i> <i>RGB</i>	—	Yes	PDF
<i>OutputIntentStandard</i>	string	The standards the output intent is compliant with (e.g., PDF/X-1a:2001). The version of the standard is assumed to be in the string accordingly to the standard's notation.	—	—	—
<i>PagesHaveSameOrientation</i>	boolean	Is " <i>true</i> " when all pages have the same orientation.	—	—	—
<i>PDFXVersion</i>	NMTOKEN	The PDF/X version key present in the document.	—	Yes	PDF
<i>PDLType</i>	NMTOKEN	The type of document expressed as a MIME-type.  <b>Values include those from:</b> Table H-1, “MimeType Attribute Values (IANA Registered)” on page 1165 and Table H-2, “MimeType and File Type Combinations” on page 1167.  <b>Example:</b> @ <i>PDLType</i> value is “ <i>application/pdf</i> ”.	—	—	—
<i>PDLVersion</i>	string	The version of document according to the @ <i>PDLType</i> .  <b>Values include those from:</b> Table H-1, “MimeType Attribute Values (IANA Registered)” on page 1165 and Table H-2, “MimeType and File Type Combinations” on page 1167.	—	—	—
<i>Producer</i>	string	A string describing the producer of the document. This is usually the name of the software used to create file. In case of PDF files, it matches exactly the Producer key.	—	Yes	—
<i>SeparationFlag</i>	boolean	Is " <i>true</i> " if the document is made of separations or is not composite.	—	—	PS, PDF
<i>Subject</i>	string	A string describing the subject of the document.	—	Yes	—

**Table 9-81: Document Properties (Sheet 5 of 5)**

Name	Type	Description	Set	Tag	Documents
Title	string	A string describing the title of the document.	—	Yes	—
TrappedKey	enumeration	A value explaining the use of trapping on the document. <b>Allowed values are:</b> <i>true</i> <i>false</i> <i>Unknown</i> <b>Note:</b> the values match exactly the @TrappedKey information of PDF.	—	Yes	—

**9.2.2.6 Fill Properties**

Fill property values are derived from graphic objects with vector primitives. They can have a fill color and a stroke color, with given colors. This is a list of Properties that specifically apply to this kind of object:

**Table 9-82: Fill Properties**

Name	Type	Description	Set	Tag	Documents
FillColorName	string	The name of the color of the fill of the vector object.	—	—	—
FillColorType	enumeration	This is an enumeration of known colors to draw fill. <b>Allowed values are from:</b> Table 9-83, “FillColorType Attribute Values”.	—	—	—
HasFillColor	boolean	Is “ <i>true</i> ” if the vector object is drawn with a fill color.	—	—	—

— Attribute: **FillColorType**

**Table 9-83: FillColorType Attribute Values**

Value	Description
CMYBlack	Will print with 100% on Cyan, Magenta and Yellow separations and less than 100% on the Black separation.
CMYGray	Will print with the same percentage 0-100% exclusive on Cyan, Magenta and Yellow separations.
Other	Any other combinations of separations.
PureBlack	Will print as 100% on the black separation with 0% on the other separation(s).
PureGray	Will print as 1-99% on the black separation with 0% on the other separation(s).
RegistrationBlack	Will print as 100% on all the separations.
RegistrationGray	Will print as 0-100% exclusive on all the separations (assuming all the separations use the same value).
RichBlack	Will print as 100% on the black separation with more than 0% on one or more of the other separations.
White	Will print as 0% on all the separations.

### 9.2.2.7 Font Properties

The following is the list of property Attributes that can be applied to a font contained in, or referenced into, a document:

**Table 9-84: Font Properties**

Name	Type	Description	Set	Tag	Documents
<i>EmbeddingRestrictionFlag</i>	boolean	Is "true" if a font cannot be embedded.	—	—	—
<i>FontCorrupted</i>	boolean	Is "true" if a font is corrupted or invalid. The implementation of this check MAY vary from one application to another.	—	—	—
<i>FontCreator</i>	string	The font creator.	—	—	—
<i>FontEmbedded</i>	boolean	Is "true" if a font is embedded into the document.	—	—	—
<i>FontIsStandardLatin</i>	boolean	Is "true" when all characters belong to the standard Latin character set.	—	—	—
<i>FontName</i>	string	The font name.	—	—	—
<i>FontNotUsed</i>	boolean	Is "true" if a font is not used to draw characters from the document.	—	—	—
<i>FontSubset</i>	boolean	Is "true" if a font is only a subset of a main font.	—	—	PS, PDF
<i>FontType</i> <small>?= "Other"</small>	enumeration	This is the type of the font. <b>Allowed values are from:</b> Table 9-85, "FontType Attribute Values".	—	—	—
<i>FontVendor</i>	string	The font vendor.	—	—	—
<i>IsDoubleByteFont</i> <small>New in JDF 1.4</small>	boolean	Some fonts need double-byte encoding to store characters internally	—	—	—
<i>IsFontScreenOnly</i>	boolean	Is "true" if a font referenced in the document contains only screen description.	—	—	Authoring
<i>PSFontName</i>	NMTOKEN	The PostScript font name.	—	—	PS, PDF

— Attribute: **FontType**

**Table 9-85: FontType Attribute Values (Sheet 1 of 2)**

Value	Description	Value	Description
<i>CIDFontType0</i>		<i>Type1</i>	
<i>CIDFontType1</i>		<i>Type1CMultipleMaster</i>	
<i>CIDFontType2</i>		<i>Type2C</i>	
<i>CIDFontType3</i>		<i>Type3</i>	
<i>CIDFontType4</i>		<i>PDFType3</i>	
<i>OpenType</i>		<i>Type42</i>	Embedded TrueType into a PostScript font.

**Table 9-85: FontType Attribute Values (Sheet 2 of 2)**

<b>Value</b>	<b>Description</b>	<b>Value</b>	<b>Description</b>
<i>TrueType</i>		<i>Unknown</i>	Type of font that can not be resolved for any reason (i.e., missing font, etc.).
<i>Type0</i>	PostScript Type0 without the CID	<i>Other</i>	To be used when the property is not any of the values listed above.

**9.2.2.8 Graphic Properties**

This is a list of property Attributes that specifically apply to objects that can be displayed or printed.

**Table 9-86: Graphic Properties (Sheet 1 of 2)**

<b>Name</b>	<b>Type</b>	<b>Description</b>	<b>Set</b>	<b>Tag</b>	<b>Documents</b>
<i>AlphaIsShape</i>	boolean	The <i>@AlphaIsShape</i> of a PS or PDF object.	—	—	PS, PDF
<i>AlternateColorSpace</i>	enumeration	The alternate color space of the object is one of the given. <b>Allowed values are from:</b> <i>@ColorSpace</i> .	—	Yes	PS, PDF
<i>BelongsToAnnotation</i>	boolean	Is "true" when this object belongs to an annotation.	—	—	—
<i>BlackGeneration</i>	enumeration	The <i>@BlackGeneration</i> function of a PS or PDF object. <b>Allowed values are:</b> <i>Identity</i> – Defines identity function. <i>Custom</i> – Used when the function is described.	—	Yes	PS, PDF
<i>BlendMode</i>	NMTOKEN	The <i>@BlendMode</i> of a PS or PDF object.	—	—	PS, PDF
<i>ColorSpace</i>	enumeration	The color space of the object. <b>Allowed values are:</b> <i>CalGray</i> <i>CalRGB</i> <i>CIEBasedA</i> <i>CIEBasedABC</i> <i>CIEBasedDEFG</i> <i>DeviceCMYK</i> <i>DeviceGray</i> <i>DeviceN</i> <i>DeviceRGB</i> <i>ICCBased</i> <i>Lab</i> <i>Separation</i>	—	—	PS, PDF
<i>EmbeddedPS</i>	boolean	Is "true" if a PDF object uses Post-Script to be drawn.	—	—	PDF

**Table 9-86: Graphic Properties (Sheet 2 of 2)**

Name	Type	Description	Set	Tag	Documents
<i>Flatness</i>	double	A number giving the value of PS or PDF <i>Flatness</i> .	—	Yes	PS, PDF
<i>HalfTone</i>	NMTOKEN	The value of the Halftone used in a document: "Named", "1", "5", "6", "10", "16".	—	Yes	PS, PDF
<i>HalfTonePhase</i>	XYPair	The value of the @ <i>HalftonePhase</i> associated with the object.	—	Yes	PS, PDF
<i>HasColorLUT</i>	boolean	Is "true" when an object is using indexed colors in a table to describe color.	—	—	—
<i>HasSoftMask</i>	boolean	Is "true" when the object is using a soft-mask using pixel values.	—	—	—
<i>NumberOfColorsInLUT</i>	integer	The number of colors in the color table used to display an indexed image.	—	—	—
<i>OverPrintFlag</i>	boolean	Is "true" when one object has been set to overprint.	—	—	—
<i>OverPrintMode</i>	integer	An integer giving the PostScript or PDF value for overprint mode.	—	—	PS, PDF
<i>RenderingIntent</i>	NMTOKEN	The rendering intent of a PS or PDF object.	—	Yes	PS, PDF
<i>Smoothness</i>	double	A number giving the value of PS or PDF @ <i>Smoothness</i> .	—	Yes	PS, PDF
<i>TransferFunction</i>	enumeration	The transfer function of a PS or PDF object. <b>Allowed values are:</b> <i>Custom</i> – Used when the function is described. <i>Identity</i> – Defines identity function.	—	Yes	PS, PDF
<i>TransparencyFlag</i>	boolean	Is "true" when the object has transparency. A transparency that is null has the "false" value.	—	—	—
<i>UnderColorRemoval</i>	enumeration	The @ <i>UnderColorRemoval</i> function of a PS or PDF object. <b>Allowed values are:</b> <i>Custom</i> – Used when the function is described. <i>Identity</i> – Defines identity function.	Yes	Yes	PS, PDF

### 9.2.2.9 **Image Properties**

This group of property Attributes is very specific to images displayed using pixels:

Table 9-87: Image Properties (Sheet 1 of 2)

Name	Type	Description	Set	Tag	Documents
<i>AlternateImages</i>	NMTOKENS	When to draw some of the alternate images that correspond with the given image. The PDF specification defines " <i>Print</i> " as a value, but any other application-specific value could be used.  <b>Values include:</b> <i>Print</i>	—	Yes	PDF
<i>BitsPerSample</i>	integer	The number of bits used to represent color on every separation.	—	—	—
<i>CompressionRatio</i>	double	For all compression types to which it makes sense, the tests apply to the quality expressed as percentage of compression.	—	—	—
<i>CompressionTypes</i>	enumerations	The type of method used to compress or encode the image.  <b>Allowed values are:</b> <i>ASCII85</i> <i>ASCIIText</i> <i>CCITT</i> <i>JBIG2</i> <i>JPEG</i> <i>JPEG2000</i> <i>LZW</i> <i>None</i> <i>RunLength</i> <i>ZIP</i>  <b>Note:</b> Where JPEG, JPEG2000 and/or JBIG2 are specified, they can be concatenated and only JPEG need be used.	—	—	—
<i>EffectiveResolution</i>	XYPair	The horizontal and vertical resolutions of the scaled image, in dots per inch.	—	—	—
<i>EstimatedJPEGQuality</i>	integer	For " <i>JPEG</i> " compression type, use algorithm provided below to obtain the estimated JPEG quality by doing a "reverse statistic" on the IJG library's quality-to-matrix routine. This value will be expressed as an integer, where " <i>0</i> " is the worse quality and " <i>100</i> " is the best quality.	—	—	—

**Table 9-87: Image Properties (Sheet 2 of 2)**

Name	Type	Description	Set	Tag	Documents
<i>ImageFlipped</i>	enumeration	The way the image is flipped. <b>Allowed values are:</b> <i>None</i> <i>Horizontal</i> <i>Vertical</i>	—	—	—
<i>ImageMaskType</i>	enumeration	The type of masks used by image. <b>Allowed values are:</b> <i>NoMask</i> – Used when the image does not use specific mask. <i>BitmapMask</i> – Used when the image is masked using a bitmap image <i>ColorKeyMask</i> – Used when some colors are masked out to display the image (such like video chroma-key).	—	—	—
<i>ImageRotation</i>	integer	The number of degrees an image is rotated. A positive number represents a counterclockwise rotation. A negative number represents a clockwise rotation. <b>Note:</b> A 540° rotation is valid (e.g., one full rotation + 180° rotation).	—	—	—
<i>ImageScalingRatio</i>	double	The ratio between X and Y scaling of an image.	—	—	—
<i>ImageSkew</i>	double	The skew angle of the image ("0" is not skewed). A positive number represents a clockwise skewing. A negative number represents a counterclockwise skewing.	—	—	—
<i>OriginalResolution</i>	XYPair	The horizontal and vertical resolutions of the image before scaling.	—	—	—
<i>PixelHeight</i>	integer	Image height in pixels.	—	—	—
<i>PixelWidth</i>	integer	Image width in pixels.	—	—	—

The JPEG quality algorithm is based on a technique used by the IJG library (<http://www.ijg.org/>) — which uses a quality value in the range 0–100 and translates image data into a 8x8 matrix. The following algorithm performs a “reverse statistic” on the IJG library’s quality-to-matrix routine, which gives a matrix-to-quality routine. The formula’s used are as follows:

```
//DCTSIZE2 is the size of the matrix, 64
derived = 0.0;
for (i = 0; i < DCTSIZE2; i++) {
    derived += (*qtblptr0)->quantval[i];
}
derived = derived / DCTSIZE2;
xq = (100.0 * derived - 50.0) / 57.625;
if (xq < 100.0) {
```

```

        quality = (long) ((200.0 - xq) / 2.0);
    } else {
        quality = (long) (5000.0 / xq);
    }
}

```

The algorithm calculates the average value in the quantization matrix and then derives a quality value in the range of 0–100 from that average.

### 9.2.2.10 Logical Properties

The logical Properties are mainly used with “Set” to count the number of objects.

**Table 9-88: Logical Properties**

Name	Type	Description	Set	Tag	Documents
Count	integer	The number of objects contained in the referenced set of objects.	Yes	—	—

### 9.2.2.11 PageBox Properties

The page box represents virtual boxes for each page. The following is a list of Attributes that specifically apply to this kind of objects.

**Table 9-89: PageBox Properties**

Name	Type	Description	Set	Tag	Documents
PageBoxType	enumeration	<p><b>Note:</b> when not known, the default is to leave <code>@PageBoxType</code> empty.</p> <p><b>Allowed values are from:</b> BoxArgument/@Box (Table 8-226, “BoxArgument Element” on page 836).</p>	—	—	—

### 9.2.2.12 Pages Properties

This is the list of Elements and Attributes related to the page object in a document.

**Table 9-90: Pages Properties (Sheet 1 of 2)**

Name	Type	Description	Set	Tag	Documents
BlankPage	boolean	Is “true” when the trim box and the bleed box area, when defined, do not output any marks.	—	—	—
BlendColorSpace	enumeration	<p>The page blend color space.</p> <p><b>Allowed values are from:</b> @ColorSpace in Table 9-86, “Graphic Properties”.</p>	—	Yes	PDF
PageHasOptionalContent <i>New in JDF 1.4</i>	boolean	Detect if a PDF has optional content (commonly called PDF layers).	—	—	—
PageHasUnknownObjects	boolean	Page contains unknown objects but the PDL was set to ignore these errors. Examples are the use of BX/EX in PDF.	—	—	—
PageNumber	integer	The page index in the RunList.	—	—	—
PageScalingFactor <i>New in JDF 1.4</i>	double	In PDF file, one way of scaling a page is to use a page scale factor. This factor can be ambiguous because it is not always used by all applications.	—	—	—

**Table 9-90: Pages Properties (Sheet 2 of 2)**

Name	Type	Description	Set	Tag	Documents
ReversePageNumber	integer	A special page numbering which starts from the last page. The last page is "-1". This has been added to allow filtering of last page or the before last page, which is "-2". It is used to apply specific test on a document cover.	—	—	—
BoxToBoxDifference	element	The rectangle from calculating the differences between two rectangles: <i>@FromBox</i> and <i>@ToBox</i> . The calculation is made using the following formula: <i>@FromBox</i> (left)– <i>@ToBox</i> (left), <i>@FromBox</i> (bottom)– <i>@ToBox</i> (bottom), <i>@ToBox</i> (right)– <i>@FromBox</i> (right), <i>@ToBox</i> (top)– <i>@FromBox</i> (top). To define the two boxes used, options are given in <i>BoxToBoxDifference</i> argument. See Table 8-228, “BoxToBoxDifference Element” on page 837.	—	—	—

Note that *BoxToBoxDifference* Element is always a Subelement of a *PreflightArgument*.

### Example 9-12: Test with BoxToBoxDifference Element

```
<Device Class="Implementation" ID="Link0003" Status="Available">
  <DeviceCap>
    <TestPool>
      <Test ID="PT01">
        <RectangleEvaluation ValueList="0 0 10 10">
          <BasicPreflightTest Name="BoxToBoxDifference">
            <PreflightArgument>
              <BoxToBoxDifference FromBox="TrimBox"
                ToBox="BleedBox" />
            </PreflightArgument>
          </BasicPreflightTest>
        </RectangleEvaluation>
      </Test>
    </TestPool>
  </DeviceCap>
</Device>
```

#### 9.2.2.13 PDLObject Properties

The PDL object is used to check whether select objects are defined or not defined in the document, but does not check anything else as these objects are specific to one given PDL.

**Table 9-91: PDLObject Properties**

Name	Type	Description	Set	Tag	Documents
<i>PDLObjectType</i>	NMTOKEN	The type of specific PDL object. <b>Values include:</b> <i>AcroForm</i> – The PDF AcroForm. <i>Actions</i> – The PDF Actions. <i>Bookmarks</i> – The PDF Bookmarks. <i>JavaScript</i> – The PDF JavaScript. <i>Thread</i> – The PDF Thread. <i>Thumbnails</i> – The PDF Thumbnails.	—	—	PDF

**9.2.2.14 Reference Properties**

Reference property Attributes describe objects that have links to external references on other objects. It only deals with OPI links and references in page to other graphical contents. This is not describing the Font Properties (see Section 9.2.2.7, “Font Properties” on page 1025).

**Table 9-92: Reference Properties**

Name	Type	Description	Set	Tag	Documents
<i>ExternalReferenceMissing</i>	boolean	Is “true” when the target of an external reference is missing.	—	—	—
<i>HasExternalReference</i>	boolean	Is “true” when some of the page graphical contents have a link on files.	—	—	—
<i>HasOPI</i>	boolean	Is “true” if there is OPI information associated with the object.	—	—	PS, PDF
<i>OPIMissing</i>	boolean	Is “true” when the target of OPI comments associated with the object is missing.	—	—	PS, PDF
<i>OPIType</i>	NMTOKEN	The OPI type of OPI comments associated with the object. Sometimes in PS, the comments are not OPI comments. <b>Values include:</b> <i>OPIComments</i> <i>OtherComments</i>	—	—	PS, PDF
<i>OPIVersion</i>	NMTOKENS	The OPI versions of OPI comments associated with the object.	—	—	PS, PDF

**9.2.2.15 Shading Properties**

Shading property Attributes are derived from graphic objects with applied shading, which is usually defined as of either smooth or vector type.

**Table 9-93: Shading Properties**

Name	Type	Description	Set	Tag	Documents
<i>ShadingType</i>	enumeration	The type of shading. <b>Allowed values are:</b> <i>Smooth</i> <i>Vector</i>	—	—	—

**9.2.2.16 Stroke Properties**

Stroke property Attributes are linked with graphic objects with vector primitives. They can have a fill color and a stroke color with given colors. This is a list of Properties that specifically apply to this kind of object:

**Table 9-94: Stroke Properties**

Name	Type	Description	Set	Tag	Documents
<i>HasStrokeColor</i>	boolean	Is "true" if the vector object is drawn with a stroke color.	—	—	—
<i>StrokeAlternateColorSpace</i>	enumeration	The alternate color space of the stroke of one object. <b>Allowed values are from:</b> @ <i>ColorSpace</i> in Table 9-86, "Graphic Properties".	—	Yes	PS, PDF
<i>StrokeColorName</i>	string	The name of the color of the stroke of the vector object.	—	—	—
<i>StrokeColorSpace</i>	enumeration	The color space of the stroke of one object. <b>Allowed values are from:</b> @ <i>ColorSpace</i> in Table 9-86, "Graphic Properties".	—	—	PS, PDF
<i>StrokeColorType</i>	enumeration	This is an enumeration of known colors used to draw stroke. <b>Allowed values are from:</b> @ <i>FillColorType</i> in Table 9-82, "Fill Properties".	—	—	—
<i>StrokeOverprintFlag</i>	boolean	Is "true" when the stroke of one object has been set to overprint.	—	—	—
<i>StrokeShadingType</i>	enumeration	The type of shading used in the stroke. <b>Allowed values are:</b> <i>Smooth</i> <i>Vector</i>	—	—	—
<i>StrokeThickness</i>	double	The thickness of the stroke of the vector object.	—	—	—

**9.2.2.17 Text Properties**

"Text" refers to a consecutive set of one or more characters that share the same style (i.e., font, size, fill, stroke, etc.). The following are the Attributes that can be applied to text:

**Table 9-95: Text Properties**

Name	Type	Description	Set	Tag	Documents
<i>CharacterProblem</i>	enumeration	<p>Problem encountered to render character.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Corrupted</i> – Used when a character was found but could not be rendered.</li> <li><i>IncorrectEncoding</i> – Used when encoding information is missing, incomplete or otherwise incorrect.</li> <li><i>Missing</i> – Use when the character could not be found in font.</li> <li><i>Others</i> – Used in all other cases.</li> </ul>	—	—	—
<i>MissingPrinterFont</i>	boolean	Is "true" if a referenced font has no printer information.	Yes	—	—
<i>MissingScreenFont</i>	boolean	Is "true" if a referenced font has no screen information.	—	—	—
<i>TextSize</i>	double	The size in points of the character.	—	—	—
<i>UseArtificialTextEffect</i>	enumerations	<p>The artificial text effects list used to draw a character.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Bold</i></li> <li><i>Italic</i></li> <li><i>Outline</i></li> <li><i>Shadow</i></li> <li><i>Underline</i></li> </ul> <p><b>Note:</b> The authoring applications can apply the text effect directly, whereas in PS or PDF, the effect will be calculated.</p>	—	—	—

#### 9.2.2.18 Vector Properties

Vector property Attributes are derived from graphic objects with vector primitives. They can have a fill color and a stroke color, with given colors. This is a list of Attributes that specifically apply to this kind of object:

**Table 9-96: Vector Properties**

Name	Type	Description	Set	Tag	Documents
<i>NumberOfPathPoints</i>	integer	The number of points used to create a vector path.	—	—	—

# Chapter 10 Subelements

The elements in this chapter are subelements that can occur in multiple Resources. They are not Resources and are therefore never directly linked to Processes.

## 10.1 Address

Definition of an address. The structure is derived from the vCard format and, therefore, is comprised of all address subtypes (ADR:) of the delivery address of the vCard format. The corresponding XML types of the vCard are quoted in the table.

### Element Properties

Element referenced by: [Location](#), [Location](#), [Contact](#), [Person](#), [Person](#)

Table 10-1: Address Element

Name	Data Type	Description
<i>City</i> ?	string	City or locality of address (vCard: ADR:locality).
<i>Country</i> ?	string	Country of address (vCard: ADR:country).
<i>CountryCode</i> ?	string	Country of address. <b>Values include those from:</b> [ISO3166-1:1997] <b>Note:</b> countries are represented as two-character codes
<i>PostalCode</i> ?	string	Zip code or postal code of address (vCard: ADR:pcode).
<i>PostBox</i> ?	string	Post office address (vCard: ADR:pobox. For example: P.O. Box 101).
<i>Region</i> ?	string	State or province (vCard: ADR:region).
<i>Street</i> ?	string	Street address (vCard: ADR:street).
<i>ExtendedAddress</i> ?	text element	Extended address (vCard: ADR:extadd. For example: Suite 245).

## 10.2 ApprovalPerson

Table 10-2: ApprovalPerson Element (Sheet 1 of 2)

Name	Data Type	Description
<i>ApprovalRole</i> ?= <a href="#">"Obligated"</a> <a href="#">New in JDF 1.2</a> <a href="#">Modified in JDF 1.3</a>	enumeration	<p>Role of the ApprovalPerson.</p> <p><b>Allowed values are:</b></p> <p><i>Approvinator</i> – The decision of this approver immediately overrides the decisions of the other approvers and ends the approval cycle. The "<i>Approvinator</i>" NEED NOT sign for the approval to become valid. <a href="#">New in JDF 1.3</a></p> <p><i>Group</i> – The approver belongs to a group of which @<i>MinApprovals</i> members SHALL sign.</p> <p><i>Informative</i> – The approver is informed of the <b>Approval</b> Process, but the approval is still valid, even without his approval.</p> <p><i>Obligated</i> – The approver SHALL sign the approval.</p>
<i>ApprovalRoleDetails</i> ? <a href="#">New in JDF 1.3</a>	string	Additional details on the @ <i>ApprovalRole</i> .

**Table 10-2: ApprovalPerson Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>Obligated ?</i> <i>Deprecated in JDF 1.2</i>	boolean	If "true", the person has to sign this approval. In JDF 1.2 and beyond, use @ApprovalRole.
<b>Contact</b> <b>ContactRef</b>	refelementI-DREF	Contact (e.g., a customer, printer or manager) who SHALL sign the approval. There SHALL be a Contact[contains (@ContactTypes, "Approver")].

## 10.3 AutomatedOverPrintParams

This element provides controls for the automated selection of overprinting of black text or graphics. @RGBGray2Black and @RGBGray2BlackThreshold in **ColorSpaceConversion**/**ColorSpaceConversionOp** are used by the **ColorSpaceConversion** process in determining the allocation of RGB values to the black (K) channel. After the **ColorSpaceConversion** process is completed, then the **Rendering** or **Separation** process uses **AutomatedOverPrintParams** to determine overprint behavior for the previously determined black (K) channel.

### Element Properties

Element referenced by: **ElementColorParams**, **RenderingParams**, **SeparationControlParams**

**Table 10-3: AutomatedOverPrintParams Element**

Name	Data Type	Description
<i>KnockOutCMYKWhite ?= "false"</i> <i>New in JDF 1.3</i>	boolean	Graphic objects defined in DeviceCMYK, where all colorant values are <0.001 SHALL be knocked out, even when set to overprint and when the PDF overprint mode is set to 1.
<i>OverPrintBlackLineArt ?= "false"</i>	boolean	Indicates whether overprint is to be set to "true" for black line art (i.e., vector elements other than text). If "true", overprint of black line art is applied regardless of any values in the PDL. If "false", @LineArtBlackLevel is ignored and PDL line art overprint operators are processed.
<i>LineArtBlackLevel ?</i>	double	A value between 0.0 and 1.0 which indicates the minimum black level for the stroke or fill colors that cause the line art to be set to overprint. Defaults to the value of @TextBlackLevel.
<i>OverPrintBlackText ?= "false"</i>	boolean	Indicates whether overprint is to be set to "true" for black text. If "true", overprint of black text is applied regardless of any values in the PDL. If "false", @TextSizeThreshold and @TextBlackLevel are ignored and PDL text overprint operators are processed.
<i>TextBlackLevel ?= "1"</i>	double	A value between 0.0 and 1.0 which indicates the minimum black level for the text stroke or fill colors that cause the text to be set to overprint.
<i>TextSizeThreshold ?</i>	integer	Indicates the point size for text below which black text will be set to overprint. For asymmetrically scaled text, the minimum point size between both axes will be used. If not specified, all text is set to overprint.

## 10.4 BarcodeCompParams

[New in JDF 1.3](#)

**BarcodeCompParams** specifies the technical compensation parameters for barcodes.

### Element Properties

Element referenced by: [BarcodeReproParams](#)

**Table 10-4: BarcodeCompParams Element**

Name	Data Type	Description
<i>CompensationProcess</i>	enumeration	<p>Process that is bar width spread is compensated for.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Printing</i></li> <li><i>Platemaking</i></li> </ul>
<i>CompensationValue</i> ?	double	The width of the bars is reduced by this amount in micron to compensate for technical spread.

## 10.5 BarcodeReproParams

[New in JDF 1.3](#)

**BarcodeReproParams** specifies the reproduction parameters for barcodes.

### Element Properties

Element referenced by: [/LayoutElementPart/BarcodeProductionParamsContent/BarcodeProductionParams](#), [DeviceMark](#), [DeviceMark](#)

**Table 10-5: BarcodeReproParams Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>BearerBars</i> ?	enumeration	<p>Indicates the policy how to generate bearer bars. (ITF).</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>None</i></li> <li><i>TopBottom</i></li> <li><i>Box</i></li> <li><i>BoxHMarks</i></li> </ul>
<i>Height</i> ?	double	The height of the bars of a linear barcode.
<i>Magnification</i> ?	double	The magnification factor for linear barcodes.
<i>Masking</i> ?	enumeration	<p>Indicates the properties of the mask around the graphical content of the barcode that masks out all underlying graphics.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>None</i> – No masking, barcode is put on top of underlying graphics.</li> <li><i>WhiteBox</i> – An area of the underlying graphics is masked out (the white box) and the barcode is put on top of this masked area. The area of the white box is the box enclosing all artwork of the barcode, excluding optional human readable text. This would enclose bearer bars, quiet zones and non-optimal human readable text (UPC and EAN barcodes).</li> </ul>
<i>ModuleHeight</i> ?	double	The Y size in micron of an Element of a 2D barcode (e.g., PDF417). For DATAMATRIX, Y Dimension MAY be omitted (X Dimension = Y Dimension).

**Table 10-5: BarcodeReproParams Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>ModuleWidth</i> ?	double	The X size in micron of an Element of a 2D barcode such as DATAMATRIX or PDF417.
<i>Ratio</i> ?	double	the ratio between the width of the narrow bars and the wide bars for those barcodes where ratio the width of the wide bars and narrow bars MAY vary.
BarcodeCompParams *	element	Parameters for bar width compensation. The total reduction of bar width is the sum of all <i>BarcodeCompParams/@CompensationValue</i> .

## 10.6 Certification

[New in JDF 1.6](#)

Certification specifies the certification properties of paper.

**Table 10-6: Certification Element**

Name	Data Type	Description
<i>Claim</i> ?	string	<p>Name of the certification as defined by the issuing organization.</p> <p><b>Values include:</b></p> <p><i>FSC 100%</i>  <i>FSC Mix 70%</i>  <i>FSC Mix Credit</i>  <i>FSC Recycled 85%</i>  <i>FSC Recycled Credit</i>  <i>PEFC nn%</i>  <i>PEFC Certified</i>  <i>PEFC Recycled</i></p>
<i>Identifier</i> ?	string	Certification identification number as defined by the issuing organization.
<i>Organization</i> ?	NMTOKEN	<p>Identifier of the issuing organization:</p> <p><b>Values include:</b></p> <p><i>FSC</i> – Forest Stewardship Council  <i>PEFC</i> – The Programme for the Endorsement of Forest Certification  <i>IFCC</i> – Sustainable Forest Management Requirements  <i>CFCC</i> – China's National Forest Certification System</p>

## 10.7 ColorantAlias

**Certification** is an element that specifies a replacement colorant name string to be used instead of one or more named colorant strings. For example, *SeparationSpec@Name* = "Pantone 135 C", "PANTONE 135" and *@ReplacementColorantName* = "PANTONE 135 C" maps string values: "Pantone 135 C" and "PANTONE 135" to the string value: "PANTONE 135 C".

### Element Properties

Element referenced by: [ColorantControl](#), [ElementColorParams](#)

**Table 10-7: ColorantAlias Element**

Name	Data Type	Description
<i>RawNames</i> ? <a href="#">New in JDF 1.4</a>	hexBinaryList	Whitespace-separated list of hexBinary values. Each token represents the original 8-bit byte stream of the color specified in SeparationSpec. Used to transport the original byte representation of a color name when moving <b>JDF</b> tickets between computers with different locales. Exactly one token SHALL be specified for each SeparationSpec in this <b>Certification</b> . The order of tokens SHALL be identical to the order of the related SeparationSpec.
<i>ReplacementColorantName</i>	string	The value of the colorant name string to be substituted for the colorant name in the SeparationSpec Resource list.
<i>SeparationSpec</i> + <a href="#">Modified in JDF 1.2</a>	element	The names of the colorants to be replaced in PDL files.

**Example 10-1: ColorantAlias/@RawNames**[New in JDF 1.4](#)

```
<ColorantAlias Class="Parameter" ID="r000004" RawNames="4772FC6E 6772FC6E"
  ReplacementColorantName="Green" Status="Available">
  <!-- ColorantAlias that maps the additional representation (grün, Grün)
       to the predefined separation Green -->
  <SeparationSpec Name="Grün"/>
  <SeparationSpec Name="grün"/>
</ColorantAlias>
```

## 10.8 ColorCorrectionOp

**Element Properties**Element referenced by: [ColorCorrectionParams](#), [ElementColorParams](#)**Table 10-8: ColorCorrectionOp Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>AdjustContrast</i> ? <a href="#">New in JDF 1.2</a>	double	Specifies the L*a*b* contrast adjustment in the range -100 (minimum contrast for the system (i.e., a solid midtone gray color)) to +100 (maximum contrast for the system (i.e., either use full color (the maximum is restricted by the system ink limit) or no color for each of Cyan, Magenta, Yellow and Black)). Increasing the contrast value increases the variation between light and dark areas and decreasing the contrast value decreases the variation between light and dark areas. See explanation above.
<i>AdjustCyanRed</i> ? <a href="#">New in JDF 1.2</a>	double	Specifies the L*a*b* adjustment in the Cyan/Red axis in the range -100 (maximum Cyan cast for the system) to +100 (maximum Red cast for the system) while maintaining lightness. See explanation above.
<i>AdjustHue</i> ? <a href="#">New in JDF 1.2</a>	double	Specifies the change in the L*a*b* hue in the range -180 to +180 of all colors by the specified number of degrees of the color circle. See explanation above.

**Table 10-8: ColorCorrectionOp Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>AdjustLightness</i> ? <a href="#">New in JDF 1.2</a>	double	Specifies the decrease or increase of the L*a*b* lightness in the range -100 (minimum lightness for the system (i.e., black)) to + 100 (maximum lightness for the system (i.e., white)). Increasing the lightness value causes the output to appear lighter and decreasing the lightness value causes the output to appear darker. See explanation above.
<i>AdjustMagentaGreen</i> ? <a href="#">New in JDF 1.2</a>	double	Specifies the L*a*b* adjustment in the Magenta/Green axis in the range -100 (maximum Magenta cast for the system) to + 100 (maximum Green cast for the system) while maintaining lightness. See explanation above.
<i>AdjustSaturation</i> ? <a href="#">New in JDF 1.2</a>	double	Specifies the increase or decrease of the L*a*b* color saturation in the range -100 (minimum saturation for the system) to +100 (maximum saturation for the system). Increasing the saturation value causes the output to contain more vibrant colors and decreasing the saturation value causes the output to contain more pastel and gray colors. See explanation above.
<i>AdjustYellowBlue</i> ? <a href="#">New in JDF 1.2</a>	double	Specifies the L*a*b* adjustment in the Yellow/Blue axis in the range -100 (maximum Yellow cast for the system) to + 100 (maximum Blue cast for the system) while maintaining lightness. See explanation above.
<i>ObjectTags</i> ? <a href="#">New in JDF 1.4</a>	NMTOKENS	Tags associated with individual objects that this <b>ColorCorrectionOp</b> SHALL be applied to. Each tag specified in <b>@ObjectTags</b> is logically anded with the object type(s) specified by <b>@SourceObjects</b> , enabling first qualification by object type (such as image), and then tags associated with those objects. The values of <b>@ObjectTags</b> depends on the PDL that the color correction is applied to. <b>@ObjectTags</b> SHALL apply only to objects whose tag pool includes all the tags in the value of <b>@ObjectTags</b> .
<i>SourceObjects</i> = "All"	enumerations	Identifies which class(es) of incoming graphical objects will be operated on. <b>Allowed values are:</b> <i>All</i> <i>ImagePhotographic</i> – Contone images. <i>ImageScreenShot</i> – Images largely comprised of rasterized vector art. <i>LineArt</i> – Vector objects other than text. <i>SmoothShades</i> – Gradients and blends. <i>Text</i>
<i>FileSpec</i> ( <i>AbstractProfile</i> ) ? <a href="#">New in JDF 1.2</a>	refelement	A <b>FileSpec</b> Resource pointing to an abstract ICC profile that has been devised to apply a preference adjustment. See explanation of adjustment at the beginning of this section.
<i>FileSpec</i> ( <i>DeviceLinkProfile</i> ) ? <a href="#">New in JDF 1.2</a>	refelement	A <b>FileSpec</b> Resource pointing to an ICC profile that describes the characterization of an abstract profile for specifying a preference adjustment. See explanation of adjustment at the beginning of this section.

## 10.9 ColorMeasurementConditions

New in JDF 1.1

This Resource contains information about the specific measurement conditions for spectral or densitometric color measurements. Spectral measurements refer to [CIE 15:2004] and [ISO13655:1996]. The default measurement conditions for spectral measurements are illuminant D50 and 2 degree observer.

Density measurements refer to [ISO5-3:1995] and [ISO5-4:1995]. The default measurement conditions for densitometric measurements are density standard ISO/ANSI Status T, calibration to absolute white and using no polarization filter.

### Element Properties

Resource Class:

ParameterElement referenced by: CIELABMeasuringField, Color,  
DensityMeasuringField, Media, PrintCondition

Example Partition:



Input of Processes:



Output of Processes:



Table 10-9: ColorMeasurementConditions Resource (Sheet 1 of 2)

Name	Data Type	Description
DensityStandard ?= "ANSIT"	enumeration	<p>Density filter standard used during density measurements.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li>ANSIA – ANSI Status A</li> <li>ANSIE – ANSI Status E</li> <li>ANSII – ANSI Status I</li> <li>ANSIT – ANSI Status T</li> <li>DIN16536</li> <li>DIN16536NB</li> </ul>
Illumination ?= "D50"	enumeration	<p>Illumination used during spectral measurements.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li>D50</li> <li>D65</li> <li>Unknown</li> </ul>
InkState ?	enumeration	<p>State of the ink during color measurements.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li>Dry</li> <li>Wet</li> <li>NA <small>Deprecated in JDF 1.2</small></li> </ul>
Instrumentation ?	string	Specific instrumentation used for color measurements (e.g., manufacturer, model number and serial number).
MeasurementFilter ?	enumeration	<p>Optical Filter used during color measurements.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li>None – No filter used.</li> <li>Pol – Polarization filter used</li> <li>UV – Ultraviolet cut filter used</li> </ul>
Observer ?= "2"	integer	CIE standard observer function (2 degree and 10 degree) used during spectral measurements. Values are in degree (2 or 10).

**Table 10-9: ColorMeasurementConditions Resource (Sheet 2 of 2)**

Name	Data Type	Description
<i>SampleBacking</i> ?	enumeration	Backing material used behind the sample during color measurements. <b>Allowed values are:</b> <i>Black</i> <i>White</i> <a href="#">NA Deprecated in JDF 1.2</a>
<i>WhiteBase</i> ?	enumeration	Reference for white calibration used for density measurements. <b>Allowed values are:</b> <i>Absolute</i> – Means the instrument is calibrated to a Device-specific calibration target (absolute white) for absolute density measurements. <i>Paper</i> – Means the instrument is calibrated relative to paper white

## 10.10 ColorSpaceConversionOp

The **ColorSpaceConversionOp** Element identifies a type of object, defines the source color space for that type of object, and specifies the behavior of the conversion operation for that type of object. Many of these Attribute descriptions refer to ICC Color Profiles[ICC.1]. See also the International Color Consortium (ICC) Web site at <http://www.color.org>.

### Element Properties

Element referenced by: **ColorSpaceConversionParams, ElementColorParams**

**Table 10-10: ColorSpaceConversionOp Element (Sheet 1 of 5)**

Name	Data Type	Description
<i>IgnoreEmbeddedICC</i> = "false" <a href="#">Deprecated in JDF 1.4</a>	boolean	If "true", specifies that embedded source ICC profiles SHALL be ignored as part of the selection criteria for this <b>ColorSpaceConversionOp</b> . If "true", <b>FileSpec</b> ( <i>PDLSourceProfile</i> ) is ignored. <b>Deprecation note:</b> starting with JDF 1.4, use the new <i>@SourceCS</i> values of "DeviceGray", "DeviceRGB", or "DeviceCMYK" to select objects having an uncharacterized color space. Use "Gray", "RGB", or "CMYK" to select objects regardless of whether they are characterized. Use "ICCGray", "ICCRGB", or "ICCCMYK" to select only characterized objects.
<i>ObjectTags</i> ? <a href="#">New in JDF 1.4</a>	NMTOKENS	Tags associated with individual objects that this <b>ColorSpaceConversionOp</b> SHALL be applied to. Each tag specified in <i>@ObjectTags</i> is logically anded with the object type(s) specified by <i>@SourceObjects</i> , enabling first qualification by object type (such as image), and then tags associated with those objects. The values of <i>@ObjectTags</i> depends on the PDL that the color space conversion is applied to. <i>@ObjectTags</i> SHALL apply only to objects whose tag pool includes all the tags in the value of <i>@ObjectTags</i> .

Table 10-10: ColorSpaceConversionOp Element (Sheet 2 of 5)

Name	Data Type	Description
<i>Operation ?</i> <a href="#">Modified in JDF 1.2</a>	enumeration	<p>Controls which of five functions the color space conversion utility performs.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Convert</i> – Transforms graphical elements to final target color space.</li> <li><i>Tag</i> – Associates appropriate working space profile with uncharacterized graphical element.</li> <li><i>Untag</i> – Removes all profiles and color characterizations from graphical elements.</li> <li><i>Retaig</i> – Equivalent to a sequence of "<i>Untag</i>" → "<i>Tag</i>", where the "<i>Untag</i>" → "<i>Tag</i>" sequence is only applied to those objects selected by this <b>ColorSpaceConversionOp</b>.</li> <li><i>ConvertIgnore</i> – Equivalent to a sequence of "<i>Untag</i>" → "<i>Convert</i>".</li> </ul> <p><b>Constraint:</b> @<i>Operation</i> SHALL be specified in the context of <b>ColorSpaceConversionParams</b>/ ColorSpaceConversionOp and SHALL NOT be specified in the context of <b>ElementColorParams</b>/ ColorSpaceConversionOp.</p>
<i>PreserveBlack = "false"</i> <a href="#">New in JDF 1.1</a>	boolean	Controls how the tints of black (K in CMYK) are to be handled. If @ <i>PreserveBlack</i> is "false", these colors are processed through the standard ICC workflow. If @ <i>PreserveBlack</i> is "true", these colors are to be converted into other shades of black. The algorithm is implementation-specific.
<i>RenderingIntent = "ColorSpaceDependent"</i> <a href="#">Modified in JDF 1.3</a>	enumeration	<p>Identifies the rendering intent to be applied when rendering the objects selected by this <b>ColorSpaceConversionOp</b>.</p> <p><b>Allowed values are</b> (ICC-defined [ICC.1] rendering intent values):</p> <ul style="list-style-type: none"> <li><i>Saturation</i></li> <li><i>Perceptual</i></li> <li><i>RelativeColorimetric</i></li> <li><i>AbsoluteColorimetric</i></li> </ul> <p><i>ColorSpaceDependent</i> – The rendering intent is dependent on the color space. The dependencies are implementation specific. <a href="#">Modified in JDF 1.3</a></p>

Table 10-10: ColorSpaceConversionOp Element (Sheet 3 of 5)

Name	Data Type	Description
<i>RGBGray2Black = "false"</i> <a href="#">Modified in JDF 1.2</a>	boolean	This feature controls what happens to gray values (R = G = B) when converting from RGB to CMYK or the incoming graphical objects indicated by <i>@SourceObjects</i> . In the case of MS Office applications and screen dumps, there are a number of gray values in the images and line art. Printers do not want to have CMY under the K because it creates registration problems. They prefer to have K only, so the printer converts the gray values to K. Gray values that exceed the <i>@RGBGray2BlackThreshold</i> are not converted. <i>@RGBGray2Black</i> and <i>@RGBGray2BlackThreshold</i> are used by the <b>ColorSpaceConversion</b> Process in determining how to allocate RGB values to the black (K) channel. After the <b>ColorSpaceConversion</b> Process is completed, the <b>Rendering</b> Process uses <b>AutomatedOverPrintParams</b> to determine overprint behavior for the previously determined black (K) channel.
<i>RGBGray2BlackThreshold = "1"</i> <a href="#">New in JDF 1.2</a>	double	A value between "0.0" and "1.0" which specifies the threshold value above which the Device SHALL NOT convert gray (R = G = B) to black (K only) when <i>@RGBGray2Black</i> is "true". So a "0" value means convert only R = G = B = 0 (black) to K only. A value of "1" specifies that all values of R = G = B are converted to K if <i>@RGBGray2Black</i> = "true".
<i>SourceCS</i> <a href="#">Modified in JDF 1.3</a>	enumeration	Identifies which of the incoming color spaces will be operated on. <b>Allowed values are from:</b> Table 10-11, "SourceCS Attribute Values". <b>Note:</b> see Table 10-12, "Mapping of SourceCS enumeration values to color spaces in the most common input file formats".
<i>SourceObjects = "All"</i>	enumerations	List of object Classes that identifies which incoming graphical objects will be operated on. <b>Allowed values are:</b> <i>All</i> <i>ImagePhotographic</i> – Contone images. <i>ImageScreenShot</i> – Images largely comprised of rasterized vector art. <i>LineArt</i> – Vector objects other than text. <i>SmoothShades</i> – Gradients and blends. <i>Text</i>

Table 10-10: ColorSpaceConversionOp Element (Sheet 4 of 5)

Name	Data Type	Description
<a href="#">SourceRenderingIntent ?</a> <a href="#">New in JDF 1.2</a>	enumeration	<p>Identifies the rendering intent transform elements to be selected from the source profile that will be used to interpret objects of type identified by the <code>@SourceObjects</code> and <code>@SourceCS</code> Attributes.</p> <p><b>Default value is from:</b> <code>@RenderingIntent</code>.</p> <p><b>Allowed values are</b> (ICC-defined [ICC.1] rendering intent values):</p> <ul style="list-style-type: none"> <li><i>Saturation</i></li> <li><i>Perceptual</i></li> <li><i>RelativeColorimetric</i></li> <li><i>AbsoluteColorimetric</i></li> </ul> <p><i>ColorSpaceDependent</i> – The rendering intent is dependent on the color space. The dependencies are implementation specific. <a href="#">Modified in JDF 1.3</a></p> <p><b>Note:</b> The <code>@SourceRenderingIntent</code> will pertain to the source profile used in a particular <b>ColorSpaceConversion</b> Process (e.g., sources can be the native original color space, an intermediate working color space or an reference output simulation color space).</p>
<a href="#">DeviceNSpace ?</a> <a href="#">New in JDF 1.2</a>	element	<a href="#">DeviceNSpace</a> Resource that describe the DeviceN color space on which to operate when <code>@SourceCS = "DeviceN"</code> . Individual colorant definitions for the colorant names given in <a href="#">DeviceNSpace</a> are provided in the <b>ColorantControl/ColorPool</b> resource, which SHALL also be present
<a href="#">FileSpec (AbstractProfile) ?</a> <a href="#">New in JDF 1.2</a>	refelement	A <a href="#">FileSpec</a> Resource pointing to an ICC profile [ICC.1] that describes the characterization of an Abstract Profile for specifying a preference adjustment.
<a href="#">FileSpec (DeviceLinkProfile) *</a> <a href="#">New in JDF 1.3</a> <a href="#">Modified in JDF 1.4</a>	refelement	<p>A <a href="#">FileSpec</a> Resource pointing to an ICC profile file [ICC.1] that contains a Device Link transform.</p> <p>The Source colorspace of the referenced Device Link transform SHOULD match that of the profile identified by <a href="#">FileSpec (PDLSourceProfile)</a> and the destination color space SHOULD match that of the destination profile identified by <a href="#">ColorSpaceConversionParams</a> (if specified). Multiple Device Link ICC transforms should be provided where each transform specifies a different rendering intent. This is important in the case where multiple PDL content objects of the colorspace specify different rendering intents.</p> <p><b>Note:</b> an ICC Device Link profile contains only one transform with one color rendering intent.</p> <p><b>Note:</b> although the ICC specification refers to all ICC files as "profiles", a Device Link in actuality represents a single transform to be applied, and not a profile of a particular device colorspace. Thus these files are referred to as Device Link transforms in this specification.</p> <p><b>Modification note:</b> starting with JDF 1.4, multiple <a href="#">FileSpec (DeviceLinkProfile)</a> Elements are allowed.</p>

**Table 10-10: ColorSpaceConversionOp Element (Sheet 5 of 5)**

Name	Data Type	Description
<b>FileSpec</b> ( <i>PDLSourceProfile</i> ) ? <a href="#">New in JDF 1.4</a>	refelement	A <b>FileSpec</b> Resource describing an ICC profile that describes a profiled source space that this <b>ColorSpaceConversionOp</b> should operate on. When present, only objects that specify the <i>@SourceCS</i> along with the specified profile are selected.  <b>Note:</b> The <b>FileSpec/@UID</b> Attribute can often be used to positively identify an ICC profile referenced in a PDL file when available ( <b>FileSpec/@UID</b> corresponds to the ICC ProfileID field). In addition, <b>FileSpec/@CheckSum</b> may be used when only a checksum of the entire profile is available.
<b>FileSpec</b> ( <i>SourceProfile</i> ) ?	refelement	A <b>FileSpec</b> Resource pointing to an ICC profile [ICC.1] that describes the assumed source color space. If <b>FileSpec</b> ( <i>SourceProfile</i> ) is specified, it SHALL be used as the profile for the source object's color space during a "Convert", "Tag", or "Retag" operation, as specified by <i>@Operation</i> . <b>FileSpec</b> ( <i>SourceProfile</i> ) SHALL be present for "Tag" or "Retag" operations, as specified by <i>@Operation</i> .
ScreenSelector ?	element	Links this <b>ColorSpaceConversionOp</b> to a given screening.
<b>SeparationSpec</b> * <a href="#">New in JDF 1.2</a>	element	<b>SeparationSpec</b> resource(s) defining on which separation(s) to operate when <i>@SourceCS</i> = "Separation".

**— Attribute: SourceCS****Table 10-11: SourceCS Attribute Values (Sheet 1 of 2)**

Value	Description
All <a href="#">New in JDF 1.4</a>	Operates on all source colorspace. This is useful when specifying a Convert operation using all PDL source-supplied characterizations with a <b>JDF</b> -supplied final target device profile.
CalGray <a href="#">New in JDF 1.3</a>	defines a calibrated Device independent representation of Gray.
Calibrated <a href="#">New in JDF 1.2</a>	Operates on "CalGray" and "CalRGB" color spaces.
CalRGB <a href="#">New in JDF 1.3</a>	defines a calibrated based Device independent representation of RGB. <b>Note:</b> JDF 1.1 defined that "CalRGB" be treated as "RGB", "CalGray" as "Gray" and "ICCBased" color spaces as one of "Gray", "RGB" or "CMYK" depending on the number of channels.
CIEBased <a href="#">New in JDF 1.2</a>	Operates on CIE-based color spaces ("CIEBasedA", "CIEBasedABC", "CIEBasedDEF" and "CIEBasedDEFG").
CMYK	Operates on all CMYK color spaces. This includes both characterized and uncharacterized CMYK color spaces.
DeviceCMYK <a href="#">New in JDF 1.4</a>	Operates on uncharacterized CMYK color spaces.
DeviceGray <a href="#">New in JDF 1.4</a>	Operates on uncharacterized Gray color spaces.

**Table 10-11: SourceCS Attribute Values (Sheet 2 of 2)**

<b>Value</b>	<b>Description</b>
<i>DeviceN</i> <a href="#">New in JDF 1.2</a>	Identifies the source color encoding as a " <i>DeviceN</i> " color space. The specific " <i>DeviceN</i> " color space to operate on is defined in the <a href="#">DeviceNSpace Resource</a> . If " <i>DeviceN</i> " is specified, then the <a href="#">DeviceNSpace</a> and <a href="#">ColorantControl/ColorPool</a> refelements SHALL also be present.
<i>DeviceRGB</i> <a href="#">New in JDF 1.4</a>	Operates on uncharacterized RGB color spaces.
<i>DevIndep</i>	Operates on Device independent color spaces (equivalent to " <i>Calibrated</i> ", " <i>CIEBased</i> ", " <i>ICCBased</i> ", " <i>Lab</i> " or " <i>YUV</i> ").
<i>Gray</i>	Operates on all Gray color spaces. This includes both characterized and uncharacterized Gray color spaces.
<i>ICCBased</i> <a href="#">New in JDF 1.2</a>	Operates on color spaces defined using ICC profiles. The " <i>ICCBased</i> " value includes EPS, TIFF or PICT files with embedded ICC profiles. See [ICC.1]. Includes PDF Device color spaces that are characterized in Footnote 1 on page 1049 following Table 10-12.
<i>ICCCMYK</i> <a href="#">New in JDF 1.3</a>	Operates on ICCBased color spaces with ICC CMYK profiles or DeviceCMYK having an ICC-based characterization. See Footnote 1 on page 1049 following Table 10-12.
<i>ICCGray</i> <a href="#">New in JDF 1.3</a>	Operates on ICCBased color spaces with ICC gray profiles or DeviceGray having an ICC-based characterization. See Footnote 1 on page 1049 following Table 10-12.
<i>ICCLAB</i> <a href="#">New in JDF 1.3</a>	Operates on ICC based Device independent representation of LAB
<i>ICCRGB</i> <a href="#">New in JDF 1.3</a>	Operates on ICCBased color spaces with ICC RGB profiles or DeviceRGB having an ICC-based characterization. See Footnote 1 on page 1049 following Table 10-12.
<i>Lab</i> <a href="#">New in JDF 1.2</a>	Operates on " <i>Lab</i> ".
<i>RGB</i> <a href="#">Modified in JDF 1.2</a>	Operates on all RGB color spaces. This includes both characterized and uncharacterized RGB color spaces.
<i>Separation</i> <a href="#">New in JDF 1.2</a>	Operates on " <i>Separation</i> " color spaces (spot colors). The specific separation(s) to operate on are defined in the <a href="#">SeparationSpec Resource(s)</a> . If no <a href="#">SeparationSpec</a> is defined, the operation will operate on all the separation color spaces in the input <a href="#">RunList</a> .
<i>YUV</i> <a href="#">New in JDF 1.2</a>	Operates on " <i>YUV</i> " (Also known as YCbCr). See [CCIR601-2]

**Notes:**

"*DevIndep*" has been retained for backwards compatibility with JDF 1.1 and because there will probably be cases where the same processing is to be applied to all Device independent spaces. An equivalent "*DevDep*" has not been added because it's less likely that all Device-dependent spaces are to be treated in the same way. The following table summarizes how the @*SourceCS* Attribute is mapped to/from different file formats.

**Table 10-12: Mapping of SourceCS enumeration values to color spaces in the most common input file formats (Sheet 1 of 3)**

<b>SourceCS</b>	<b>File Format</b>	<b>Color Space</b>
<i>Calibrated</i>	PDF (2)	CalGray, CalRGB
	PostScript (2)	n/a
	TIFF	n/a

**Table 10-12: Mapping of SourceCS enumeration values to color spaces in the most common input file formats (Sheet 2 of 3)**

<b>SourceCS</b>	<b>File Format</b>	<b>Color Space</b>
<i>CIEBased</i>	PDF (2)	n/a
	PostScript (2)	CIEBasedABC, CIEBasedA, CIEBasedDEF and CIEBasedDEFG
	TIFF	n/a
<i>CMYK</i>	PDF (2)	DeviceCMYK (1) PDF ICCBased color spaces with ICC CMYK profiles. CIEBasedDEFG spaces that resolve to a characterized CMYK space.
	PostScript (2)	DeviceCMYK
	TIFF	PhotometricInterp = 5 Samples per pixel = 4
<i>DeviceCMYK</i> <i>New in JDF 1.4</i>	PDF (2)	DeviceCMYK (1)
	PostScript (2)	DeviceCMYK
	TIFF	PhotometricInterp = 5 Samples per pixel = 4
<i>DeviceGray</i> <i>New in JDF 1.4</i>	PDF (2)	DeviceGray (1)
	PostScript (2)	DeviceGray
	TIFF	PhotometricInterp = 0 or 1
<i>DeviceN</i>	PDF (2)	DeviceN
	PostScript (2)	DeviceN
	TIFF	PhotometricInterp = 5, Samples per pixel = N
<i>DeviceRGB</i> <i>New in JDF 1.4</i>	PDF (2)	DeviceRGB (1)
	PostScript	DeviceRGB
	TIFF	PhotometricInterp = 2
<i>Gray</i>	PDF (2)	DeviceGray (1) PDF ICCBased color spaces with ICC Gray profiles. CIEBasedA spaces that resolve to a characterized Gray space.
	PostScript (2)	DeviceGray
	TIFF	PhotometricInterp = 0 or 1
<i>ICCBased</i> <i>ICCCMYK</i> <i>ICCGray</i> <i>ICCLAB</i> <i>ICCRGB</i>	PDF (2)	ICCBased DeviceGray, DeviceCMYK, DeviceRGB (See Footnote 1 on page 1049)
	PostScript (2)	n/a
	PostScript/EPS	The EPS file has an embedded ICC profile.
	TIFF	The TIFF file has an embedded ICC profile.
<i>LAB</i>	PDF (2)	LAB
	PostScript (2)	n/a
	TIFF	PhotometricInterp = 8 (CIELAB 1976 “normal” encoding) or PhotometricInterp = 9 (CIELAB 1976 using ICC profile v2 encoding).

**Table 10-12: Mapping of SourceCS enumeration values to color spaces in the most common input file formats (Sheet 3 of 3)**

<b>SourceCS</b>	<b>File Format</b>	<b>Color Space</b>
RGB	PDF (2)	DeviceRGB (1) PDF ICCBased color spaces with ICC RGB profiles. CIEBasedDEF spaces that resolve to a characterized RGB space.
	PostScript	DeviceRGB
	TIFF	PhotometricInterp = 2
Separation	PDF (2)	Separation
	PostScript (2)	Separation
	TIFF	PhotometricInterp = 5 (Applies only to one of the planes in the separated image.)
YUV	PDF (2)	n/a
	PostScript (2)	n/a
	TIFF	PhotometricInterp = 6

- 1) In PDF, DeviceCMYK, DeviceRGB, and DeviceGray source colorspaces can be characterized through providing a DefaultCMYK, DefaultRGB, or DefaultGray resource specifying a profile to be associated with source objects in that color space. In which case, the resulting color space is considered characterized by JDF operations.
- 2) Where a "*Pattern*" or "*Indexed*" color space has been used, the base color space is used to determine whether to apply this operation.

## 10.11 ComChannel

A communication channel to a person or company such as an email address, phone number or fax number.

### Element Properties

Element referenced by:      [Contact](#), [Person](#)

**Table 10-13: ComChannel Element**

Name	Data Type	Description
<i>ChannelType</i> <a href="#">Modified in JDF 1.5</a>	enumerationNMOKEN	<p>Type of the communication channel.</p> <p><b>Allowed values are:</b> Values include:</p> <ul style="list-style-type: none"> <li><i>ComputerName</i> <a href="#">New in JDF 1.5</a></li> <li><i>Email</i> – Email address.</li> <li><i>Fax</i> – Fax machine.</li> <li><i>JMF</i> – <a href="#">JMF XJMF</a> messaging channel.</li> <li><i>Mobile</i> – Mobile phone. <a href="#">New in JDF 1.5</a></li> <li><i>Phone</i> – Telephone number. Starting with JDF 1.5, this This SHOULD be restricted to land line phones. <a href="#">Modified in JDF 1.5</a></li> <li><i>WWW</i> – WWW home page or form.</li> </ul> <p><i>PrivateDirectory</i> – Account of a registered customer of a certain service. (The list of the registered accounts is maintained by the service vendor). The <i>ChannelTypeDetails</i> Attribute has the name of the private directory service vendor.</p> <p><i>InstantMessaging</i> – IM service address. The <i>ChannelTypeDetails</i> Attribute has the name of the IM service vendor</p>
<i>ChannelTypeDetails</i> ? <a href="#">New in JDF 1.2</a> <a href="#">Modified in JDF 1.5</a>	NMOKEN	<p>Description of the value of the <i>@ChannelType</i> Attribute. Consumer treats this value as the service vendor name if <i>@ChannelType</i> is "PrivateDirectory" or "InstantMessaging".</p> <p><b>Values include those from:</b> Table 10-14, "ChannelTypeDetails Attribute – predefined values for certain ChannelType values" on page 1051.</p>
<i>ChannelUsage</i> ? <a href="#">New in JDF 1.2</a>	NMOKENS	<p>Communication channel usage.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Business</i> – Business purpose usage (e.g., office phone number, fax).</li> <li><i>Private</i> – Private purpose usage (e.g., private phone number, fax, Email).</li> <li><i>DayTime</i> – Office hours in the time zone of the recipient.</li> <li><i>NightTime</i> – Out-of-office hours in the time zone of the recipient.</li> <li><i>WeekEnd</i> – Out-of-office hours in the time zone of the recipient.</li> </ul>
<i>Locator</i> <a href="#">Modified in JDF 1.2</a>	string	<p>Locator of this type of channel in a form, such as a phone number, a URL or an Email address. If a URL is defined for the <i>@ChannelType</i>, it is RECOMMENDED to use the URL syntax specified in [RFC2368] for "mailto" URLs, [RFC3966] for "tel" URLs and [RFC3986] for URLs in general, as follows:</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li>"mailto:a@b.com" – instead of "a@b.com" if <i>@ChannelType</i> = "Email",</li> <li>"tel:+49-69-92058800" – if <i>@ChannelType</i> = "Phone" and "tel:+49.6151.155.299" – if <i>@ChannelType</i> = "Fax".</li> </ul>

— Attribute: **ChannelTypeDetails**

**Table 10-14: ChannelTypeDetails Attribute – predefined values for certain ChannelType values**

ChannelType value	ChannelTypeDetails value	Description
"Phone"	"Secure"	Secure phone line.
	"ISDN"	ISDN line telephone number.
"WWW"	"Form"	Upload form.
	"Target"	Upload target URL.

**Example 10-2: ComChannel for Telephone**

```
<ComChannel Class="Parameter" ID="cc000004" ChannelType="Phone"
    ChannelTypeDetails="Mobile" ChannelUsage="Business"
    Locator="tel:+44-07808-907-919" Status="Available"/>
```

**Example 10-3: ComChannel for Instant Messaging**

```
<ComChannel Class="Parameter" ID="cc000004" ChannelType="InstantMessaging"
    ChannelTypeDetails="MyIMService" ChannelUsage="Private"
    Locator="123456789" Status="Available"/>
```

## 10.12 ConvertingConfig

New in JDF 1.4

Modified in JDF 1.5

The ConvertingConfig Element describes a range of Sheet sizes. that can be used for optimizing a *DieLayoutProduction* or a press sheet for *SheetOptimizing*.

**Modification note:** moved ConvertingConfig subelement from Chapter 8, “Resources”.

### Element Properties

Element referenced by: **DieLayoutProductionParams, SheetOptimizingParams**

**Table 10-15: ConvertingConfig Element (Sheet 1 of 2)**

Name	Data Type	Description
MarginBottom ?	double	The bottom margin for positioning the layout on the Sheet.
MarginLeft ?	double	The left margin for positioning the layout on the Sheet.
MarginRight ?	double	The right margin for positioning the layout on the Sheet.
MarginTop ?	double	The top margin for positioning the layout on the Sheet.
SheetHeight ?	DoubleRange	The minimum to maximum Sheet height (pt). <b>Modification note:</b> starting in JDF 1.5, @SheetHeight is optional.
SheetHeightMax ?	double	The maximum Sheet height (pt)..
SheetHeightMin ?	double	The minimum Sheet height (pt).
SheetWidth ?	DoubleRange	The minimum to maximum Sheet width (pt). <b>Modification note:</b> starting in JDF 1.5, @SheetWidth is optional.
SheetWidthMax ?	double	The maximum Sheet width (pt).
SheetWidthMin ?	double	The minimum Sheet width (pt).

**Table 10-15: ConvertingConfig Element (Sheet 2 of 2)**

Name	Data Type	Description
<b>Device</b> *	refelementelement	The target devices (printing press, die cutter and further finishing equipment) corresponding to this configuration. Typically only the type of Device would be used (e.g., the model of the die cutter). If multiple Devices are specified, then the other Attributes in this Element SHALL apply to a production configuration that uses all specified Devices.
<b>Media</b> * <i>New in JDF 1.5</i>	refelementelement	Reference to zero or more <b>Media</b> elements that are candidates for optimization. <b>Note:</b> this element allows a media database savvy consumer to loop over an explicit range of known materials rather than providing results based on a range of dimensions only.

## 10.13 CostCenter

This Element describes an individual area of a company that has separated accounting.

### Element Properties

Element referenced by: **Notification, ResourceInfo, JobPhase, Employee, Device**

**Table 10-16: CostCenter Element**

Name	Data Type	Description
<i>CostCenterID</i>	string	Identification of the cost center
<i>Name</i> ? <i>New in JDF 1.2</i>	string	Name of the cost center.

## 10.14 Crease

Crease defines an individual crease line on a **Component**.

### Element Properties

Element referenced by: **CreasingParams, FoldingParams**

**Table 10-17: Crease Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Depth</i> ? <i>New in JDF 1.2</i>	double	Depth of the crease, measured in microns [ $\mu\text{m}$ ].
<i>RelativeStartPosition</i> ? <i>New in JDF 1.2</i>	XYPair	Relative starting position of the tool. The <i>@RelativeStartPosition</i> is always based on the complete size of the input <b>Component</b> and not on the size of an intermediate state of the folded Sheet. The allowed value range is from 0.0 to 1.0 for each component of the XYPair, which specifies the full size of the input <b>Component</b> .
<i>RelativeTravel</i> ? <i>New in JDF 1.2</i>	double	Relative distance of the reference edge relative to <i>@From</i> in the coordinates of the incoming <b>Component</b> . The <i>@RelativeTravel</i> is always based on the complete size of the input <b>Component</b> and not on the size of an intermediate state of the folded Sheet. The allowed value range is from 0.0 to 1.0, which specifies the full length of the input component.

**Table 10-17: Crease Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>RelativeWorkingPath</i> ? <a href="#">New in JDF 1.2</a>	XYPair	Relative working path of the tool beginning at <i>@RelativeStartPosition</i> . Since the tools can only work parallel to the edges, one coordinate SHALL be zero. The <i>@RelativeWorkingPath</i> is always based on the complete size of the input <b>Component</b> and not on the size of an intermediate state of the folded Sheet. The allowed value range is from 0.0 to 1.0 for each component of the XYPair, which specifies the full size of the input <b>Component</b> .
<i>StartPosition</i> ? <a href="#">Modified in JDF 1.2</a>	XYPair	Starting position of the tool. If both <i>@StartPosition</i> and <i>@RelativeStartPosition</i> are specified, <i>@RelativeStartPosition</i> is ignored. At least one of <i>@StartPosition</i> or <i>@RelativeStartPosition</i> SHALL be specified.
<i>Travel</i> ? <a href="#">New in JDF 1.2</a>	double	Distance of the reference edge relative to <i>@From</i> . If both <i>@Travel</i> and <i>@RelativeTravel</i> are specified, <i>@RelativeTravel</i> is ignored. At least one of <i>@Travel</i> or <i>@RelativeTravel</i> SHALL be specified.
<i>WorkingDirection</i> ? <a href="#">Modified in JDF 1.5</a>	enumeration	Direction from which the tool is working. <b>Allowed values are:</b> <i>Top</i> – From above. <i>Bottom</i> – From below. <b>Modification note:</b> starting in JDF 1.5, <i>@WorkingDirection</i> is optional
<i>WorkingPath</i> ?	XYPair	Working path of the tool beginning at <i>@StartPosition</i> . Since the tools can only work parallel to the edges, one coordinate SHALL be zero. If both <i>@WorkingPath</i> and <i>@RelativeWorkingPath</i> are specified, <i>@RelativeWorkingPath</i> is ignored. At least one of <i>@WorkingPath</i> or <i>@RelativeWorkingPath</i> SHALL be specified.

## 10.15 Cut

Cut describes one straight cut with an arbitrary tool.

### Element Properties

Element referenced by: [CuttingParams](#), [FoldingParams](#)

**Table 10-18: Cut Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>CutWidth</i> ? <a href="#">New in JDF 1.4</a>	double	Width in points of u-shaped knife, saw blade, etc.
<i>LowerRibbonName</i> ? <a href="#">New in JDF 1.5</a>	NMTOKEN	<i>@RibbonName</i> of the Ribbon on the side of the cut that corresponds to a lower X value of <i>@StartPosition</i> or <i>@RelativeStartPosition</i> .
<i>RelativeStartPosition</i> ? <a href="#">New in JDF 1.2</a>	XYPair	Relative starting position of the tool. The <i>@RelativeStartPosition</i> is always based on the complete size of the input <b>Component</b> and not on the size of an intermediate state of the folded Sheet. The allowed value range is from 0.0 to 1.0 for each component of the XYPair, which specifies the full size of the input <b>Component</b> .

**Table 10-18: Cut Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>RelativeWorkingPath</i> ? <a href="#">New in JDF 1.2</a>	XYPair	Relative working path of the tool beginning at <i>@RelativeStartPosition</i> . Since the tools can only work parallel to the edges, one coordinate SHALL be zero. <i>@RelativeWorkingPath</i> is always based on the complete size of the input <b>Component</b> and not on the size of an intermediate state of the folded Sheet. The allowed value range is from 0.0 to 1.0 for each component of the XYPair, which specifies the full size of the input <b>Component</b> .
<i>StartPosition</i> ? <a href="#">Modified in JDF 1.2</a>	XYPair	Starting position of the tool. If both <i>@StartPosition</i> and <i>@RelativeStartPosition</i> are specified, <i>@RelativeStartPosition</i> is ignored. At least one of <i>@StartPosition</i> or <i>@RelativeStartPosition</i> SHALL be specified.
<i>UpperRibbonName</i> ? <a href="#">New in JDF 1.5</a>	NMOKEN	<i>@RibbonName</i> of the Ribbon on the side of the cut that corresponds to a higher X value of <i>@StartPosition</i> or <i>@RelativeStartPosition</i> .
<i>WorkingDirection</i> ? <a href="#">Modified in JDF 1.5</a>	enumeration	Direction from which the tool is working. <b>Allowed values are:</b> <i>Top</i> – From above. <i>Bottom</i> – From below. <b>Modification note:</b> starting in JDF 1.5, <i>@WorkingDirection</i> is optional.
<i>WorkingPath</i> ? <a href="#">Modified in JDF 1.2</a>	XYPair	Working path of the tool beginning at <i>@StartPosition</i> . Since the tools can only work parallel to the edges, one coordinate SHALL be zero. If both <i>@WorkingPath</i> and <i>@RelativeWorkingPath</i> are specified, <i>@RelativeWorkingPath</i> is ignored. At least one of <i>@WorkingPath</i> or <i>@RelativeWorkingPath</i> SHALL be specified.

## 10.16 DeviceMark

[New in JDF 1.1](#)

Promoted from Subelement status in the **Layout** Resource with new Attributes defined below.

The **DeviceMark** Element specifies the formatting parameters for how text for a device mark should be marked. This text is provided by an associated **JobField** Element (see **Layout/MarkObject/JobField** or **LayoutElementProductionParams/JobField**).

Two methods for text layout are provided by **DeviceMark**. First, text can be placed within a bounding box defined by a containing **MarkObject** (see **MarkObject/@TrimSize** for defining the size of that bounding box). When this feature is selected, **DeviceMark/@Font**, **DeviceMark/@FontSize**, **DeviceMark/@HorizontalFitPolicy** and **DeviceMark/@VerticalFitPolicy** MAY be used to specify how text SHALL be fit within that bounding box.

The second method allows the bounding box defined by the text itself to be positioned, rotated, and scaled (along with the text). This facility operates through specifying an anchor point on that bounding box, and having the **MarkObject/@CTM** operate relative to that anchor point. **DeviceMark** Attributes that affect this method are **DeviceMark/@Font** and **DeviceMark/@FontSize**.

See figures below for illustrations of marks generated by **DeviceMark**.

**Element Properties****Element referenced by:**

[Layout/MarkObject](#), [LayoutPreparationParams](#),  
[LayoutPreparationParams/PageCell](#)

**Table 10-19: DeviceMark Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Anchor</i> ? <a href="#">New in JDF 1.4</a>	Anchor	Anchor point on or within the bounding box of the text marked by this DeviceMark that <i>MarkObject/@CTM</i> refers to. When <i>@Anchor</i> is specified, <i>MarkObject/@TrimSize</i> , <i>DeviceMark/@HorizontalFitPolicy</i> and <i>DeviceMark/@VerticalFitPolicy</i> are ignored. <b>Note:</b> the bounding box of this <b>DeviceMark</b> is defined by the extent of the text being marked.
<i>Font</i> ?	NMTOKEN	The name of the font that is to be used for the DeviceMark. <b>Values include:</b> <i>Courier</i> <i>Helvetica</i> <i>Helvetica-Condensed</i> <i>Times-Roman</i>
<i>FontSize</i> ? <a href="#">Modified in JDF 1.4</a>	double	The size of the font that is to be used for the DeviceMark, in points $\geq 0$ . <b>Modification note:</b> starting with JDF 1.4, the data type is no longer integer.
<i>HorizontalFitPolicy</i> ? <a href="#">New in JDF 1.4</a>	enumeration	<b>Allowed values are from:</b> <i>StripMark/@HorizontalFitPolicy</i> .
<i>MarkJustification</i> ? <a href="#">Deprecated in JDF 1.4</a>	enumeration	Description of the preferred DeviceMark justification. Interpreted in context of the <i>@MarkOrientation</i> . <b>Allowed values are:</b> <i>Center</i> <i>Left</i> <i>Right</i> <b>Deprecation note:</b> starting with JDF 1.4, use <i>DeviceMark/@Anchor</i> to specify the point in the bounding box defined by the text being marked relative to which <i>MarkObject/@CTM</i> is applied to.
<i>MarkOffset</i> ? <a href="#">Deprecated in JDF 1.4</a>	XYPair	Description of the preferred DeviceMark offset. Interpreted in context of the Device dependent default position in the coordinate system defined by <i>@MarkOrientation</i> . <b>Deprecation note:</b> starting with JDF 1.4, use the <i>MarkObject/@CTM</i> to appropriately place the mark.
<i>MarkOrientation</i> ? <a href="#">Deprecated in JDF 1.4</a>	enumeration	Description of the preferred DeviceMark orientation. <b>Allowed values are:</b> <i>Horizontal</i> <i>Vertical</i> <b>Deprecation note:</b> starting with JDF 1.4, use the <i>MarkObject/@CTM</i> to appropriately rotate the mark.

**Table 10-19: DeviceMark Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>MarkPosition</i> ? <a href="#">Deprecated in JDF 1.4</a>	enumeration	Description of the preferred DeviceMark position. <b>Allowed values are:</b> <i>Top</i> <i>Bottom</i> <i>Left</i> <i>Right</i> <b>Deprecation note:</b> starting with JDF 1.4, use <i>@Anchor</i> .
<i>VerticalFitPolicy</i> ? <a href="#">New in JDF 1.4</a>	enumeration	<b>Allowed values are from:</b> <i>StripMark/@VerticalFitPolicy</i>
<i>BarcodeReproParams</i> ? <a href="#">New in JDF 1.4</a>	element	Reproduction parameters for Barcodes specified in the parent <i>MarkObject/IdentificationField</i> .

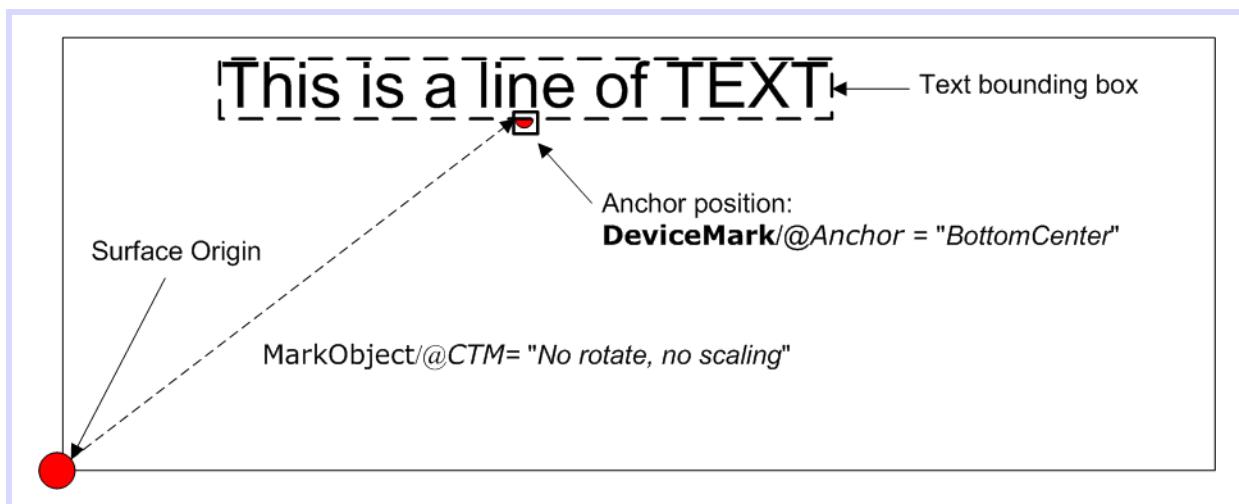
**Figure 10-1: Anchor with No Scaling and No Rotation**

Figure 10-2: Anchor with No Scaling and Rotation of 90° Clockwise

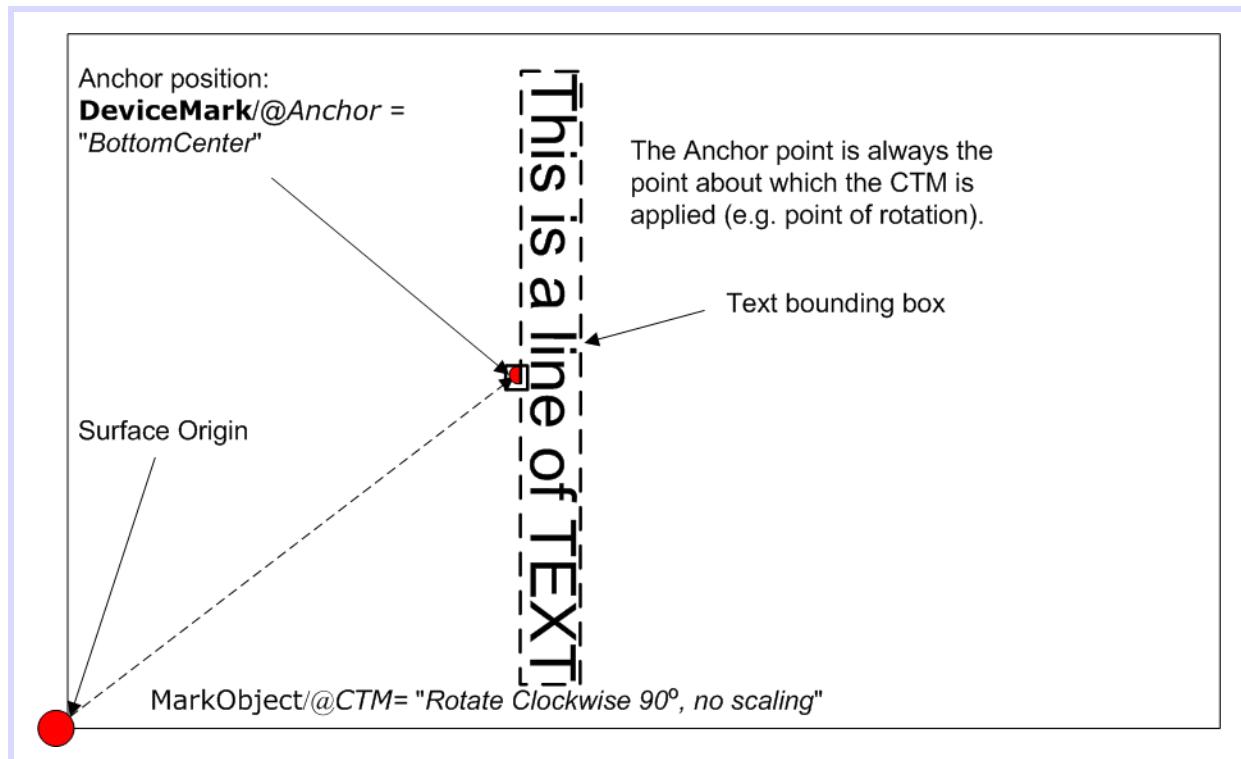
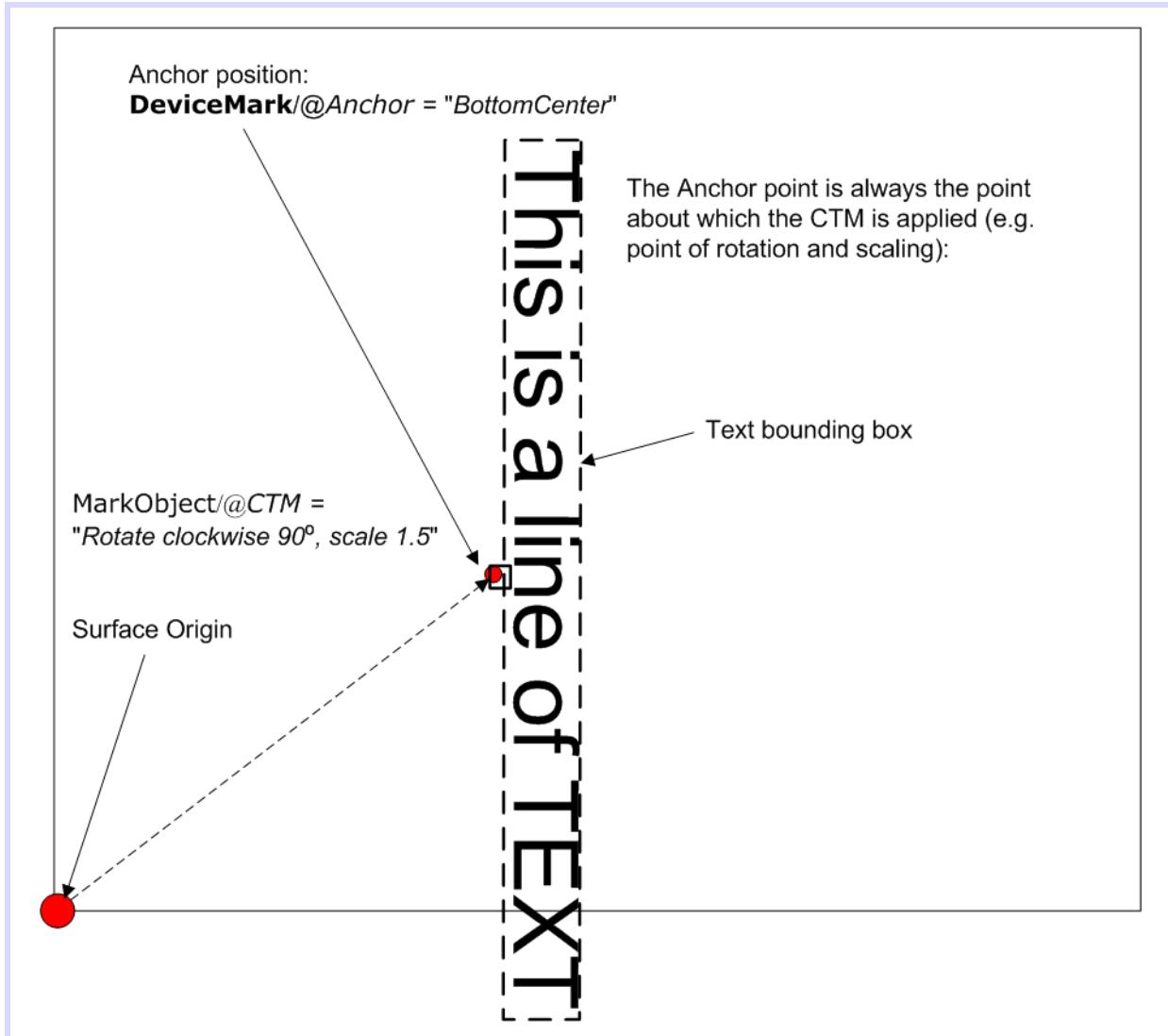


Figure 10-3: Anchor with 1.5 Scaling and Rotation of 90° Clockwise



## 10.17 DeviceNSpace

In Chapter 11 for 1.x; Subelement of ColorantControl for 2.x.

The DeviceNSpace can be used in several ways. For example, defining the specific colorants of a DeviceNSpace:

- **ColorantControl/ColorPool/@ColorantSetName** matches **ColorantControl/DeviceNSpace/@Name**, and a:
- **ColorantControl/ColorPool/Color** Resource (with correct **@Name** of colorant and other defining Attributes) exists for each colorant of the DeviceNSpace as given in:
- **ColorantControl/DeviceNSpace/SeparationSpec/@Name**

For example, defining a single colorant in terms of its values in a DeviceNSpace:

- **ColorantControl/ColorantParams** names a colorant (e.g., a Pantone spot color).
- **ColorantControl/DeviceNSpace** names a DeviceN color space, which then the

- **ColorantControl/ColorPool/@ColorantSetName** matches, and then the corresponding
- **ColorantControl/ColorPool/Color/DeviceNSpace/@ColorList** Attribute gives the set of DeviceNSpace colorant percent values necessary to construct the,
- **ColorantControl/@ColorantParams** colorant (also named **ColorantControl/ColorPool/Color/@Name**) in using DeviceNSpace colorants.

### Element Properties

Element referenced by: **ColorantControl**, **ColorSpaceConversionOp**

**Table 10-20: DeviceNSpace Element**

Name	Data Type	Description
<i>N</i>	integer	The number of colors that define the color space.
<i>Name</i> ?	string	Color space name (e.g., HexaChrome or HiFi).
<b>SeparationSpec</b> * <b>Separations</b> ? <u>Modified in JDF 1.2</u>	elementN-MTOKENS	Ordered list of colorant names that define the DeviceN color space. Note that these colorants SHALL be specified in a corresponding <b>ColorantParams</b> Element <b>@ColorantParams</b> Attribute of the <b>ColorantControl</b> or be implied by <b>@ProcessColorModel</b> . In other words, they SHALL be real, physical colorants.

## 10.18 Disjointing

The Disjointing Element describes how individual components are separated from one another on a stack.

### Element Properties

Element referenced by: **Component**, **DigitalPrintingParams**, **GatheringParams**, **StackingParams**

**Table 10-21: Disjointing Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Number</i> ?	integer	Number of Sheets that make up one component. The <b>@OffsetUnits</b> attribute specifies the type of the component. See <b>@OffsetUnits</b> for more details.
<i>Offset</i> ?	XYPair	Offset dimension in X and Y dimensions that separates the components.
<i>OffsetAmount</i> ?	integer	The number of components that are shifted in <b>@OffsetDirection</b> simultaneously. The <b>@OffsetUnits</b> attribute specifies the type of the component counted by this attribute. See <b>@OffsetUnits</b> for more details.

**Table 10-21: Disjointing Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>OffsetDirection</i> ?	enumeration	<p>Offset-shift action for the first component. A component can be offset to one of two positions—left or right.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Alternate</i> – The position of the first component of a new job is opposite to the position of the previous component and subsequent components are each offset to alternating positions. For example, if the last item in the stack was positioned to the right then the subsequent items will be positioned to the left, right, left, right and so on.</li> <li><i>Left</i> – The first component of a new job is on the left, and subsequent components are each offset to alternating positions.</li> <li><i>None</i> – Do not offset consecutive components. The position of all components is the same as the position of the previous component.</li> <li><i>Right</i> – The first component of a new job is on the right, and subsequent components are each offset to alternating positions.</li> </ul> <p><i>Straight</i> – Same as "<i>None</i>". <a href="#">Deprecated in JDF 1.2</a></p>
<i>OffsetUnits</i> ? <a href="#">New in JDF 1.5</a>	NMTOKEN	<p>This attribute specifies the type of the component counted by the <i>@OffsetAmount</i> attribute. If <i>@Number</i> is present, it specifies the number of Sheets that make up a component (e.g., if <i>@OffsetUnits</i> is "Sets", the value of <i>@Number</i> specifies the number of sheets in a Set, and <i>@OffsetAmount</i> specifies the number of Sets). If <i>@Number</i> is not specified, it is assumed that the system has an internal way to keep track of component boundaries, whatever they may be (e.g., Set or Document boundaries). In a simple, non-VDP workflow, the product of <i>@Number</i> and <i>@OffsetAmount</i> is the number of sheets between shifts or separators.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>DocCopies</i> – every individual document is counted.</li> <li><i>Docs</i> – all copies of identical documents are counted as one.</li> <li><i>Jobs</i> – entire Jobs are counted.</li> <li><i>SetCopies</i> – every individual Set is counted.</li> <li><i>Sets</i> – all copies of identical sets are counted as one.</li> <li><i>Sheets</i> – each sheet is counted.</li> <li><i>Stacks</i> – each stack is counted.</li> </ul>
<i>Overfold</i> ? <a href="#">Deprecated in JDF 1.1</a>	double	Expansion of the overfold of a Sheet. This Attribute is needed for the <b>Inserting</b> or other postpress Processes. Moved to <b>Component</b> .
<b>IdentificationField</b> * <a href="#">Modified in JDF 1.1</a>	element	Marks that identify the range of Sheets to be used in a Process. A scanner will scan the Sheets and detect a component boundary by scanning a mark (e.g., a bar code) that matches the description in the <b>IdentificationField</b> Element.
<i>InsertSheet</i> ?	refelement telelement	Some kind of physical marker (e.g., a paper strip or a yellow paper Sheet) that separates the components.

## 10.19 Disposition

New in JDF 1.2

This Element describes how long an asset SHOULD be maintained by a Device. The Device will perform an action defined by **Disposition/@DispositionAction** when a “disposition time” occurs. Disposition time is defined either as:

*Until* <= "Disposition time" <= *Until* + *ExtraDuration*  
*ProcessCompleteTime*+*MinDuration* <= "Disposition time" <= *ProcessCompleteTime*+*MinDuration*+*ExtraDuration*

### Element Properties

**Element referenced by:** ResourcePullParams, QueueSubmissionParams, SubmitQueueEntry/  
 QueueSubmissionParams, **FileSpec**, **RunList**

**Table 10-22: Disposition Element**

Name	Data Type	Description
<i>DispositionAction</i> ?= "Delete"	enumeration	<b>Allowed values are:</b> <i>Delete</i> – The asset is deleted when disposition time occurs. <i>Archive</i> – The asset is archived when disposition time occurs.
<i>DispositionUsage</i> ?	enumeration	Specifies the usage of the asset by the Process. <b>Default behavior:</b> Disposition applies to all Processes that link to the Disposition Resource (if @ <i>DispositionUsage</i> not specified). <b>Allowed values are:</b> <i>Input</i> – Disposition applies only to Processes that use the asset as an Input Resource. <i>Output</i> – Disposition applies only to Processes that use the asset as an Output Resource.
<i>ExtraDuration</i> ?	duration	Indicates the maximum duration that the Device is allowed to retain the asset after the time specified by @ <i>MinDuration</i> or @ <i>Until</i> . If @ <i>ExtraDuration</i> , @ <i>MinDuration</i> and @ <i>Until</i> are all unspecified, the asset is retained for a system specified time.
<i>MinDuration</i> ?	duration	Indicates the minimum duration that the Device SHOULD retain the asset after the Process that uses the asset completes.
<i>Priority</i> ?= "0"	integer	Value between 0 and 100 that specifies the order in which assets are deleted or archived when the values of @ <i>ExtraDuration</i> , @ <i>MinDuration</i> and @ <i>Until</i> cannot be honored (e.g., when local storage runs low). Assets with @ <i>Priority</i> = "0" will be deleted first.
<i>Until</i> ?	dateTime	Indicates an absolute point in time when the Device or application SHOULD stop the asset retention. If @ <i>Until</i> is specified, @ <i>MinDuration</i> SHALL be ignored.

## 10.20 FitPolicy

New in JDF 1.1

This Element specifies how to fit content into a receiving container (e.g., a page onto a ContentObject of an imposed sheet). See the description of each reference to **FitPolicy** to determine what the context-specific “content” is and what the “receiving container” is.

**Element Properties****Element referenced by:**

**ImageSetterParams, InterpretingParams, Layout/PlacedObject,**  
**Layout/ContentObject, Layout/MarkObject,**  
**LayoutPreparationParams, LayoutPreparationParams/PageCell,**  
**RasterReadingParams**

**Table 10-23: FitPolicy Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>ClipOffset</i> ?	XYPair	Defines the offset (position) of the imaged area in the non-rotated source image when <i>@SizePolicy</i> is " <i>ClipToMaxPage</i> ". The values 0.0 0.0 mean that the imaged area starts at the lower left point of the receiving container. If absent, the imaged area is taken from the center of the source image.  If <b>FitPolicy</b> is defined in the context of a <b>PageCell</b> , <i>@ClipOffset</i> is ignored when <b>PageCell/@ImageShift</b> is specified.
<i>GutterPolicy</i> ?= "Fixed"	enumeration	Allows printing of NUp grids even if the media size does not match the requirements of the data. <i>@GutterPolicy</i> SHALL NOT be specified when <b>FitPolicy</b> is referenced from a <b>Layout</b> Resource.  <b>Allowed values are:</b> <i>Distribute</i> – The gutters can grow or shrink to the value specified in <i>@MinGutter</i> . <i>Fixed</i> – The gutters are fixed.
<i>MinGutter</i> ?	XYPair	Minimum width in points of the horizontal and vertical gutters formed between rows and columns of pages of a multi-up Sheet layout.  The first value specifies the minimum width of all horizontal gutters and the second value specifies the minimum width of all vertical gutters.  <i>@MinGutter</i> SHALL NOT be specified when <b>FitPolicy</b> is referenced from a <b>Layout</b> resource.
<i>RotatePolicy</i> ?	enumeration	Specifies the policy for the Device to automatically rotate the content to optimize the fit of the content to the receiving container.  <b>Allowed values are:</b> <i>NoRotate</i> – Do not rotate. <i>RotateOrthogonal</i> – Rotate by 90° in either direction. <i>RotateClockwise</i> – Rotate clockwise by 90°. <i>RotateCounterClockwise</i> – Rotate counterclockwise by 90°.

**Table 10-23: FitPolicy Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>SizePolicy ?</i> <a href="#">Modified in JDF 1.1A</a>	enumeration	<p>Allows printing even if the container size does not match the requirements of the data.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>ClipToMaxPage</i> – The page contents are to be clipped to the size of the container. The printed area is either centered in the source image if no <i>@ClipOffset</i> key is given, or from that position which is determined by <i>@ClipOffset</i>.</li> <li><i>Abort</i> – Emit an error and abort printing.</li> <li><i>FitToPage</i> – The page contents are to be scaled up or down to fit the container. The aspect ratio is maintained.</li> <li><i>ReduceToFit</i> – The page contents are to be scaled down but not scaled up to fit the container. The aspect ratio is maintained.</li> <li><i>Tile</i> – the page contents are to be split into several tiles, each printed on its own surface.</li> </ul>

## 10.21 Fold

[New in JDF 1.1](#)

**Fold** describes an individual folding operation of the **Component**.

### Element Properties

Element referenced by: **FoldingIntent**, **BinderySignature**, **FoldingParams**, **Layout**/

**Table 10-24: Fold Element**

Name	Data Type	Description
<i>From</i>	enumeration	<p>Edge from which the page is folded.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Front</i></li> <li><i>Left</i></li> </ul>
<i>RelativeTravel ?</i> <a href="#">New in JDF 1.2</a>	double	Relative distance of the reference edge relative to <i>@From</i> in the coordinates of the incoming <b>Component</b> . The <i>@RelativeTravel</i> is always based on the complete size of the input <b>Component</b> and not on the size of an intermediate state of the folded Sheet. The allowed value range is from 0.0 to 1.0, which specifies the full length of the input <b>Component</b> . At least one of <i>@Travel</i> or <i>@RelativeTravel</i> SHALL be specified.
<i>To</i>	enumeration	<p>Direction in which it is folded.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Up</i> – Upwards; corresponds to a valley fold with the left/bottom side coming over the opposite side.</li> <li><i>Down</i> – Downwards; corresponds to a mountain or peak fold with the left/bottom side coming under the opposite side.</li> </ul>
<i>Travel ?</i> <a href="#">Modified in JDF 1.2</a>	double	Distance of the reference edge relative to <i>@From</i> . If both <i>@Travel</i> and <i>@RelativeTravel</i> are specified, <i>@RelativeTravel</i> is ignored. At least one of <i>@Travel</i> or <i>@RelativeTravel</i> SHALL be specified.

## 10.22 Glue

### 10.23 GlueLine

This element provides the information to determine where and how to apply glue.

All positions and paths are specified relative to the center of the glue application tool.

#### Element Properties

Element referenced by: [InsertingIntent](#), [Insert](#), [BoxFoldingParams](#), [BoxFoldingParams](#)/  
[BoxFoldAction](#), [CaseMakingParams](#), [EndSheetGluingParams](#)/  
[EndSheet](#), [GlueApplication](#), [GluingParams](#)/Glue, [GluingParams](#)/  
[Glue](#), [HeadBandApplicationParams](#), [InsertingParams](#),  
[ThreadSewingParams](#), [MediaLayers](#),

**Table 10-25: GlueLine Element (Sheet 1 of 2)**

Name	Data Type	Description
<a href="#">AreaGlue ?= "false"</a> <a href="#">New in JDF 1.1</a>	boolean	Specifies that this <a href="#">GlueLine</a> SHOULD cover the complete width of the <a href="#">Component</a> it is applied to.
<a href="#">GlueBrand ?</a>	string	Glue brand.
<a href="#">GlueLineWidth ?</a>	double	Width of the glue line in points. If not specified, the default behavior depends on the value of <a href="#">@AreaGlue</a> : If <a href="#">@AreaGlue = "true"</a> , then the implied width is the width of the <a href="#">Component</a> . If <a href="#">@AreaGlue = "false"</a> , then the implied width is the system dependent glue line width. Note that in extreme cases, the glue line could cover the input component over the whole width.
<a href="#">GlueRef ?</a>	IDREF	Reference to a <a href="#">MiscConsumable</a> that represents the physical glue.
<a href="#">GlueType ?</a>	enumeration	Glue type. <b>Allowed values are:</b> <i>ColdGlue</i> – Any type of glue that needs no heat treatment. <i>Hotmelt</i> – Hotmelt EVA (Ethyl-Vinyl-Acetate-Copolymere) <i>Permanent</i> – Any glue that is designed not to be removed. <i>PUR</i> – Polyurethane <i>Removable</i> – Any glue that is designed to be removed.
<a href="#">GluingPattern ?</a> <a href="#">Modified in JDF 1.3</a>	NumberList	Glue line pattern defined by the length of a glue line segment (1st Element, 3rd and all odd elements of the NumberList) and glue line gap (2nd Element, 4th and all even elements of the NumberList). A solid line is expressed by the pattern (1 0). <a href="#">@GluingPattern</a> SHALL contain an even number of entries. If the total length of <a href="#">@GluingPattern</a> is less than <a href="#">@WorkingPath</a> or the length implied by <a href="#">@RelativeWorkingPath</a> , the pattern restarts after the last gap. If the total length of <a href="#">@GluingPattern</a> is larger than <a href="#">@WorkingPath</a> or the length implied by <a href="#">@RelativeWorkingPath</a> , the pattern is clipped at the end.

**Table 10-25: GlueLine Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>GluingTechnique</i> ?	enumeration	When Glue is specified in the context of hard cover binding, then <i>@GluingTechnique</i> specifies the technique of gluing operation. <b>Allowed values are:</b> <i>SpineGluing</i> <i>SideGluingFront</i> <i>SideGluingBack</i>
<i>MeltingTemperature</i> ?	integer	Temperature needed for melting the glue, in degrees centigrade. Used only when <i>@GlueType</i> = "Hotmelt" or <i>@GlueType</i> = "PUR".
<i>RelativeStartPosition</i> ? <a href="#">New in JDF 1.2</a>	XYPair	Relative starting position of the tool. The <i>@RelativeStartPosition</i> is always based on the complete size of the input <b>Component</b> and not on the size of an intermediate state of the folded Sheet. The allowed value range is from 0.0 to 1.0 for each component of the XYPair, which specifies the full size of the input <b>Component</b> .
<i>RelativeWorkingPath</i> ? <a href="#">New in JDF 1.2</a>	XYPair	Relative working path of the tool beginning at <i>@RelativeStartPosition</i> . The <i>@RelativeWorkingPath</i> is always based on the complete size of the input <b>Component</b> and not on the size of an intermediate state of the folded Sheet. The allowed value range is from 0.0 to 1.0 for each component of the XYPair, which specifies the full size of the input <b>Component</b> .
<i>StartPosition</i> ? <a href="#">Modified in JDF 1.2</a>	XYPair	Start position of glue line. The start position is given in the coordinate system of the mother Sheet. If both <i>@StartPosition</i> and <i>@RelativeStartPosition</i> are specified, <i>@RelativeStartPosition</i> is ignored.
<i>WorkingDirection</i> ?	enumeration	Direction from which the Glue should be applied to the <b>Component</b> . <b>Allowed values are:</b> <i>Back</i> – Back side of of a sheet or product <i>Bottom</i> – Bottom of a product <i>Front</i> – Front side of of a sheet or product <i>Left</i> – Left side of a product, e.g. the spine of a left bound book. <i>Right</i> – Right side of a product, e.g. the spine of a right bound book. <i>Top</i> – Top of a product
<i>WorkingPath</i> ? <a href="#">Modified in JDF 1.2</a>	XYPair	Relative working path of the gluing tool. If both <i>@WorkingPath</i> and <i>@RelativeWorkingPath</i> are specified, <i>@RelativeWorkingPath</i> is ignored.

## 10.24 HolePattern

The **HolePattern** Resource describes [an individual a pattern of one or more holes](#).

**HolePattern** MAY be used to describe line hole punching which generates a series of holes with identical distance (pitch) running parallel to the edge of a Web, which is mainly used to transport paper through continuous-feed printers and finishing Devices (form processing). The final product typically is a Web with two lines of holes, one at each edge of the Web. The distance between holes within each line of holes is identical (constant pitch). In case of line hole punching *@Center* applies to the initial hole and *@Extent* applies to each hole individually.

**Default behavior for @HoleCount:** For dealing with the Default case of @HoleCount (i.e., when not supplied), intelligent systems will take into consideration Job's like the length of the binding edge or distance of holes to the paper edges to calculate the appropriate number of holes. For production of the holes and selection/production of the matching binding Element, the “system specified” values need to match 100% between the **HoleMaking** and the binding Process for obvious reasons. In practice, if no details are specified for **HoleMaking**, they SHOULD also be absent for binding. In this case, either the operator provides the missing value when setting up the binding Device for the Job, or the Device itself needs to have some kind of automatic hole detection mechanism.

## Element Properties

Element referenced by: [HoleLine](#), [HoleList](#), [HoleMakingParams](#)

**Table 10-26: HolePattern Element**

Name	Data Type	Description
<i>Center</i> ?	XYPair	Position of the center of the hole relative to the <b>Component</b> coordinate system. For more information, see Section 6.7.2, “HoleMaking”.
<i>CenterReference</i> ?	enumeration	Defines the reference coordinate system for @Center. <b>Allowed values are:</b> <i>TrailingEdge</i> – Physical coordinate system of the component. <i>RegistrationMark</i> – The center is relative to a registration mark.
<i>Extent</i> ?	XYPair	Size (Bounding Box) of <i>the each</i> hole, in points. If @Shape is "Round", only the first entry of @Extent is evaluated and defines the hole diameter.
<i>HoleCount</i> ?	IntegerList	@HoleCount specifies the number of consecutive holes and spaces. The first entry defines the number of holes, the second entry defines the number of spaces, and consecutive entries alternately define holes (h) and spaces (s), for instance: "2 2 2" = "h h s s h h". "0 3 3 3 3" = "s s s h h s s s h h h". Note: @HoleCount is typically applied to patterns with @HoleType whose enumeration values begin with a "P", "W" or "C" in Table M-1, “Naming Scheme for Hole Patterns”
<i>Pattern</i> ?	NMTOKEN	Prefined hole pattern. <b>Allowed values are:</b> from: Section M, “JDF XJDF/CIP4 Hole Pattern Catalog” on page 1239
<i>Pitch</i> ?	XYPair	If @Pitch is specified, this <b>HolePattern</b> represents a line of holes. Center-hole to center-hole distance within a line of hole and @Pitch represents the distance between the centers of two adjacent holes. If neither @Pitch nor @Pattern is specified, this <b>HolePattern</b> represents an individual hole.s.
<i>Shape</i> ? <a href="#">Modified in JDF 1.1</a>	enumeration	Shape of the hole. <b>Allowed values are:</b> <i>Elliptic</i> <i>Round</i> <i>Rectangular</i>

**Table 10-26: HolePattern Element**

Name	Data Type	Description
ReferenceEdge ?	enumeration	The edge of the <b>Component</b> relative to where the holes SHALL be placed. <b>Allowed values are:</b> <i>Left</i> <i>Right</i> <i>Top</i> <i>Bottom</i> <i>Pattern</i> – Specifies that the reference edge implied by the value of <i>@Pattern</i> in Section M, “JDF XJDF/CIP4 Hole Pattern Catalog” on page 1239

## 10.25 HoleLine

New in JDF 1.1

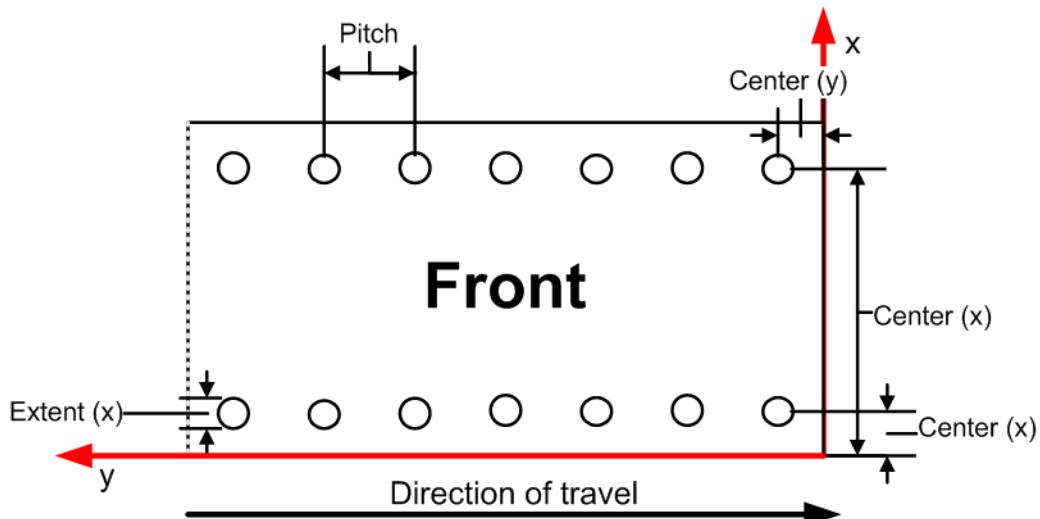
Line hole punching generates a series of holes with identical distance (pitch) running parallel to the edge of a Web, which is mainly used to transport paper through continuous-feed printers and finishing Devices (form processing). The final product typically is a Web with two lines of holes, one at each edge of the Web. The parameters for one line of holes are specified in the **HoleLine** Resource. The distance between holes within each line of holes is identical (constant pitch).

### Element Properties

Element referenced by: **HoleList, HoleMakingParams**

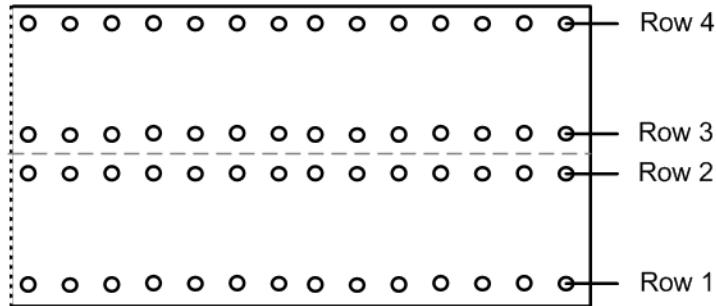
**Table 10-27: HoleLine Element**

Name	Data Type	Description
Pitch	double	Center-hole to center-hole distance within a line of holes.
HolePattern	element	Size and position of the first hole in the <b>HoleLine</b> .

**Figure 10-4: Hole line parameters**

However, sometimes Line Hole Punching is performed for multiple webs before dividing the Web after the **HoleMaking** Process as illustrated in Figure 10-5 below:

**Figure 10-5: Line hole punching for multiple webs**



## 10.26 InsertSheet

**InsertSheet** Resources define Device generated images and Sheets which can be produced along with the Job. **InsertSheet** Elements include separators Sheets, error Sheets, accounting Sheets and Job Sheets. The information provided on the Sheet depends on the type of Sheet. In some cases, an **Imposition** Process can encounter **RunList** Elements that do not provide enough finished pages to complete a **Layout** Resource or its children. **InsertSheet** Resources are used to provide a standard way of completing such **Layout** Resources. **InsertSheet** Resources MAY also be used to start new Sheet Resources (e.g., to ensure that a new chapter starts on a right-hand page). In addition, **InsertSheet** MAY specify whether new media are to be inserted after the current Sheet, Signature, Instance Document or Job is completed.

**InsertSheet** Elements MAY be used at the beginning or end of **RunList** with a **@SheetUsage** Attribute of "**Header**" or "**Trailer**". When an **InsertSheet** appears **both** in a **RunList** and in a **Layout**, the following precedence applies:

- 1 The **InsertSheet** with **@Usage "FillSurface"** from the **RunList** is applied first.
- 2 The **InsertSheet** with **@Usage "FillSheet"** from the **RunList** is applied.
- 3 The **InsertSheet** with **@Usage "FillSignature"** from the **RunList** is applied.
- 4 After completely processing the **RunList** **InsertSheet** Elements once, apply the **Layout** Partition's **InsertSheet** Elements.

If the **RunList** of the **InsertSheet** does not supply enough content to fill a Sheet, Signature or surface, the **RunList** will be reapplied until no **PlacedObject** **PlacedObject** slots remain to be filled. When an **InsertSheet** is used in a **RunList** of a Process that does not use a **Layout** or **LayoutPreparationParams** Resource (i.e., that Process is not a part of a Combined Process with **Imposition** or **LayoutPreparation**), only **@Usage "Header"** or **"Trailer"** are valid.

**Table 10-28: InsertSheet Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>IncludeInBundleItem</i> ? <a href="#">New in JDF 1.2</a>	enumeration	<p>Defines bundle items when this <b>InsertSheet</b> is not a Subelement of <b>RunList</b>. If this <b>InsertSheet</b> is a Subelement of a <b>RunList</b>, then <i>@IncludeInBundleItem</i> SHALL be ignored, and <b>RunList</b>/<i>@EndOfBundleItem</i> SHALL be used instead. As an example, <i>@IncludeInBundleItem</i> controls whether the <b>InsertSheet</b> is to be included in a bundle item for purposes of finishing the <b>InsertSheet</b> with other Sheets.</p> <p><b>Allowed values are:</b></p> <p><i>After</i> – This <b>InsertSheet</b> is to be included in the BundleItem that occurs after this <b>InsertSheet</b>. "After" is equivalent to "None" if no BundleItem is defined after this <b>InsertSheet</b></p> <p><i>Before</i> – This <b>InsertSheet</b> is to be included in the BundleItem that occurs before this <b>InsertSheet</b>. "Before" is equivalent to "None" if no BundleItem is defined before this <b>InsertSheet</b>.</p> <p><i>None</i> – This <b>InsertSheet</b> is not included in a BundleItem.</p> <p><i>New</i> – A new BundleItem is created. This <b>InsertSheet</b> will be in the new BundleItem by itself unless another <b>InsertSheet</b> with <i>@IncludeInBundleItem = "Before"</i> occurs immediately after this <b>InsertSheet</b>.</p>
<i>IsWaste</i> ? <a href="#">New in JDF 1.1</a>	boolean	Specifies whether the <b>InsertSheet</b> is waste that is to be removed from the document before further processing. If "true", the <b>InsertSheet</b> is to be discarded when finishing the document.
<i>MarkList</i> ? <a href="#">New in JDF 1.1</a>	NMTOKENS	<p>List of marks that are to be marked on this <b>InsertSheet</b>. Ignored if a Sheet is specified in this <b>InsertSheet</b>.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>CIELABMeasuringField</i></li> <li><i>ColorControlStrip</i></li> <li><i>ColorRegisterMark</i></li> <li><i>CutMark</i></li> <li><i>DensityMeasuringField</i></li> <li><i>IdentificationField</i></li> <li><i>JobField</i></li> <li><i>PaperPathRegisterMark</i></li> <li><i>RegisterMark</i></li> <li><i>ScavengerArea</i></li> </ul>

**Table 10-28: InsertSheet Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>SheetFormat</i> ? <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.2</a>	NMTOKEN	<p>Identifies that Device-dependent information is to be included on the <b>InsertSheet</b>.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Blank</i></li> <li><i>Brief</i></li> <li><i>Duplicate</i> – Valid for <i>@SheetUsage</i> = "Interleaved" or "InterleavedBefore". Specifies that the interleaved Sheet is to contain the same (duplicate) content as the previous ("Interleaved") or following ("InterleavedBefore") Sheet. If there is content on both sides of the previous or following Sheet (duplex), then the <b>InsertSheet</b> has both sides duplicated. <a href="#">New in JDF 1.2</a></li> <li><i>Full</i></li> <li><i>Standard</i></li> </ul>
<i>SheetType</i> <a href="#">New in JDF 1.1</a>	enumeration	<p>Identifies the type of Sheet.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>AccountingSheet</i> – A Sheet that reports accounting information for the Job.</li> <li><i>ErrorSheet</i> – A Sheet that reports errors for the Job.</li> <li><i>FillSheet</i> – A Sheet that fills ContentObject Elements with no matching entry in the content <b>RunList</b>.</li> <li><i>InsertSheet</i> – A Sheet that is inserted to the Job (e.g., a preprinted cover).</li> <li><i>JobSheet</i> – A Sheet that delimits the Job.</li> <li><i>SeparatorSheet</i> – A Sheet that delimits pages, sections, copies or Instance Documents of the Job.</li> </ul>
<i>SheetUsage</i> <a href="#">New in JDF 1.1</a> <a href="#">Modified in JDF 1.2</a>	enumeration	<p>Indicates where this <b>InsertSheet</b> is to be produced and inserted into the set of output pages.</p> <p><b>Allowed values are from:</b> Table 10-29, "SheetUsage Attribute Values".</p>
<i>Usage</i> ? <a href="#">Deprecated in JDF 1.1</a>	enumeration	<p><b>Allowed values are from:</b> <i>@SheetUsage</i>.  <b>Deprecation note:</b> starting with JDF 1.1, use <i>@SheetUsage</i>.</p>
<i>Layout</i> ? <i>LayoutRef</i> ? <a href="#">New in JDF 1.3</a>	refelementI-DREF	<p>Details of the Sheet that will be inserted. Contents for this <b>Layout</b> are drawn from the <b>RunList</b> included in this <b>InsertSheet</b> if any. If not specified, the system specified insert Sheets are used. Any <b>InsertSheet</b> Resources referenced by this <b>Layout</b> are ignored.</p>
<i>RunList</i> ?	refelementele- ment	<p>A <b>RunList</b> that provides the content for the <b>InsertSheet</b>. Any <b>InsertSheet</b> Resources referenced by this <b>RunList</b> are ignored. This <b>RunList</b> SHALL NOT contain further <b>InsertSheet</b> elements.</p>
<i>Sheet</i> ? <a href="#">Deprecated in JDF 1.3</a>	refelement	<p>Details of the <b>Sheet</b> that will be inserted. Contents for this <b>Sheet</b> are drawn from the <b>RunList</b> included in this <b>InsertSheet</b> if any. If not specified, the system specified insert Sheets are used. Any <b>InsertSheet</b> Resources referenced by this <b>Sheet</b> are ignored.  <b>Deprecation note:</b> starting with JDF 1.3, use <b>Layout</b>.</p>

## — Attribute: SheetUsage

**Table 10-29: SheetUsage Attribute Values (Sheet 1 of 2)**

Value	Description
<i>FillForceBack</i>	<p>Valid for <code>@SheetType = "FillSheet"</code>. Contents of the <b>RunList</b> of the <b>InsertSheet</b> are used to fill the next Finished front Page of the current Sheet before forcing the next page of the content <b>RunList</b> to the next Finished back Page if not already on a Finished back Page.</p> <p><b>Modification note:</b> starting with JDF 1.4, this value applies to Finished pages rather than sheet surfaces.</p>
<i>FillForceFront</i>	<p>Valid for <code>@SheetType = "FillSheet"</code>. Contents of the <b>RunList</b> of the <b>InsertSheet</b> are used to fill the next Finished back Page of the current Sheet before forcing the next Page of the content <b>RunList</b> to the next Finished front Page if not already on a Finished front Page. A typical use is to start a chapter on the front side of the Finished Page.</p> <p><b>Modification note:</b> starting with JDF 1.4, this value applies to Finished pages rather than sheet surfaces.</p>
<i>FillSheet</i>	<p>Valid for <code>@SheetType = "FillSheet"</code>. Contents from the <b>RunList</b> of the <b>InsertSheet</b> are used to fill the current Sheet.</p>
<i>FillSignature</i>	<p>Valid for <code>@SheetType = "FillSheet"</code>. Contents from the <b>RunList</b> of the <b>InsertSheet</b> are used to fill the current Signature.</p>
<i>FillSurface</i>	<p>Valid for <code>@SheetType = "FillSheet"</code>. Contents from the <b>RunList</b> of the <b>InsertSheet</b> are used to fill the current surface.</p>
<i>Header</i>	<p>Valid for <code>@SheetType = "InsertSheet", "JobSheet" or "SeparatorSheet"</code>. The Sheet is produced at the beginning of the Job (for <i>JobSheet</i>), or at the beginning of each copy of each Instance Document (for <i>SeparatorSheet</i>), or is appended before the current Sheet, Signature, layout or <b>RunList</b> as defined by its context. Contents for the Sheet are drawn from the <b>RunList</b> included in this <b>InsertSheet</b> Resource if one is included. If a <b>RunList</b> is not included, the inserted Sheet is filled with system-specified content defined by <code>@SheetType</code>.</p>
<i>Interleaved</i>	<p>Valid for <code>@SheetType = "SeparatorSheet"</code>. The Sheet is produced after each page (e.g., used to insert Sheets under transparencies). Contents for the Sheet are drawn from the <b>RunList</b> included in this <b>InsertSheet</b> Resource if one is included. If a <b>RunList</b> is not included, the inserted Sheet is filled with system-specified content defined by <code>@SheetType = "SeparatorSheet"</code>.</p>
<i>InterleavedBefore</i> <u>New in JDF 1.2</u>	<p>Valid for <code>@SheetType = "SeparatorSheet"</code>. The Sheet is produced before each page (e.g., used to insert Sheets before transparencies). Contents for the Sheet are drawn from the <b>RunList</b> included in this <b>InsertSheet</b> Resource if one is included. If a <b>RunList</b> is not included, the inserted Sheet is filled with system-specified content defined by <code>@SheetType = "SeparatorSheet"</code>.</p>
<i>OnError</i>	<p>Valid for <code>@SheetType = "ErrorSheet"</code>. The Sheet is produced at the end of the Job only when an error or warning occurs.</p>
<i>Slip</i>	<p>Valid for <code>@SheetType = "SeparatorSheet"</code>. The Sheet is produced between each copy of each Instance Document. Contents for the Sheet are drawn from the <b>RunList</b> included in this <b>InsertSheet</b> Resource if one is included. If a <b>RunList</b> is not included, the inserted Sheet is filled with system-specified content defined by <code>@SheetType = "SeparatorSheet"</code>.</p>

**Table 10-29: SheetUsage Attribute Values (Sheet 2 of 2)**

Value	Description
<i>SlipCopy</i>	Valid for <code>@SheetType = "SeparatorSheet"</code> . The Sheet is produced between each copy of the Job, which is defined to be when the complete <b>RunList</b> has been consumed. Contents for the Sheet are drawn from the <b>RunList</b> included in this <b>InsertSheet</b> Resource if one is included. If a <b>RunList</b> is not included, the inserted Sheet is filled with system-specified content defined by <code>@SheetType = "SeparatorSheet"</code> .
<i>Trailer</i>	Valid for <code>@SheetType = "AccountingSheet", "ErrorSheet", "InsertSheet", "JobSheet" and "SeparatorSheet"</code> . The Sheet is produced at the end of the Job (for <code>"AccountingSheet"</code> , <code>"ErrorSheet"</code> and <code>"JobSheet"</code> ), or at the end of each copy of each Instance Document (for <code>"SeparatorSheet"</code> ), or is appended after the current Sheet, Signature, layout or <b>RunList</b> as defined by its context. Contents for the Sheet are drawn from the <b>RunList</b> included in this <b>InsertSheet</b> Resource if one is included. If a <b>RunList</b> is not included, the inserted Sheet is filled with system specified content defined by <code>SheetType</code> . <b>Note:</b> use <code>@SheetType = "ErrorSheet"</code> and <code>@SheetUsage = "Trailer"</code> to always produce a Sheet that contains error or success information even if no errors or warnings occurred.

## 10.27 JobField

[New in JDF 1.1](#)

A **JobField** is a **Mark** object that specifies the details of a Job. The **JobField** Elements are also referred to as slug lines.

### Element Properties

Element referenced by: [Layout/MarkObject](#), [LayoutPreparationParams](#), [StripMark](#)

**Table 10-30: JobField Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>JobFormat</i> ? <a href="#">New in JDF 1.4</a>	string	A formatting string used with <code>@JobTemplate</code> to generate a string. <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.
<i>JobTemplate</i> ? <a href="#">New in JDF 1.4</a>	string	A list of values used with <code>@JobFormat</code> to generate a string. <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.
<i>OperatorText</i> ?	string	Text from the operator. <a href="#">Note that this was erroneously described as text to the operator in JDF 1.1 and below.</a> <b>Constraint:</b> starting with JDF 1.4, if <code>@JobFormat</code> and <code>@JobTemplate</code> are specified, <code>@ShowList</code> , <code>@OperatorText</code> and <code>@UserText</code> SHALL NOT be specified.

**Table 10-30: JobField Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>ShowList ?</i> <a href="#">Modified in JDF 1.4</a>	NMTOKENS	List of elements to display in the JobField. <b>Constraint:</b> starting with JDF 1.4, if @JobFormat and @JobTemplate are specified, @ShowList, @OperatorText and @UserText SHALL NOT be specified. <b>Values include those from:</b> Table I-1, “Predefined variables used in @XXXTemplate and @ShowList” on page 1171. <a href="#">New in JDF 1.4</a> <b>Modification note:</b> starting with JDF 1.4, the values come from a common list rather than a list that is custom to this Element. In addition, @ShowList becomes optional.
<i>UserText ?</i>	string	User-defined text to output with JobField. <b>Constraint:</b> starting with JDF 1.4, if @JobFormat and @JobTemplate are specified, @ShowList, @OperatorText and @UserText SHALL NOT be specified.
<i>DeviceMark ?</i> <a href="#">Modified in JDF 1.3</a> <a href="#">Deprecated in JDF 1.4</a>	element	DeviceMark defines the formatting parameters for the mark. If not specified, the settings defined in <b>LayoutPreparationParams</b> /DeviceMark are assumed. <b>Deprecation note:</b> starting with JDF 1.4, DeviceMark SHALL be specified in the parent <b>MarkObject</b> Element.

## 10.28 MarkColor

[New in JDF 1.5](#)

Definition of the separations used to fill a dynamic mark.

### Element Properties

Element referenced by: FillMark, StripMark

**Table 10-31: MarkColor Element**

Name	Data Type	Description
<i>Name</i>	string	Name of the Separation
<i>Tint</i>	double	Value from 0 (not used) to 1 (100% tint) of the Separation specified in @Name.

## 10.29 MediaLayers

MediaLayers contains an ordered list of Subelements. Each Subelement describes an individual layer of a layered **Media** Resource. The first layer in MediaLayers is the front layer of the **Media** until the last layer, which defines the back.

### Element Properties

Element referenced by: **MediaIntent**, **Media**

**Table 10-32: MediaLayers Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>GlueLine *Glue *</i>	element	<b>GlueLineGlue</b> Resource describing a glue layer of a layered <b>Media</b> Resource. Each <b>GlueLineGlue</b> Resource SHALL have <b>GlueLineGlue/@AreaGlue = "true"</b> .

**Table 10-32: MediaLayers Element (Sheet 2 of 2)**

Name	Data Type	Description
Media *	refelement	Media Resources describing a layer of a layered Media Resources.

## 10.30 MetadataMap

[New in JDF 1.4](#)

The MetadataMap in RunList allows metadata embedded in PDL files to be assigned to Partition Key values, certain RunList Attributes, or Attributes created using GeneralID. During the mapping of PDL data to the **JDF XJDF** document structure (see the definition in the glossary or the discussion in the **Imposition** Process), each MetadataMap Element will be evaluated for each node (Set, Document, Page, etc.) of the PDL document structure. For XML based PDL files an XPath expression will be evaluated relative to the XML node that defines each node in the document hierarchy. For non-XML based PDLs a PDL specific mapping of the XPath to the PDL document structure is used instead and the value assignment is performed on the derived XML for the PDL file. If the path specified by the XPath does not exist in the PDL, then the associated metadata value is undefined, otherwise the metadata value will be set to the conversion of the node list to a string.

When MetadataMap is specified in the context of an **IdentificationField**, data can be extracted from the barcode represented by the **IdentificationField**.

### Element Properties

Element referenced by: **IdentificationField, RunList**

**Table 10-33: MetadataMap Element (Sheet 1 of 3)**

Name	Data Type	Description
Context ?= "PagePool"	enumeration	<p>Specifies the node context in which the XPaths specified in this MetadataMap Element are to be evaluated.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Set</i> – evaluated relative to the current set node.</li> <li><i>Document</i> – evaluated relative to the current document node.</li> <li><i>SubDoc0</i> – evaluated relative to the current subdocument immediately below the Document level.</li> <li><i>SubDoc1</i> – evaluated relative to the current subdocument immediately below "SubDoc0" level.</li> <li><i>SubDoc2</i> – see "SubDoc1", but relative to "SubDoc1" level.</li> <li><i>SubDoc3</i> – see "SubDoc1", but relative to "SubDoc2" level.</li> <li><i>SubDoc4</i> – see "SubDoc1", but relative to "SubDoc3" level.</li> <li><i>SubDoc5</i> – see "SubDoc1", but relative to "SubDoc4" level.</li> <li><i>SubDoc6</i> – see "SubDoc1", but relative to "SubDoc5" level.</li> <li><i>SubDoc7</i> – see "SubDoc1", but relative to "SubDoc6" level.</li> <li><i>SubDoc8</i> – see "SubDoc1", but relative to "SubDoc7" level.</li> <li><i>SubDoc9</i> – see "SubDoc1", but relative to "SubDoc8" level.</li> <li><i>PagePool</i> – evaluated relative to the current Page Pool.</li> <li><i>Page</i> – evaluated relative to the current page.</li> <li><i>Object</i> – evaluated for each unique object on each page.</li> </ul>

Table 10-33: MetadataMap Element (Sheet 2 of 3)

Name	Data Type	Description
<i>DataType</i> ?	enumeration	<p>Expected data type of the metadata value.</p> <p><b>Allowed values are:</b></p> <p><i>PartIDKeys</i> – with this value, <i>@Name</i> SHALL match a Partition Key.</p> <p><b>Allowed values are also from:</b> GeneralID/<i>@DataType</i>.</p>
<i>Name</i> ?	NMTOKEN	<p>The name of the metadata.</p> <p>If <i>@DataType</i> = "PartIDKeys", the value of <i>@Name</i> SHALL be a <i>@PartIDKeys</i> value. See <a href="#">@PartIDKeys in Table 3-32</a>, <a href="#">"Partitionable Resource Element" on page 128</a> <a href="#">Table 3-15</a>, "Part Element" on page 85.</p> <p>If <i>@Name</i> = "ObjectTags", then values are added to a logical pool of tag values associated with each object being processed. This pool of object tags is referenced from: <b>ColorSpaceConversionParams/ColorSpaceConversionOp/@ObjectTags</b>, <b>ScreeningParams/ScreenSelector/@ObjectTags</b>, <b>ObjectResolution/@ObjectTags</b>, <b>ColorCorrectionParams/ColorCorrectionOp/@ObjectTags</b>.</p> <p>Otherwise, <i>@Name</i> specifies the value of an implied variable (e.g., for use in <b>GeneralID/@IDUsage</b>, <b>RunList/@EndOfSet</b>, <b>RunList/@SetCopies</b>, <b>RunList/@PageCopies</b>, or <b>RunList/@DocCopies</b>).</p> <p>If <i>@DataType</i> is not "PartIDKeys" or a <b>RunList</b> implied variable name (e.g., <b>RunList/@DocCopies</b>), then the <b>MetadataMap</b> Element is equivalent to explicitly defining a <b>GeneralID</b> Element with the value being assigned by <b>MetadataMap/@ValueFormat</b>. The following example counts the number of <b>Page</b> Elements within all <b>DocPart</b> Elements.</p> <pre>&lt;MetadataMap DataType="integer" Name="NumPages"     ValueFormat="%d" ValueTemplate="npages"&gt;     &lt;Expr Name="npages"         Path="count(..../DocPart/Page)"&gt; &lt;/MetadataMap&gt;</pre> <p>If multiple <b>MetadataMap</b> Elements specify the same name, then the specified key has the value from the last <b>MetadataMap</b> Element to assign a value to that key.</p> <p>If the specified <i>@Name</i> sets the value for a <i>@PartIDKeys</i> or <b>RunList</b> variable, where a <b>RunList</b> Attribute also supplies a value (e.g., <b>RunList/@RunTag</b>, <b>RunList/@DocCopies</b>, etc.), the value supplied by the <b>RunList</b> Attribute shall be replaced by the value supplied by the <b>MetadataMap</b>.</p>
<i>ValueFormat</i> ?	string	<p>Formatting value for combining extracted values from the <b>Expr</b> Elements.</p> <p><b>Allowed values are from:</b> Appendix I, "Generating strings with Format and Template" on page 1171.</p>

**Table 10-33: MetadataMap Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>ValueTemplate</i> ?	string	Arguments for combining extracted values from the Expr Elements. The argument names SHALL match the values of Expr/@Name. <b>Allowed values are from:</b> Appendix I, “Generating strings with Format and Template” on page 1171.
Expr * <a href="#">Modified in JDF 1.4</a>	element	Each Expr Element describes a Term expression (see Section 9.1.13, “Term” on page 993 and Section 9, “Device Capabilities” on page 949) evaluating metadata values in the PDL. If Expr/Term is not specified, or if the Term expression returns true, then the value specified by the Expr element is assigned to the key specified by MetadataMap/@Name. Expr Elements are evaluated in the XML order specified. Expr Elements with identical @Name Attributes where a previous Expr Element with that @Name has already evaluated to true SHALL NOT be processed. If any name specified in MetadataMap/@ValueTemplate is unassigned, then the key specified by MetadataMap/@Name is undefined. All Expr Elements return string values. These values will be type converted as necessary during processing of @ValueFormat and @ValueTemplate (See Section I, “Generating strings with Format and Template”). <b>Note:</b> if @ValueFormat contains a constant string with no format specifiers, then it is not necessary to define any Expr Elements. <b>Modification note:</b> starting with JDF 1.4, Expr MAY be omitted.

**10.30.1 Element: Expr**[New in JDF 1.4](#)**Table 10-34: Expr Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Name</i> ?	NMTOKEN	Name of this Expr. The value (as specified by @Value or extracted from @Path) SHALL be used to evaluate the parent @ValueTemplate.
<i>Path</i> ?	XPath	If specified, and either the value returned by the Term Element (if present) is true or no Term Element is specified, then the value specified by this path is assigned to Expr/@Name. If the XPath specified by @Path does not evaluate to a value such as a string or number, then this Expr Element fails and any subsequent Expr Elements are evaluated. If the XPath points to an Element, then an implied XPath text() function is executed. The value is converted into a string when returned by the Expr Element. The value returned when the XPath results in a node set is undefined. <b>Constraint:</b> exactly one of @Path or @Value SHALL be specified in an Expr Element.
<i>Value</i> ?	string	If specified, and either the value returned by the Term Element (if present) is true or no Term Element is specified, then the value of this Attribute is assigned to Expr/@Name. <b>Constraint:</b> exactly one of @Path or @Value SHALL be specified in an Expr element.

**Table 10-34: Expr Element (Sheet 2 of 2)**

Name	Data Type	Description
Term ?	element	Evaluates one or more metadata values from the PDL, and returns a true or false result. Evaluation/@Path SHALL be specified for all Evaluation Elements in the Term hierarchy.

For PPML the XPath expression will be relative to the JOB, DOCUMENT or PAGE element. Example XPath expressions:

- “METADATA/DATUM[@key = "Gender"]” will extract the value of the Gender metadata for each **JDF XJDF** set, document and page.
- “count(PAGE)” will count the pages within a given document (only works for **JDF XJDF** document level Nodes).
- “count(PAGE/METADATA/DATUM[@key = "special"])” will count the number of pages that have a Special metadata defined for it.

MetadataMap may also be used to set the value of certain **RunList** Attributes. These Attributes are **@EndOfSet**, **@EndOfDocument**, **@PageCopies**, **@DocCopies** and **@SetCopies**. The values set will be instantiated as if actually present in a Partitioned **RunList** for the current page or Page Pool being processed. Care should be taken to ensure their consistency across Page Pools within a document or set.

#### Example 10-4: MetadataMap: Setting Attributes

This example extracts the value of the **@Copies** Attribute as specified by the **@Path**, and sets the value of **RunList/@DocCopies**.

**Table 10-35: MetadataMap: Setting Attributes**

Value	Description
<i>EndOfSet</i>	The last page of a set of Instance Document.
<i>EndOfDocument</i>	The last page of an Instance Document.
<i>PageCopies</i>	Number of finished page copies.
<i>DocCopies</i>	Number of Instance Document copies
<i>SetCopies</i>	Number of Instance Document Set copies.

TBD 2.x Example.

```
<RunList Class="Parameter" ID="r000004" Status="Available">
  <MetadataMap DataType="integer" Name="DocCopies" ValueFormat="%d"
    ValueTemplate="ncopies">
    <Expr Name="ncopies" Path="//record/document/@Copies"/>
    <Expr Name="ncopies" Value="1"/>
  </MetadataMap>
</RunList>
```

#### Example 10-5: RunList/MetadataMap

[New in JDF 1.4](#)

In the following example, the **MetadataMap** Element maps arbitrary tags in the document to a structural **@RunTag** Partition Key. Note that any Partition Key may be mapped. Note also that although an XPath syntax is used, this may be mapped to any hierarchical structure including but not limited to XML. Finally, note that if / Dokument/@Sektion is a value other than “*Einband*” or “*HauptTeil*”, then the **Expr** Elements assigning values to section will all fail, resulting in **@RunTags** being undefined.

TBD 2.x Example.

```

<!--this runlist points to a structured pdl with arbitrary structural
tagging-->
<RunList Class="Parameter" ID="r000004" Status="Available">
  <MetadataMap DataType="PartIDKeys" Name="RunTags"
    ValueFormat="%s%" ValueTemplate="sex,section">
    <!--This expression maps the value of /Dokument/Rezipient/@Sex
        to a variable "sex"-->
    <Expr Name="sex" Path="/Dokument/Rezipient/@Sex"/>
    <!--Maps all elements with /Dokument/@Sektion=Einband to Cover-->
    <Expr Name="section" Value="Cover">
      <NameEvaluation Path="/Dokument/@Sektion" RegExp="Einband"/>
    </Expr>
    <!--Maps all elements with /Dokument/@Sektion=HauptTeil and >50 pages
        to BigBody-->
    <Expr Name="section" Value="BigBody">
      <and>
        <NameEvaluation Path="/Dokument/@Sektion" RegExp="HauptTeil"/>
        <IntegerEvaluation Path="count(PAGE)" ValueList="51 ~ INF"/>
      </and>
    </Expr>
    <!--Maps all elements with /Dokument/Sektion=HauptTeil and <=50 pages
        to SmallBody-->
    <Expr Name="section" Value="SmallBody">
      <and>
        <NameEvaluation Path="/Dokument/Sektion" RegExp="HauptTeil"/>
        <IntegerEvaluation Path="count(PAGE)" ValueList="0 ~ 50"/>
      </and>
    </Expr>
  </MetadataMap>
  <LayoutElement Class="Parameter">
    <FileSpec Class="Parameter"
     MimeType="application/vnd.foobar+xml" URL="bigVariable.foo"/>
  </LayoutElement>
</RunList>
<!--Layout for versioned product-->
<Layout Class="Parameter" ID="r000005" PartIDKeys="RunTags" Status="Available">
  <Layout RunTags="MaleCover">
    <MediaRef rRef="r000006">
      <Part RunTags="MaleCover"/>
    </MediaRef>
  </Layout>
  <Layout RunTags="FemaleCover">
    <MediaRef rRef="r000006">
      <Part RunTags="FemaleCover"/>
    </MediaRef>
  </Layout>
  <Layout RunTags="MaleBigBody FemaleBigBody">
    <MediaRef rRef="r000006">
      <Part RunTags="MaleBigBody MaleSmallBody FemaleBigBody
                    FemaleSmallBody"/>
    </MediaRef>
  </Layout>
  <Layout RunTags="MaleSmallBody FemaleSmallBody">
    <MediaRef rRef="r000006">
      <Part RunTags="MaleBigBody MaleSmallBody FemaleBigBody
                    FemaleSmallBody"/>
    </MediaRef>
  </Layout>
</Layout>

```

```

</Layout>
<Media Class="Consumable" ID="r000006" PartIDKeys="RunTags"
      PartUsage="Implicit" Status="Available">
  <Media RunTags="MaleCover"/>
  <Media RunTags="FemaleCover"/>
  <Media RunTags="MaleBigBody MaleSmallBody FemaleBigBody FemaleSmallBody"/>
</Media>

```

## 10.31 MISDetails

[New in JDF 1.2](#)

MISDetails is a container for MIS related information. It is referenced by Audit Elements and JMF Messages.

### Element Properties

Element referenced by:

[PhaseTimeAuditStatus](#), [ResourceAuditAuditResource](#),  
[ResourceCmdParams](#), [ResourceInfo](#), [ResourcePullParams](#),  
[PipeParams](#), [JobPhase](#), [NodeInfo](#)

**Table 10-36: MISDetails Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Complexity</i> ? <a href="#">New in JDF 1.4</a>	double	<p>Complexity of the task specified by this <a href="#">JDF XJDF</a> Node in a range from 0.0 to 1.0.</p> <p><b>Note:</b> the interpretation of values is implementation dependant.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>0 . 0</i> – The job is simple and therefore reduced setup and waste or higher speeds are possible.</li> <li><i>0 . 5</i> – The job is of standard complexity and therefore standard setup and waste or normal speeds are possible.</li> <li><i>1 . 0</i> – The job is complex and therefore more setup and waste or lower speeds are possible.</li> </ul>
<i>CostType</i> ?	enumeration	<p>Whether or not this MISDetails is chargeable to the customer or not.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Chargeable</i></li> <li><i>NonChargeable</i></li> </ul>
<i>DeviceOperationMode</i> ?	enumeration	<p><i>@DeviceOperationMode</i> shows the operation mode that the Device is in. It is used to show if the production of a Device is aimed at producing good products or not. The latter case applies when a Device is used to produce a Job for testing, calibration, etc., without the intention to produce good output.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Productive</i> – The Device is used to produce good product. Any times recorded in this mode are to be allocated against the Job.</li> <li><i>NonProductive</i> – The Device is used without the intention to produce good product. Any times recorded in this mode are not to be allocated against the Job.</li> <li><i>Maintenance</i> – The Device is used without the intention to produce good product (e.g., to perform (preventive) maintenance).</li> </ul>

**Table 10-36: MISDetails Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>WorkType</i> ?	enumeration	<p>Definition of the work type for this <b>MISDetails</b> (i.e., whether or not this <b>MISDetails</b> relates to originally planned work, an alteration or rework).</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Original</i> – Standard work that was originally planned for the Job.</li> <li><i>Alteration</i> – Work done to accommodate change made to the Job at the request of the customer.</li> <li><i>Rework</i> – Work done due to unforeseen problem with original work (bad plate, Resource damaged, etc.).</li> </ul>
<i>WorkTypeDetails</i> ?	string	<p>Definition of the details of the work type for this <b>MISDetails</b> (i.e., why the work was done).</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>CustomerRequest</i> – The customer requested change(s) requiring the work.</li> <li><i>EquipmentMalfunction</i> – Equipment used to produce the Resource malfunctioned; Resource needs to be created again.</li> <li><i>InternalChange</i> – Change was made for production efficiency or other internal reason.</li> <li><i>ResourceDamaged</i> – A Resource needs to be created again to account for a damaged Resource (damaged plate, etc.).</li> <li><i>UserError</i> – Incorrect operation of equipment or incorrect creation of Resource requires creating the Resource again.</li> </ul>

## 10.32 ObjectResolution

**ObjectResolution** defines a resolution depending on *@SourceObjects* data types.

### Element Properties

Element referenced by: **InterpretingParams**, **RenderingParams**, **TrappingDetails**, **TrappingParams**

**Table 10-37: ObjectResolution Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>AntiAliasing</i> ? <small>New in JDF 1.2</small>	NMTOKEN	<p>Indicates the anti-aliasing algorithm that the Device SHALL apply to the rendered output images. An anti-aliasing algorithm causes lines and curves to appear smooth which would otherwise have a jagged appearance, especially at lower resolutions such as 300 dpi and lower.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>AntiAlias</i> – Anti-aliasing SHALL be applied. The algorithm is system specified.</li> <li><i>None</i> – Anti-aliasing SHALL NOT be applied.</li> </ul>

**Table 10-37: ObjectResolution Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>ObjectTags</i> ? <a href="#">New in JDF 1.4</a>	NMTOKENS	<p>Tags associated with individual objects that this <i>ObjectResolution</i> SHALL be applied to. Each tag specified in <i>@ObjectTags</i> is logically anded with the object type(s) specified by <i>@SourceObjects</i>, enabling first qualification by object type (such as image), and then tags associated with those objects.</p> <p>The values of <i>@ObjectTags</i> depends on the PDL that the <i>ObjectResolution</i> is applied to..</p> <p><i>@ObjectTags</i> SHALL apply only to objects whose tag pool includes all the tags in the value of <i>@ObjectTags</i>.</p>
<i>Resolution</i>	XYPair	Horizontal and vertical output resolution in DPI.
<i>SourceObjects</i> ?= "All"	enumerations	<p>Identifies the class(es) of incoming graphical objects to render at the specified resolution.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>All</i></li> <li><i>ImagePhotographic</i> – Contone images.</li> <li><i>ImageScreenShot</i> – Images largely comprised of rasterized vector art.</li> <li><i>LineArt</i> – Vector objects other than text.</li> <li><i>SmoothShades</i> – Gradients and blends.</li> <li><i>Text</i></li> </ul>

## 10.33 OCGControl

**Table 10-38: OCGControl Element**

Name	Data Type	Description
<i>IncludeOCG</i> ?= "true"	boolean	<p>Defines whether the optional content group(s) identified by <i>@OCGName</i> are to be included in the <b>InterpretedPDLData RunList</b>. If "true", then the layer SHALL be included. If "false", it SHALL NOT.</p> <p>Note that the contents stream of excluded OCGs SHALL still be interpreted so that changes to CTM, etc., are acted on. The objects drawn in excluded OCGs SHALL NOT be rendered.</p>
<i>OCGName</i>	string	<p>The name of the optional content group(s) that SHALL be included or excluded.</p> <p>Note that the <i>@Name</i> Attribute of an optional content group entry is encoded as a PDF text string, and <i>@OCGName</i> is encoded with the Unicode variant identified in the <b>JDF XJDF</b> file header; names SHALL be re-encoded as necessary for comparison. Using a value for <i>@OCGName</i> that does not match any OCG in the referenced PDF file is an error (<a href="#">subject to @SettingsPolicy</a>), independent of the value of <i>@IncludeOCG</i>.</p>

## 10.34 Perforate

Perforate describes one perforated line.

### Element Properties

Element referenced by: [FoldingParams](#), [PerforatingParams](#)

**Table 10-39: Perforate Element**

Name	Data Type	Description
<i>Depth</i> ? <a href="#">New in JDF 1.2</a>	double	Depth of the perforation, in microns [ $\mu\text{m}$ ].
<i>RelativeStartPosition</i> ? <a href="#">New in JDF 1.2</a>	XYPair	Relative starting position of the tool. The <i>@RelativeStartPosition</i> is always based on the complete size of the input <b>Component</b> and not on the size of an intermediate state of the folded Sheet. The allowed value range is from 0.0 to 1.0 for each component of the XYPair, which specifies the full size of the input <b>Component</b> . At least one of <i>@StartPosition</i> or <i>@RelativeStartPosition</i> SHALL be specified.
<i>RelativeWorkingPath</i> ? <a href="#">New in JDF 1.2</a>	XYPair	Relative working path of the tool beginning at <i>@RelativeStartPosition</i> . Since the tools can only work parallel to the edges, one coordinate SHALL be zero. The <i>@RelativeWorkingPath</i> is always based on the complete size of the input <b>Component</b> and not on the size of an intermediate state of the folded Sheet. The allowed value range is from 0.0 to 1.0 for each component of the XYPair, which specifies the full size of the input <b>Component</b> . At least one of <i>@WorkingPath</i> or <i>@RelativeWorkingPath</i> SHALL be specified.
<i>StartPosition</i> ? <a href="#">Modified in JDF 1.2</a>	XYPair	Starting position of the tool. If both <i>@StartPosition</i> and <i>@RelativeStartPosition</i> are specified, <i>@RelativeStartPosition</i> is ignored. At least one of <i>@StartPosition</i> or <i>@RelativeStartPosition</i> SHALL be specified.
<i>TeethPerDimension</i> ?	double	Number of teeth in a given perforation extent in teeth/point. MicroPerforation is defined by specifying a large number of teeth ( $@TeethPerDimension > 1000$ ).
<i>WorkingDirection</i> ? <a href="#">Modified in JDF 1.5</a>	enumeration	Direction from which the tool is working. <b>Allowed values are:</b> <i>Top</i> – From above. <i>Bottom</i> – From below. <b>Modification note:</b> starting in JDF 1.5, <i>@WorkingDirection</i> is optional.
<i>WorkingPath</i> ? <a href="#">Modified in JDF 1.2</a>	XYPair	Working path of the tool beginning at <i>@StartPosition</i> . Since the tools can only work parallel to the edges, one coordinate SHALL be zero. If both <i>@WorkingPath</i> and <i>@RelativeWorkingPath</i> are specified, <i>@RelativeWorkingPath</i> is ignored. At least one of <i>@WorkingPath</i> or <i>@RelativeWorkingPath</i> SHALL be specified.

## 10.35 Person

This Element provides detailed information about a person. It also has the ability to specify different communication channels to this person. Use *@ProductID* when a unique identifier for the Person is required. The structure of the Element is derived from the vCard format. It contains all of the same name subtypes (N:) of the identification and the title of the organizational properties. The corresponding XML types of the vCard are quoted in the description field of the table below.

**Modification note:** starting with JDF 1.4, a rule about using *@ProductID* is added

### Element Properties

Element referenced by: [Contact](#), [Employee](#)

**Table 10-40: Person Element**

Name	Data Type	Description
<i>AdditionalNames</i> ?	string	Additional names of the contact person (vCard: N:other).
<i>FamilyName</i> ?	string	The family name of the contact person (vCard: N:family).
<i>FirstName</i> ?	string	The first name of the contact person (vCard: N:given).
<i>JobTitle</i> ?	string	Job function of the person in the company or organization (vCard: title).
<i>Languages</i> ? <a href="#">New in JDF 1.4</a>	languages	List of languages related to the person, ordered by decreasing preference
<i>NamePrefix</i> ?	string	Prefix of the name, can include title (vCard: N:prefix).
<i>NameSuffix</i> ?	string	Suffix of the name (vCard: N:suffix).
<i>PhoneticFirstName</i> ? <a href="#">New in JDF 1.5</a>	string	Alternative spelling of a first name. Used (e.g., for pronunciation of Kanji (Japanese) names). See <a href="http://en.wikipedia.org/wiki/VCard">http://en.wikipedia.org/wiki/VCard</a> .
<i>PhoneticLastName</i> ? <a href="#">New in JDF 1.5</a>	string	Alternative spelling of a last name. Used (e.g., for pronunciation of Kanji (Japanese) names). See <a href="http://en.wikipedia.org/wiki/VCard">http://en.wikipedia.org/wiki/VCard</a> .
<i>Address</i> ? <a href="#">New in JDF 1.2</a>	element	Address of the person.
<i>ComChannel</i> *	element	Communication channels to the person

## 10.36 RefAnchor

[New in JDF 1.4](#)

RefAnchor describes the relative position with respect to a related element in a layout. Depending on the value of *@AnchorType*, it specifies either a parent Element or a sibling Element.

### Element Properties

Element referenced by: Layout/MarkObject, **LayoutElementProductionParams**/  
LayoutElementPart/PositionObj, **Content/PositionObj**,  
StrippingParams/StripMark

**Table 10-41: RefAnchor Element**

Name	Data Type	Description
<i>Anchor</i> ?	Anchor	<i>@Anchor</i> specifies the origin (0,0) of the vector specified in the rotated coordinate system of the related layout element.
<i>AnchorType</i> ?	enumeration	<p>Role of this RefAnchor. <b>Allowed values are:</b></p> <p><i>Parent</i> – The layout element referenced by this RefAnchor is a parent. This layout element is transformed with the parent.</p> <p><i>Sibling</i> – The layout element referenced by this RefAnchor is a sibling. Both layout elements share a common parent. The parent of this layout element is specified as the RefAnchor of the first child in the chain of siblings.</p>
<i>rRef</i> ?	IDREF	<p>Reference to a layout element that this layout element is positioned relative to. If <i>@rRef</i> is not specified, the page or sheet defined by the layout element is the parent container.</p> <p><i>@rRef</i> SHALL be specified if <i>@AnchorType = "Sibling"</i>.</p>

## 10.37 RegisterRibbon

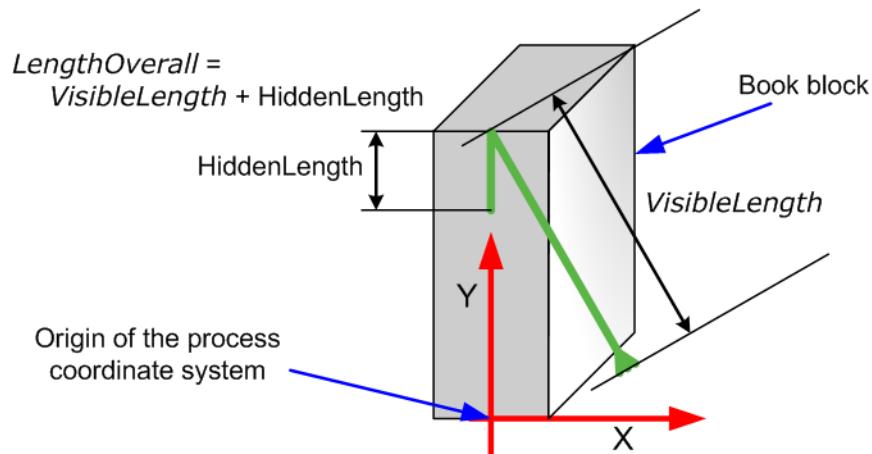
[New in JDF 1.1](#)

Description of register ribbons. For the register ribbon, the length SHALL be specified. There are two parameters, as shown in Figure 10-6, “RegisterRibbon lengths and coordinate system for BlockPreparation,” on page 1084:

**Table 10-42: RegisterRibbon Element**

Name	Data Type	Description
<i>LengthOverall</i> ? <a href="#">Modified in JDF 1.4</a>	double	Overall length of the register ribbon (i.e., <i>@VisibleLength</i> + <i>HiddenLength</i> in Figure 10-6). Note “HiddenLength” is not an Attribute <b>Modification note:</b> starting with JDF 1.4, <i>@LengthOverall</i> is optional.
<i>Material</i> ?	string	Material of the register ribbon.
<i>RibbonColor</i> ?	NamedColor	Color of the ribbon.
<i>RibbonColorDetails</i> ? <a href="#">New in JDF 1.4</a>	string	A more specific, specialized or site-defined name for the color. If <i>@RibbonColorDetails</i> is supplied, <i>@RibbonColor</i> SHOULD also be supplied.
<i>RibbonEnd</i> ?	NMOKEN	End of the Ribbon. <b>Values include:</b> <i>Cut</i> <i>CutSealed</i> <i>Knot</i> <i>SealedOffset</i> – The ribbon is sealed a distance from the cut.
<i>VisibleLength</i> ? <a href="#">Modified in JDF 1.4</a>	double	Length of the register ribbon which will be seen when opening the book. See Figure 10-6. <b>Modification note:</b> starting with JDF 1.4, <i>@VisibleLength</i> is optional.

**Figure 10-6: RegisterRibbon lengths and coordinate system for BlockPreparation**



## 10.38 ScreenSelector

Description of screening for a selection of source object types and separations.

**Element Properties**

Element referenced by: ColorSpaceConversionOp, ScreeningParams

**Table 10-43: ScreenSelector Element (Sheet 1 of 3)**

Name	Data Type	Description
<i>Angle</i> ?	double	Specifies the first angle of the screen when AM screening is used, otherwise <i>@Angle</i> is ignored. At most one of <i>@Angle</i> or <i>@AngleMap</i> SHALL be specified. If neither <i>@Angle</i> nor <i>@AngleMap</i> are specified, the angle is determined by the default of the selected <i>@ScreeningFamily</i> .
<i>AngleMap</i> ? <a href="#">New in JDF 1.1</a>	string	Specifies the mapping of the angle of the screen to the angle of a different separation when AM screening is used. For example, a spot color that has the same screening angle as the cyan separation is specified by <i>@AngleMap</i> = "Cyan". In FM screening, <i>@AngleMap</i> specifies the mapping of the separation specific screen functions (e.g., threshold arrays). At most one of <i>@Angle</i> or <i>@AngleMap</i> SHALL be specified. This mapping is not transitive, so, when <i>@Separation</i> already specifies a color with a known default, it specifies the angle of the separation defined by <i>@AngleMap</i> prior to that separation being mapped. Note that, in general, the known default will be a CMYK process color, but it can also be another process color (e.g., Hexachrome™). The following example specifies that "Black" is to be mapped to the "Cyan" default separation and "Cyan" to the "Black" default separation. The third line maps Spot1 to Magenta. <pre>&lt;ScreenSelector AngleMap="Black" Separation="Cyan"/&gt; &lt;ScreenSelector AngleMap="Cyan" Separation="Black"/&gt; &lt;ScreenSelector AngleMap="Magenta" Separation="Spot1"/&gt;</pre>
<i>DotSize</i> ? <a href="#">New in JDF 1.1</a>	double	Specifies the dot size of the screen, in microns [ $\mu\text{m}$ ], when FM screening ( <i>@ScreeningType</i> = "FM" or "Adaptive") is used, otherwise <i>@DotSize</i> is ignored.
<i>Frequency</i> ? <a href="#">Modified in JDF 1.2</a>	double	Specifies the halftone screen frequency in lines per inch (lpi) of the screen when AM screening is used, otherwise <i>@Frequency</i> is ignored. With some screens, frequency can change as a function of gray level. In this case, the <i>@Frequency</i> value is interpreted for a midtone (50%) gray level. If <i>@Frequency</i> is not specified, the frequency is determined by the default of the selected <i>@ScreeningFamily</i> .
<i>ObjectTags</i> ? <a href="#">New in JDF 1.4</a>	NMTOKENS	Tags associated with individual objects that this ScreenSelector SHALL be applied to. Each tag specified in <i>@ObjectTags</i> is logically added with the object type(s) specified by <i>@SourceObjects</i> , enabling first qualification by object type (such as image), and then tags associated with those objects.  The values of <i>@ObjectTags</i> depends on the PDL that the ScreenSelector is applied to.  <i>@ObjectTags</i> SHALL apply only to objects whose tag pool includes all the tags in the value of <i>@ObjectTags</i> .
<i>ScreeningFamily</i> ?	string	Vendor specific screening family name. <a href="#">Sample values removed in JDF 1.2</a>

**Table 10-43: ScreenSelector Element (Sheet 2 of 3)**

Name	Data Type	Description
<i>ScreeningType</i> ? <a href="#">Modified in JDF 1.2</a>	enumeration	<p>General type of screening.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Adaptive</i></li> <li><i>AM</i> – Can be line or dot. See <i>@SpotFunction</i>.</li> <li><i>ErrorDiffusion</i></li> <li><i>FM</i> – Includes all stochastic screening types.</li> <li><i>HybridAM-FM</i></li> <li><i>HybridAMline-dot</i></li> </ul>
<i>Separation</i> ?= "All"	string	<p>The name of the separation. If <i>@Separation</i> = "All", the <b>ScreenSelector</b> is to be applied to all separations that are not specified explicitly.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li>All</li> </ul>
<i>SourceFrequency</i> ? <a href="#">Modified in JDF 1.2</a>	DoubleRange	Specifies the line frequency of screens which is to be matched from the source file when screen matching is to be done. Note that this is a filter that selects on which objects to apply this <b>ScreenSelector</b> .
<i>SourceFrequencyMax</i> ?	double	Specifies the maximum line frequency of screens which is to be matched from the source file when screen matching is to be done. Note that this is a filter that selects on which objects to apply this <b>ScreenSelector</b> .
<i>SourceFrequencyMin</i> ?	double	Specifies the minimum line frequency of screens which is to be matched from the source file when screen matching is to be done. Note that this is a filter that selects on which objects to apply this <b>ScreenSelector</b> .
<i>SourceObjects</i> ?= "All"	enumerations	<p>Identifies the class(es) of incoming graphical objects on which to use the selected screen.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li>All</li> <li><i>ImagePhotographic</i> – Contone images.</li> <li><i>ImageScreenShot</i> – Images largely comprised of rasterized vector art.</li> <li><i>LineArt</i> – Vector objects other than text.</li> <li><i>SmoothShades</i> – Gradients and blends.</li> <li><i>Text</i></li> </ul>

**Table 10-43: ScreenSelector Element (Sheet 3 of 3)**

Name	Data Type	Description
<i>SpotFunction</i> ?	NMTOKEN	<p>Specifies the spot function of the screen when AM screening is used. In general, it is common for a spot function to change its shape as a function of gray level. Response to these spot function names MAY be implementation-dependent. These example names are the same as the spot function names defined in PDF.</p> <p><b>Values include:</b></p> <ul style="list-style-type: none"> <li><i>Round</i></li> <li><i>Diamond</i></li> <li><i>Ellipse</i></li> <li><i>EllipseA</i></li> <li><i>InvertedEllipseA</i></li> <li><i>EllipseB</i></li> <li><i>EllipseC</i></li> <li><i>InvertedEllipseC</i></li> <li><i>Line</i></li> <li><i>LineX</i></li> <li><i>LineY</i></li> <li><i>Square</i></li> <li><i>Cross</i></li> <li><i>Rhomboid</i></li> <li><i>DoubleDot</i></li> <li><i>InvertedDoubleDot</i></li> <li><i>SimpleDot</i></li> <li><i>InvertedSimpleDot</i></li> <li><i>CosineDot</i></li> <li><i>Double</i></li> <li><i>InvertedDouble</i></li> </ul>

## 10.39 SeparationSpec

This Element specifies a specific separation, and is usually used to define a list or sequence of separations.

### Element Properties

#### Element referenced by:

ColorsUsed, NumberItem, ProofItem, Certification,  
 ColorantConvertProcess, ColorantOrder, ColorantParams,  
 DeviceColorantOrder, ColorSpaceSubstitute, **ColorControlStrip**,  
 ColorSpaceConversionOp, ContentData, DeviceNSpace,  
**LayoutElement**, **PageList**, PageData, **RegisterMark**,  
**ScavengerArea**, CutLines, SeparationListBack,  
 SeparationListFront, TrappingOrder,

**Table 10-44: SeparationSpec Element**

Name	Data Type	Description
<i>Name</i> ?	string	<p>Name of one specific separation.</p> <p>If <i>@Name</i> is not specified, this SeparationSpec consumes a slot in a separation order without setting a separation, for instance when specifying modules to skip on a press or color fields to leave blank in a <b>ColorControlStrip</b>.</p> <p><b>Modification note:</b> starting with JDF 1.4, <i>@Name</i> is optional.</p>

# Chapter 11 Building a System Around JDFXJDF

## 11.1 Implementation Considerations and Guidelines

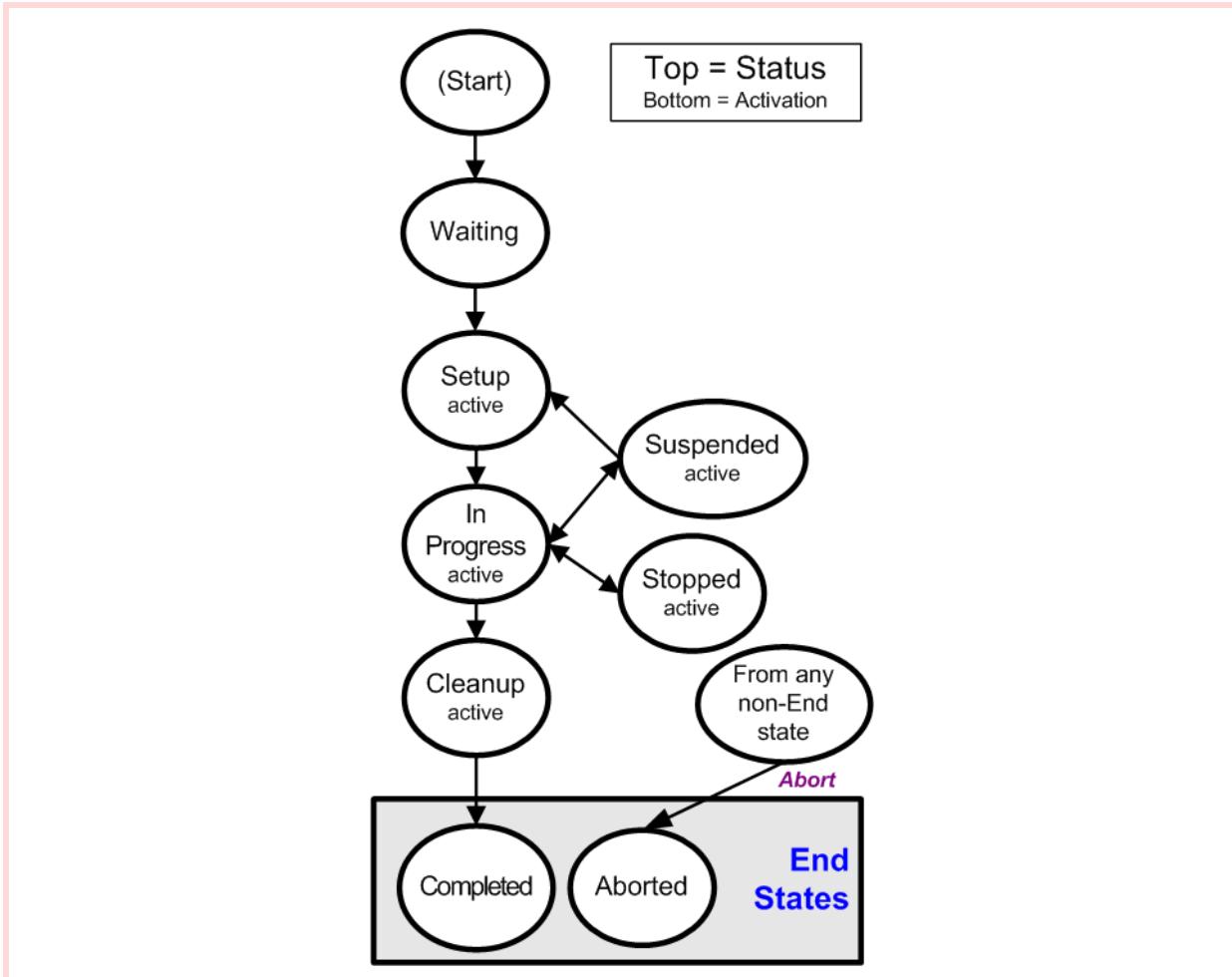
**JDF parsing.** JDF Devices SHALL implement JDF parsing. At a minimum, a Device SHALL be able to search the JDF to find a Node whose Process type it is able to execute. The details of the search algorithm are implementation dependent and can be as simple as searching only in the JDF Root Node. In addition, a Device SHALL be able to consume the inputs and produce the outputs for each Process type it is able to execute. See Section 4.2.1, “Determining Executable Nodes” on page 178.

**Test run.** To reduce failures during processing, it is RECOMMENDED that either individual Devices or their Controller support the test-run functionality. This prevents the case where a Device begins processing a Node that is incomplete or malformed.

## 11.2 Status Transitions

A process that is represented by an XJDF will go through various states during its life time as is described in Figure 11-1, “Life Cycle of a Process”. These states are defined in detail in [NodeInfo/@NodeStatus](#). Note that the Node NEED NOT go through all phases such as Setup or Cleanup explicitly if the device does not physically support these phases. In this case the phases as described in Figure 11-1, “Life Cycle of a Process” SHALL be skipped and processing SHALL continue with the next supported phase.

Figure 11-1: Life Cycle of a Process



## 11.3 Execution Model

XJDF provides a range of options that help Controllers tailor a processing system to the needs of the workflow and of the Job itself. The following sections explain the ways in which Devices execute processes using these various options.

**Modification note:** whereas JDF 1.x supported explicit encoding of process networks, XJDF assumes that the network is implemented in a proprietary fashion by the Controllers. Each individual XJDF Node therefore contains only information that is specific to the receiving Device. Nonetheless, XJDF enables the Execution models detailed below.

The processing model of XJDF is based on a producer/consumer model. Devices that process XJDF act both as producers and consumers of Resources.

### 11.3.1 Serial Processing

The simplest Process sequence is serial processing. In serial processing, the Controller sends an XJDF to a Device and waits until the first XJDF has been completely processed before sending a subsequent XJDF belonging to the same Job to the same or a different Device.

### 11.3.2 Partial Processing of Nodes with Partitioned Resources

Some processes apply to multiple parts such as multiple sheets or plates. The partitioning structure of the **NodeInfo** resource SHALL define the sequencing of the process steps. The Device SHALL process all work steps that are explicitly specified in **NodeInfo** partitions.

If a Device is only capable of performing more granular worksteps than **NodeInfo** requires, the Device MAY split the execution into multiple work steps. For Instance, a non-perfecting press MAY process a request for a duplex sheet in two runs - one for front and one for back.

### 11.3.3 Parallel Processing

Some processes are independent of one another and therefore it is possible to execute them in parallel. Examples are prepress of individual pages prior to impositioning or printing of individual sheets prior to binding. In parallel processing, the Controller sends an XJDF to one Device and does not wait until the first XJDF has been processed before sending a subsequent XJDF belonging to the same Job to a different Device or to the same device if it is capable of processing multiple work steps simultaneously, e.g. a multi-threaded RIP.

### 11.3.4 Overlapping Processing

Some processes, e.g. a long print run, take a long time to complete while constantly creating intermediate output that is already available for processing by a subsequent process prior to completion of the initial process. In Overlapping processing, the Controller sends an XJDF to the initial Device and does not wait until the first XJDF has been processed before sending a subsequent XJDF that describes the next process step of the same job to a different Device. The subsequent Device MAY begin processing as soon as the initial Device has produced sufficient resources for the subsequent Device. The communication between the Devices SHOULD use PipeControl XJMF messages as described in Section 11.3.4, “Overlapping Processing”. If this is technically not feasible, out of bands communication such as a pallet of printed paper that was delivered by a fork lift MAY be used as process control.

ResourceSet/Dependent provides information that is required to setup a Pipe. Any Resource MAY be transformed into a pipe Resource by specifying Dependent/@PipeProtocol.

The two following diagrams show the ways in which the Process producing the Resource and the Process consuming the Resource SHALL be synchronized.

Dependent/@JMFURL – SHALL specify the URL that receives CommandPipeControl XJMF messages.

Dependent/@PipePartIDKeys – SHALL specify the granularity of a pipe request for partitioned resources.

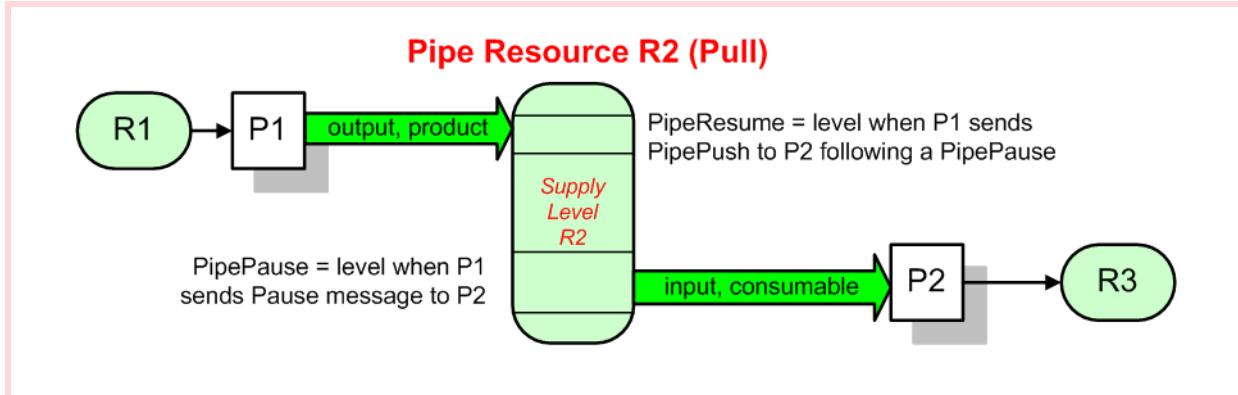
**Dependent@PipePause** – specifies at which resource level to pause a pipe.

**Dependent@PipeProtocol** – SHALL specify the protocol used to control the pipe.

**Dependent@PipeResume** – specifies at which resource level to resume a pipe.

Figure 11-4, “Example of status transitions in case of overlapping Processing” gives an example of a view on the dynamics of a pipe Resource. The available level of the pipe Resource, represented as R2, and the availability status of two Resources, represented as R1 and R3, are changing along a time line. Below the progressions of these Resources is the **NodeInfo@NodeStatus** of two Processes — P1 and P2. P1 represents the Process producing the pipe Resource and P2 represents the Process consuming that Resource.

**Figure 11-2: Example of a Pipe Resource Linking Two Processes via Pull**



**Figure 11-3: Example of a Pipe Resource Linking Two Processes via Push**

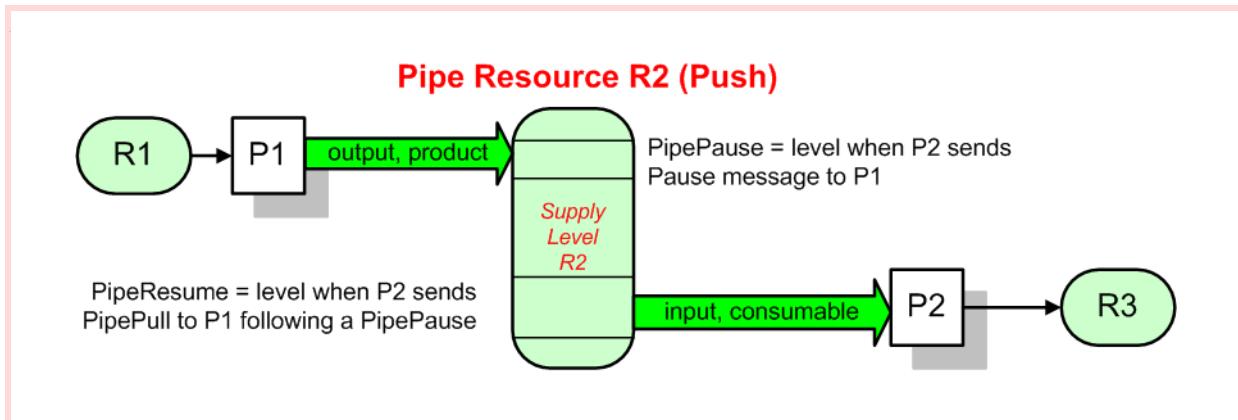
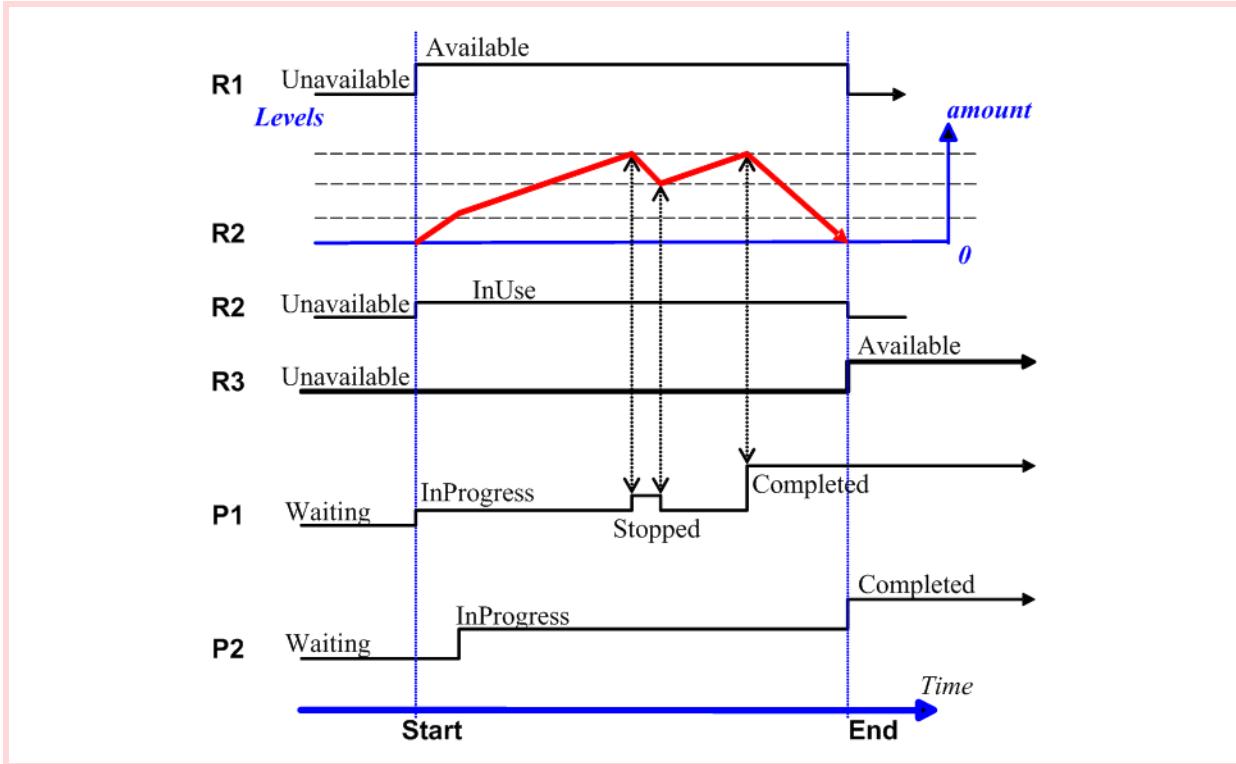


Figure 11-4: Example of status transitions in case of overlapping Processing



#### 11.3.4.1 Dynamic Pipes

In addition to abstractly declaring pipe properties, XJMF provides pipe Messages that allow dynamic control of pipes. Dynamic pipes can be used to model situations where the amount of Resources is not known beforehand but becomes known during processing. An example of this behavior is a long press run where new plates are needed during a press run because of quality deterioration. The exact point in time where quality becomes unacceptable is not predetermined and might even vary from separation to separation. Dynamic pipes provide the flexibility to adjust to changing situations of this nature.

Another usage of dynamic Pipes is linking the output of a variable data print job to various components. Examples include a Pipe describing the **RunList** that links the RIP to a print engine or a Pipe describing the **Component** that links the printer to finishing equipment or individual finishing devices. In this case, the **RunList** and **Component** are templates that are logically expanded in increments by the Pipe messages.

Dynamic pipes provide a `@PipeURL` Attribute that allows dynamic requests for a status change of the pipe while a Process is executing. Dynamic requests use XJMF pipe control Messages (see Section 5.10, “Messages for Pipe Control”) sent to another Controller whose URL address is specified by the `@PipeURL` Attribute of the respective **Dependent**. Depending on the values of the `Dependent/@PipeProtocol` Attribute, the following actions are possible.

- `"JMFPull"`: The consumer initiates the pipe by sending an `@Operation = "Pull"` Message to its `@PipeURL`. The consumer MAY request new resources by sending `@Operation = "Pull"` Messages. If the producer reaches the pipe-pause (low water) mark, or is incapable of fulfilling `@Operation = "Pull"` Messages for other reasons such as a malfunction, it SHOULD send an `@Operation = "Pause"` Message to the consumer. Once it has reached the pipe-resume (high water) mark, or the malfunction has been removed, it SHOULD send an `@Operation = "Push"` Message to the consumer to inform the consumer that it can commence sending `@Operation = "Pull"` Messages. The consumer SHOULD send an `@Operation = "Close"` Message to the producer if the consumer does not require any further Resources.

- **"JMFPush"**: The producer initiates the pipe by sending an **@Operation = "Push"** Message to its **@PipeURL**. The producer MAY dispatch new resources by sending **@Operation = "Push"** messages. If the consumer reaches the pipe-pause (high water) mark, or is incapable of fulfilling **@Operation = "Push"** requests for other reasons such as a malfunction, it SHOULD send an **@Operation = "Pause"** message to the producer. Once it has reached the pipe-resume mark (low water), or the malfunction has been removed, it SHOULD send an **@Operation = "Pull"** to the producer to inform the producer that it can commence sending **@Operation = "Push"** messages. The producer SHOULD send an **@Operation = "Close"** Message to the consumer if the producer cannot provide any further Resources.

When dynamic pipes are used, **@PipeResume** and **@PipePause** define the buffering parameters that lead to a Pipe control message to the remote device. The pipe control Messages described later in Section 5.10, “Messages for Pipe Control” are designed to establish communication between Processes at both ends of dynamic pipe, even if the corresponding Processes are spawned separately.

The following table summarizes the actions to be taken when the buffer in a dynamic pipe reaches a certain level “L”.

**Table 11-1: Actions generated when a dynamic-pipe buffer passes various levels**

PipeProtocol (sender)	Situation	Message	Description
JMFPull (consumer)	ready to process	<b>@Operation = "Pull"</b>	The consumer has processing or buffering available and therefore the producer SHOULD produce resources.
JMFPull (creator)	$L < @PipePause$	<b>@Operation = "Pause"</b>	The creator has no resources available and therefore the consumer SHALL refrain from sending <b>@Operation = "Pull"</b> messages.
JMFPull (creator)	$L > @PipeResume$	<b>@Operation = "Push"</b>	Sufficient Resources have been produced by the creator and are ready for delivery to the consumer.
JMFPush (producer)	resources available	<b>@Operation = "Push"</b>	Sufficient resources have been produced by the creator and are ready for delivery to the consumer. therefore the consumer SHOULD consume resources.
JMFPush (consumer)	$L > @PipePause$	<b>@Operation = "Pause"</b>	The consumer has no processing or buffering space available and therefore the creator SHALL refrain from sending <b>@Operation = "Push"</b> messages.
JMFPush (consumer)	$L < @PipeResume$	<b>@Operation = "Pull"</b>	The consumer has processing or buffering available and therefore the producer SHOULD commence sending <b>@Operation = "Push"</b> Messages.

Dynamic pipes are initially dormant and SHALL be activated by an explicit request. If Resource/**@PipeProtocol** = "JMF", dynamic pipe requests MAY be initiated by both ends of the pipe. As soon as the Pipe has been initiated, actions that are required by the impled **@PipeProtocol** ("JMFPush" or "JMFPull") SHALL be applied. For example, a print Process might notify an off-line finishing Process when a certain amount is ready by sending a **@Operation = "Push"** Message, or the printing Process might request a new plate by sending a **@Operation = "Pull"** Message.

#### 11.3.4.2 Example JMFPush Sequence

This section illustrates the concept of dynamic pipes using the example of variable data near line finishing being controlled by a variable data digital press.

The exchange resource is a **Component** that is the output of the **DigitalPrinting** Combined Node and the input of a Combined **Folding** and **Stitching** booklet maker. The actual XJMF messages are provided in Section O.5.3, “JMF XJMF Pipe Messages” on page 1276 with example digital finishing.

Table 11-2: Event Sequence in Digital Finishing

Direction	Type	PipeParams Description
P->C	@Operation = "Push" Sheet 0/1; Cover; Set 0	Initialize Pipe
P->C	@Operation = "Push" Sheet 0/5; Set 0	Next sheet
P->C	@Operation = "Push"	Lots of next sheets
P->C	@Operation = "Push" Sheet 4/7; Body; Set 35	Next sheet
P-<-C	@Operation = "Pause" Sheet 4/7; Set 35	Paper Jam in finisher - destroys Set 34 and 35
P-<-C	@Operation = "Pull" Sheet 0; Set 34	Restart at Page 0 of Doc 34
P->C	@Operation = "Push" Sheet 0/3; Set 34	Restart Pipe
P->C	@Operation = "Push"	Lots of next sheets
P->C	@Operation = "Pause" Sheet 4/7; Cover; Set 122	Paper Jam in printer - destroys Set 122
P-<-C	@Operation = "Pull" Sheet 0; Set 122	Restart at Page 0 of Doc 34(optional)
P->C	@Operation = "Push" Sheet 0; Set 122	Restart at Page 0 of Doc 122
P->C	@Operation = "Push"	Lots of next sheets
P->C	@Operation = "Push" Sheet 2/3; Body; Set 221	Last sheet - note zero based counting for index
P->C	@Operation = "Close"	Done

#### 11.3.4.3 Comparison of Non-Dynamic and Dynamic Pipes

The **Dependent Element** between non-dynamic pipes provides the buffering parameters for the Process to which the **Dependent Element** belongs. Therefore, many Processes can link to the same pipe Resource. Furthermore, each Process has its own buffering parameters, whether it is a consumer or a producer. In order to control non-dynamic pipes, one master Controller SHALL control all Processes linked to the pipe Resource.

In contrast, dynamic pipes provide a URL address to control a Process at the other pipe end. Then the buffering parameters of the **Dependent Element** control the Process at the other end. In the case of dynamic pipes, no master Controller is needed to control the pipe. Control is accomplished by sending pipe Messages. If pipe Resources are linked to multiple consumers or producers, such as two finishing lines that consume the output of one press one palette at a time, it is up to implementation to ensure consistency of the Processes.

#### 11.3.4.4 Metadata in Pipe Messages

TBD

#### 11.3.5 Approval, Proofing, Quality Control and Verification

In many cases, it is desirable to ensure that an executed Process or set of Processes have been executed completely and/or correctly. In the graphic arts industry this is often accomplished by generating proofs and signing approvals. XJDF defines the approval Process and the verification Processes by using an **ApprovalDetails** that MAY be specified as an Input ResourceSet in any Process.

The **Approval**, **QualityControl** and **Verification** Processes accept any Resource as input and output that same Resource along with **ApprovalDetails** Resource if approved. For hard copy proofing, a **DigitalPrinting**

Process) generates the hard proof which is input to an **Approval**. For soft proofing, a **Rendering** or **PDLCreation** Process generates the soft proof which is input to an **Approval** Process.

XJDF provides a **QualityControl** Process to verify that the output of a Process fulfills certain quality criteria. **QualityControl** differs from the **Verification** Process, which verifies the completeness of a given set of Resources.

### 11.3.6 Error Handling

Error handling is an implementation-dependent feature of XJDF-based systems. The AuditPool Element provides a container where errors that occur during the execution of a JDF Node are to be logged using Notification Elements. Notification Elements MAY also be sent in XJMF messages. The content of the Notification Element is described in Table 5.8.7.4.1, “Notification” on page 242. For a list of predefined error codes, see Appendix D, “Supported Error Codes in JMF XJMF and Notification Elements” on page 1151. Further details about error handling are provided in the next four sections.

### 11.3.7 Classification of Notifications

AuditNotification/Notification Elements are classified by the **@Class** Attribute. Every workflow implementation SHALL associate a **@Class** with all events on an event-by-event basis. For values, see AuditNotification/Notification/**@Class** in Table 5.8.7.4.1, “Notification” on page 242.

### 11.3.8 Event Description

A description of the event is given by a generic Comment element, which SHALL be specified for the Notification Classes **“Information”**, **“Warning”**, **“Error”** or **“Fatal”**. For example, after a process is aborted, error information describing a device error MAY be logged in the Comment element of the Notification element. If phase times are logged, the AuditStatus element that logged the transition to the **“Aborted”** state MAY also contain a local Comment element that describes the cause of the process abortion. AuditStatus and Notification elements MAY be specified as subelements of the AuditPool, which is described in Section 3.16, “AuditPool and Audit”.

### 11.3.9 Error Logging in the JDF File

An XJDF-compliant Device SHOULD log an error by inserting an AuditPool/AuditNotification.

### 11.3.10 Error Handling via Messaging (XJMF)

An XJMF with a Notification Element in the Message body SHOULD be sent through all persistent channels that subscribed events of Class **“Error”**. In order to receive Notifications, SignalNotification XJMF Signals SHALL be subscribed for by using the standard subscription mechanisms described in Section 11.5.3, “Managing Persistent Channels.” on page 1101.

## 11.4 JDF XJDF and JMF XJMF Interchange Protocol

A system of vendor-independent elements SHOULD define a protocol that allows them to interchange information based on JDF and JMF. XJDF and XJMF SHOULD be exchanged over a network by using http [RFC2616] or https. Controllers and Devices SHOULD implement an http server.

**Note:** A Controller or Device could be designed without an http server by polling but this is discouraged.

Controllers and Devices SHOULD provide insecure http without an SSL/TLS layer for better interoperability. Controllers and Devices MAY provide hot folders or other file based mechanisms for exchange of XJDF or XJMF for debugging and prototyping purposes.

**Note:** It is strongly discouraged to design a production workflow based on hot folders.

### 11.4.1 File-Based Protocol (JDF)

The file-based protocol is a solution for JDF Job tickets. A file-based protocol MAY be based on hot folders. A Device that implements hot holders SHALL define an input hot folder and an output folder for JDF. In addition, the SubmitQueueEntry Message contains a URL Attribute that allows specification of arbitrary JDF locators. Implementation of JDF file-based protocol is simple, but it is important to note that the protocol does not support acknowledgments.

edgement receipts for protocol error handling. It requires that the receiver polls the output folder of the processor. Finally, granting read/write access to your hot folder negates the security functions.

## 11.4.2 HTTP-Based Protocol (JDF + JMF)

HTTP [RFC2616] is a stable, vendor-independent protocol, and it supports a variety of advantageous features. For example, it offers a wide availability of tools. It is already a common technology among vendors who use HTTP, and it has a well defined query-response mechanism (HTTP post message). It also offers widespread firewall support and secure connections via SSL (see [SSL3]) when using HTTPS.

### 11.4.2.1 Protocol Implementation Details

#### 11.4.3 HTTP Port

JDF XJMF Messaging does not specify a standard port.

#### Implementation of Messages

#### 11.4.4 HTTP Request Method

A Sender SHALL use an HTTP Post request to transmit an XJMF that contains XJMF Queries, XJMF Commands and XJMF Signals to an HTTP server.

The contents SHALL be placed in the body of the http request. See Section 11.6, “JDF XJDF Packaging” below for details of XJMF packaging.

The Receiver SHALL place the XJMF containing XJMF Response Messages in the body of the response to the HTTP post. The Receiver SHALL package Response messages as raw XML.

The body of an HTTP response to an XJMF that contains only XJMF Signals that are not defined as reliable (@ChanelMode!="Reliable") MAY be empty.

Only HTTP servers SHALL be targeted by Query Messages, Registration Messages or Command Messages. This is done with a standard HTTP Post request. The JMF is the body of the HTTP post message. The Response Message is the body of the response to the initiated HTTP post. Signal and Acknowledge Messages are also implemented as HTTP post messages. The body of the HTTP response to these Messages MAY be empty.

If reliable Signaling (see Section 5.3.3, “Signal”) is implemented, the Response to a Signal SHALL NOT be empty.

#### HTTP Push Mechanisms

Since HTTP is a stateless protocol, push mechanisms, such as regular status bar updates, are non-trivial when communicating with a client. Workarounds can, however, be implemented. For example, a client application that polls the server in regular intervals MAY be used.

## 11.4.5 HTTPS-Based Protocol – TLS SSL with two-way authentication

Secure XJMF has no additional requirements in addition to standard TLS [RFC5246].

Note: Since Controllers and Devices will typically implement the http client interface and the http server interface, Sender and Receiver will need to provide certificates and maintain the chain of trust to verify that the certificates are valid.

New in JDF 1.3

### 11.4.5.1 Purpose

The addition of support for the HTTPS Protocol for use in JMF systems from JDF Spec version 1.3 onwards is not so much about Encryption as about Authentication. Customers of JMF based system have a need to be able to exchange Messages securely between systems in their facility without fear of intervention from outside sources or from malicious acts. The solution needs to be able to sustain authentication without having to exchange username and password on every call, is platform and implementation language independent and is capable of working across firewalls (though configuration of firewalls might be required in an individual installation).

Support for JMF over HTTPS does not require the implementation of any additional JMF messages, though the RequestForAuthentication Message (which is new in 1.4) may be used to exchange certificates and establish a secure connection.

On a web server, the server provides its certificate to you. The client decides whether to accept communication. With two-way authentication client authentication is required.

#### 11.4.5.2 Certificates

JMF over HTTPS requires both parties to provide exchange and validate certificates. The certificates SHALL contain the core four fields of the X.509 format and the UserID. Any additional fields are OPTIONAL. These fields are:

- Common Name (Abbreviation CN) (i.e., hostname which could be an IP address or DNS name by which the receiver knows the sender),
- Organization Unit (Abbreviation OU)
- Organization (Abbreviation O)
- Country (Abbreviation C)
- UserID (Abbreviation UID) - this SHALL be the SenderID that messages from the sender will be identified by. This would be the client's SenderID for commands, queries, and signals, and the server's SenderID for responses and acknowledges
- givenName? - The vendor name, product name, and any other information about the product MAY be optionally included in the certificate using the givenName certificate field.

Example for XYZ Software's XYZImpose product:

```
CN=impose7.printinginc.internal OU=Prepress O=Printing, Inc.  
C=US UID=XYZImpose7 givenName=XYZ Software XYZImpose v7.0
```

More information can be found at <http://www.rsasecurity.com/rsalabs/node.asp?id=2307>

Certificates can be generated by any certificate generation tool such as Sun Keytool. See Section 11.4.5.5.2, "Example of Java Keytool Usage".

The certificates should be self-signed to remove the need to access third-party Certificate Authorities.

#### 11.4.5.2.1 Verification of Certificates

Certificates should be verified against the hostname of the machine. Therefore certificates should reference the machine and may need to be generated on site.

**Note:** The difference between the hostname and the IP address is that if the IP address changes, this will effectively revoke the certificate. However, if the hostname is used, then the name SHALL be resolvable by the receiver using either DNS or local name resolution.

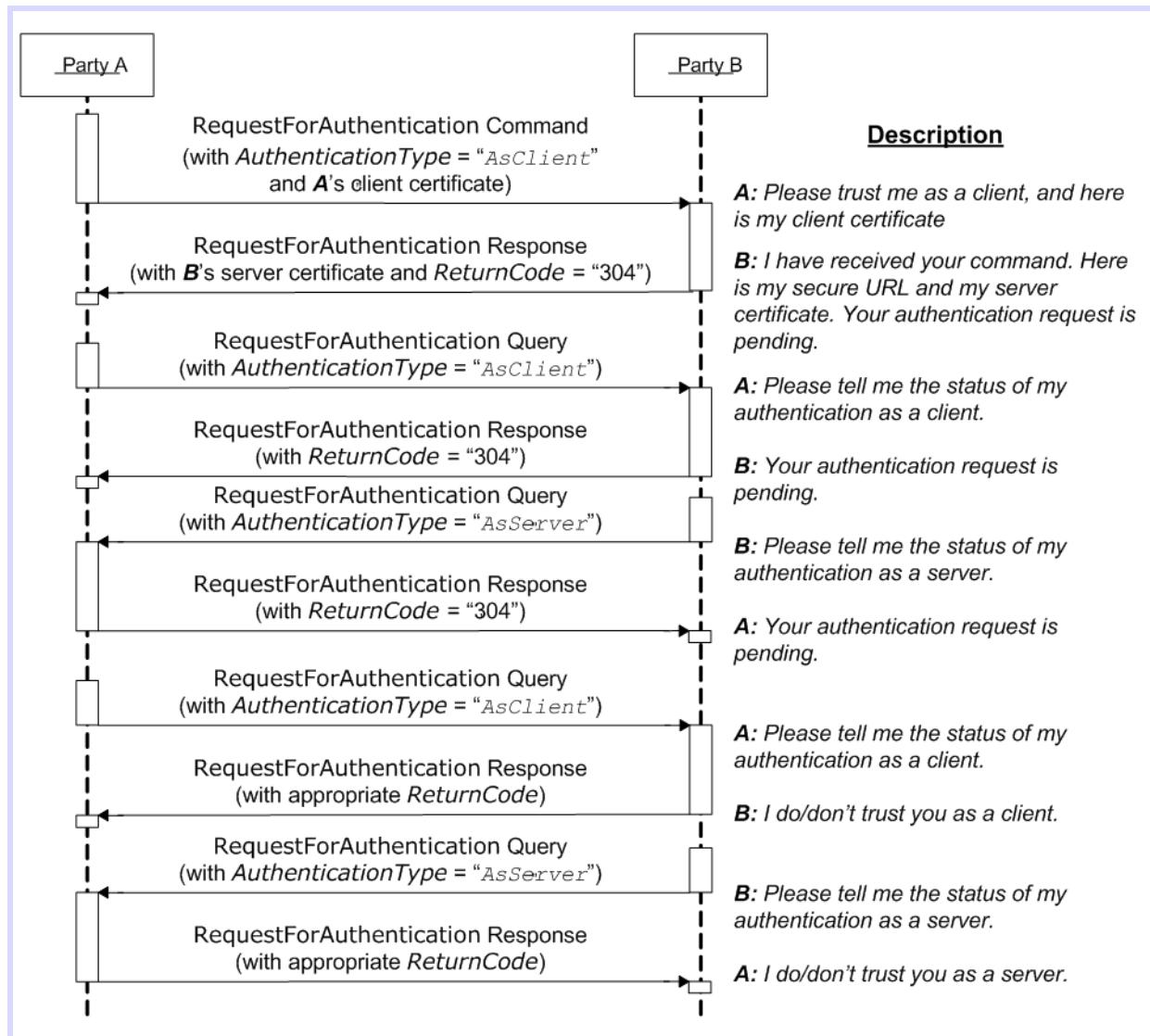
#### 11.4.5.3 Exchange of Certificates

Certificates may be exchanged and authenticated by the following sequence which makes use of the RequestForAuthentication Message.

The RequestForAuthentication Message includes a requirement that the recipient return its appropriate certificate on receipt of the sender's certificate, based on the value of the @AuthenticationType Attribute.

The likely sequence of events between two parties, A and B, can be summarized as follows:

Figure 11-5: Example of Exchange of Certificates



We now have 2 way authentication in one direction with **A** as the client, and **B** as the server. To complete the other direction, there are two possibilities:

- The Process is repeated with **B** sending a **RequestForAuthentication** to **A** using the same steps.
- A** to initiate the same steps, but sets the **@AuthenticationType** Attribute to **"AsServer"**, and provides its Secure URL in the **AuthenticationCmdParams** Element.

If the certificate received by **A** in the response from **B** is bad, then **B**'s trust of **A** SHALL be manually deleted. Then **A** can repeat the above steps.

If the certificate received by **A** at some later time goes bad, then **A** can repeat the above steps over a secure channel, with the **@Reason** Attribute set appropriately to indicate a problem. Effectively it is saying “I'm serving you notice that your certificate is bad; send me a new one”. **B**'s response will be to present a certificate that should be different to the one previously sent.

If party **B** realizes that it needs to re-issue its server certificate, it MAY send a **RequestForAuthentication** Command to party **A**'s secure URL, with the **@AuthenticationType** Attribute set to **"AsServer"**. **A** should then respond appropriately.

**Reconnection:** if certificates have been exchanged, but the secure URL has been lost, reconnection can be facilitated by sending a KnownDevices Query to the system whose URL has been lost. If the signed certificate has been lost, then the existing trust relationships SHALL be manually deleted, then a repeat of the above steps.

#### 11.4.5.4 Standards

See [SSL3] and [X.509].

#### 11.4.5.5 Implementation

If a client communicates with a server over an HTTPS connection and at some point the client receives a “permission denied” HTTP response, this indicated that the secure connection has been revoked and that the client needs to resubmit the RequestForAuthentication message.

##### 11.4.5.5.1 Discovery Messages

The KnownDevices Message has been extended so that **Device** Resource has a new Attribute `@SecureJMFURL`.

The KnownMessages Message has been extended to indicate which Messages are supported under which protocols, by adding the `@URLSchemes` Attribute to the **MessageService** Element.

##### 11.4.5.5.2 Example of Java Keytool Usage

A command line example of using the Java keytool:

- 1 Use Java keytool to generate a public/private key pair and wrap the public key into an X.509 v1 self-signed certificate. The private key and certificate are stored in a JKS key store.

```
keytool -genkey -alias impose7 -dname "CN=xyzimpose7.myCompany.internal  
OU=Prepress O=Printing, Inc. C=US UID=XYZImpose7  
givenName=XYZ Software XYZImpose" -validity 365 -keystore keystore.jks
```

- 2 Export the self-signed certificate to the base64 encoded PEM format:

```
keytool -export -keystore keystore.jks -rfc -alias impose7 -file impose7.cer
```

For full documentation, see <http://java.sun.com/j2se/1.5.0/docs/tooldocs/windows/keytool.html>

## 11.5 XJMF Handshaking

This section describes the actions and appropriate reactions in a communication between Controllers and Devices using **XJMF**.

### 11.5.1 Single Query/Command Response Communication

The handshaking mechanisms for queries and commands are identical. The Sender SHALL send a **Query Message** or **Command Message** to the Receiver. The Receiver SHALL parse the **Query Message** or **Command Message** and SHALL synchronously return an appropriate **Response** to the Sender. `@refID` SHALL be set to the value of `@ID` of the message from the Sender. If the incoming Message could not be parsed, the Response SHALL be a **ResponseNotification**.

#### 11.5.1.1 XJMF Error Handling

If a **Command Message**, **Query Message**, or a **Signal Message** is not successfully handled, a processor SHALL reply with a Response that SHALL contain a non-zero `@ReturnCode` from Appendix D, “Supported Error Codes in JMF XJMF and Notification Elements” on page 1151 and that SHOULD contain a **Notification Element** that SHOULD provide additional details of the error.

The Response Messages contain a `@ReturnCode` Attribute. `@ReturnCode` defaults to 0, which indicates that the response is successful. In case of success and in responses to commands an informational **Notification Element** (`@Class = "Information"`) MAY be provided. In case of a warning, error or fatal error, the `@ReturnCode` is greater than 0 and indicates the kind of error committed. In this case, a **Notification Element** SHOULD be provided. Error codes are defined in Appendix D, “Supported Error Codes in JMF XJMF and

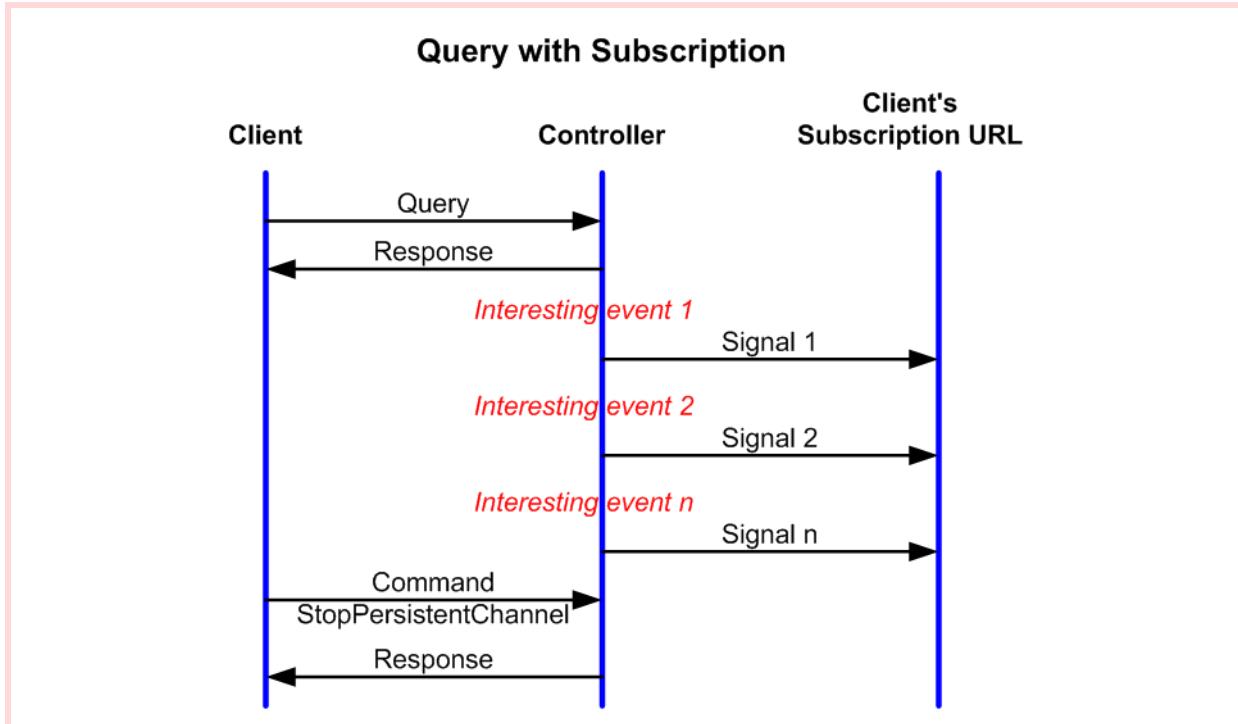
Notification Elements" on page 1151. The responding application SHOULD fill additional Notification/Error Elements that describe the details of the error.

### Example 11-1: Response with Notification Element

The following example uses a Notification Element to describe an error:

TBD 2.x Example.

**Figure 11-6: Interaction of Messages with a Subscription**



#### 11.5.2 Subscribing for Signals

Queries SHALL be subscribed by including a **Subscription Element** that defines the details of the subscription (see also Figure 5-1). The Receiver of the subscription SHALL initially send an empty Response Message to the Sender. The Receiver of the subscription SHALL send XJMF Signals whenever the conditions that were specified in the Subscription element are met. Such a subscribed Query that requests multiple Signals is referred to as a "persistent channel".

Note: the Sender and Receiver roles for Signals are reversed compared with the initial subscription.

If a Controller that does not support persistent channels is queried to set up a persistent channel, it SHALL answer the Query Message with a Response Message, set **@Subscribed** to "false", and set the **@ReturnCode** to "111".

Multiple Attributes of a **Subscription Element** are combined as a Boolean OR operation of these Attributes. For instance, if **@RepeatStep** and **@ObservationTarget** are both specified, Messages fulfilling either of the requirements are requested. If the **Subscription Element** contains only a URL, it is up to the emitting Controller to define when to emit Messages.

### 11.5.3 Managing Persistent Channels.

A Controller MAY request information about currently active subscriptions by sending a **KnownSubscriptions Query** to a Device. A Controller SHOULD NOT send a new **Subscription Subscription** if a matching **Subscription Subscription** is already in place in the Device. If the device does not support **KnownSubscriptions Query**, the Controller MAY create a new **Subscription Subscription**. A Device that receives a **Subscription Subscription** of the same type to the same URL SHOULD replace the existing **Subscription Subscription** with the new **Subscription Subscription**.

A Controller SHOULD remove persistent channels that are no longer evaluated by sending a **StopPersistentChannel Command** to a Device.

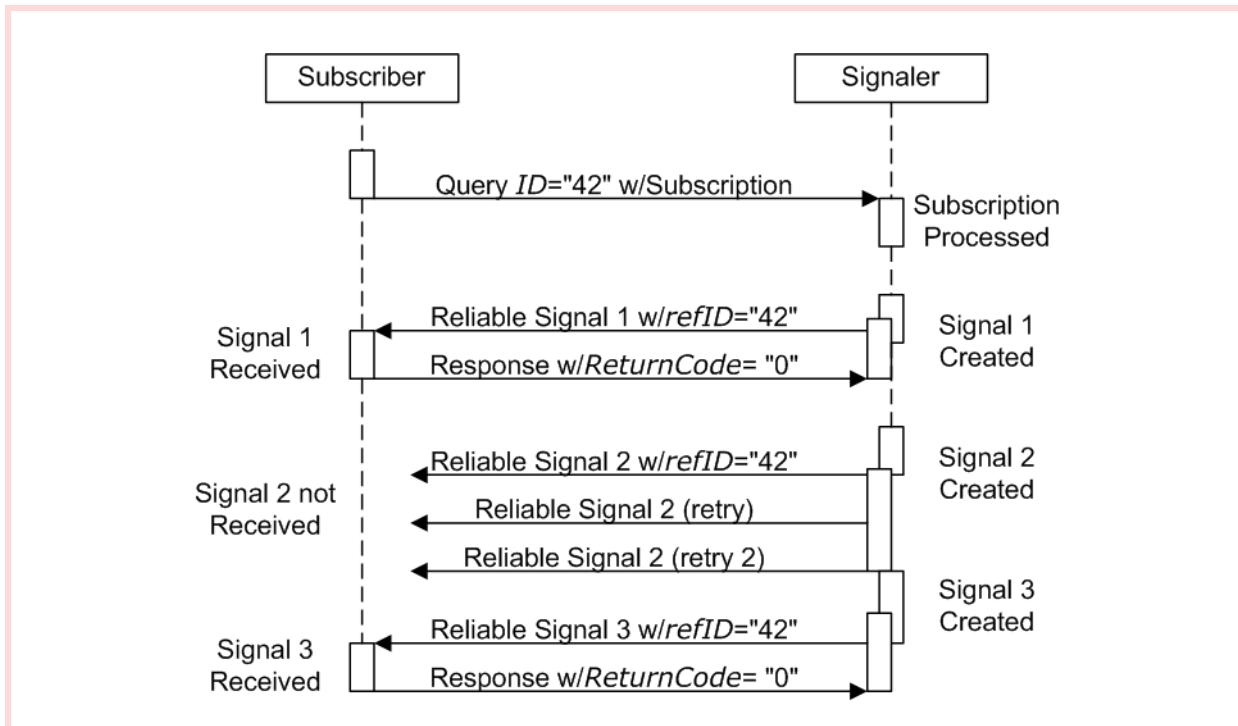
### 11.5.4 Signal Handshaking

JMF Signal Messages that were subscribed with **Subscription/@ChannelMode = "FireAndForget"** SHALL NOT be resent in case they were not successfully delivered to the Signal Receiver. In case of success, the Receiver SHALL send an HTTP response with an empty body. If an error occurred, the Receiver SHOULD return an error Response Message as defined in Section 11.5.1.1, "XJMF Error Handling" on page 1099.

### 11.5.5 Reliable Signalling

JMF Signal Messages that were subscribed with **Subscription/@ChannelMode = "Reliable"** SHALL be resent in case they were not successfully delivered to the Signal Receiver. If the receiver does not respond to the reliable signal, the sender SHALL retry the reliable signal, based on the **@RetryPolicy** specified in the original **Subscription Element**. If a Response is received with a **@ReturnCode** value other than zero, then the Signal Message SHOULD be retried, unless the sender determines that resending the message is not useful in an implementation specific manner.

**Figure 11-7: Example of Reliable Signaling**



#### 11.5.5.1 12.3.4.1 Sequence of Signals

Signals SHALL be sent in the order that the underlying event that triggered the Signal occurred. Thus subsequent Signals that occurred after a Signal that was in error and needs to be resent SHALL NOT be sent until either the offending Signal has been successfully resent or the offending Signal has been discarded.

### 11.5.6 Deleting Persistent Channels

A persistent channel is to be deleted by sending a StopPersistentChannel Command Message, as described in Section 5.8.10, “StopPersistentChannel”.

### 11.5.7 XJMF Bootstrapping

XJMF currently provides no mechanism for initial Device discovery. Thus the URL of an XJMF Device needs to be provided to a Controller outside of XJMF. Once the XJMF URL is known, a Controller SHOULD follow the steps specified in Table 11-3, “XJMF Bootstrapping steps” to initiate communication.

**Table 11-3: XJMF Bootstrapping steps**

Sender	Message	Remarks
Controller	QueryKnownMessages	The Controller SHOULD query for known messages and refrain from sending unknown messages, including messages specified in this section.
Device	ResponseKnownMessages	The Controller SHOULD respond with a list of known messages.
Controller	QueryKnownDevices	If the Device is a workflow controller, the Controller MAY query for additional known lower-level devices that the Device wishes to publish. The Controller SHOULD apply this bootstrapping procedure defined in this section to all lower level devices that are supplied in the ResponseKnownDevices.
Device	ResponseKnownDevices	The Device SHOULD respond with a list of known lower-level devices.
Controller	QueryKnownSubscriptions	If the Controller intends to subscribe for Signals from the Device, the Controller SHOULD query for a list of existing subscriptions. The Controller SHOULD NOT resubscribe for existing subscriptions.
Device	ResponseKnownSubscriptions	The Device SHOULD respond with a list of known subscriptions.

### 11.5.8 Device / Controller Selection

XJMF defines the KnownDevices Query Message to find Controllers and Devices. The information provided by this query can be used by a Controller to infer the appropriate routing for a Node. In a system that does not support messaging, this information SHOULD be provided outside of XJDF.

## 11.6 JDF XJDF Packaging

New in JDF 1.2

JDF messaging supports combining into a single package: An XJMF MAY be transferred with no additional packaging. Alternatively, an XJMF and its referenced assets MAY be combined into a single zip package consisting of:

- the a single JMF XJMF Message,
- the JDF XJDF Job ticket(s) tickets to which it refers, and
- the digital assets to which the XJMF and JDF XJDF Job tickets refer.

XJDF messages that do not refer to external assets SHOULD NOT be packaged as zip. XJDF MAY refer to digital assets that are not included in the zip package. Multiple XJMF messages SHALL NOT be packaged in one zip package.

The following external data file types are identified, although any valid MIME file type MAY be referenced:

- Preview images (They SHOULD be encoded using the PNG format.)
- ICC Profiles
- Preflight Profiles
- PDL (Page Description Language)

Currently MIME Multipart/Related packaging is supported.[RFC2387]

All packaging methods use a consistent design pattern. The package contains one or more parts and there SHALL be at least one **JDF** or **JMF** part. If a **JMF** part is included there SHALL be only one. If the packaging has ordered parts (Multipart/Related) the **JMF** part SHALL be first. The **JDF** parts SHALL follow the **JMF** part (if present) and any other parts follow the **JDF** parts.

When the content parts of a **JDF** Package are extracted, the **QueueSubmissionParams** (at a provided URL) or **ResubmissionParams** (at a provided URL) within the **JMF** Message and **FileSpec** (at a provided URL) within the **JDF** ticket(s) SHALL be updated with the URL at which the referenced items are stored.

### 11.6.1 MIME Basics

MIME (Multipurpose Internet Mail Extensions) [RFC2045] is an Internet standard that defines mechanisms for specifying and describing the format of Internet message bodies. MIME is comprised of headers and content. In case of Multipart messages, the content consists of multiple body parts, each with its own MIME headers and content. A unique boundary string precedes each body part and follows the last one.

### 11.6.2 MIME Types and File Extensions

The following MIME types and extensions SHOULD be used when storing XJDF or XJMF as files or when a MIME type is required, e.g. when setting the http Content-Type header. The MIME type for **JDF XJDF** is not yet registered with IANA <http://www.iana.org/>. The registration process is ongoing and the MIME types will be registered as: according to table:

Table 11-4: MIME Types and File Extensions

MIME Type	Extension	Usage
application/vnd.cip4-xjdf+xml	xjdf	unpackaged XJDF
application/vnd.cip4-xjmf+xml	xjmf	unpackaged XJMF
application/vnd.cip4-xjdf+zip	zip	zip packaged XJDF
application/vnd.cip4-xjmf+zip	zip	zip packaged XJMF

**JDF** — application/vnd.cip4-jdf+xml

**JMF** — application/vnd.cip4-jmf+xml

It is RECOMMENDED that the Controller use a file extension of “jdf” when using file-based **JDF** in an environment that supports file name extensions. Agents that serialize **JMF** to a file SHOULD use a file extension of “jmf”.

When a MIME package containing **JDF** or **JMF** is serialized to a file, it is RECOMMENDED to use the “mjd” file extension for packages where a **JDF** is the first entity. It is RECOMMENDED to use the “mjm” file extension when a **JMF** Message is the first package. CIP4 will also register a mime type for CIP3 ppf: application/vnd.cip3-ppf. It is RECOMMENDED that the Controller use a file extension of “ppf” when writing CIP3 ppf files.

### 11.6.3 ZIP Packaging

Zip is a de facto industry standard for packaging and compressing data. Directory structures can be encoded in a ZIP package. Details can be found at: <https://www.pkware.com/support/zip-app-note/>.

### 11.6.3.1 Identifying the Root XJMF.

The root XJMF SHALL be named root.xjmf and SHALL reside in the root directory of the ZIP package.

### 11.6.3.2 Referencing Assets within a ZIP Package.

Referenced assets that reside in the ZIP package, for instance those that are referenced with `/*/@URL`, SHALL be referenced as local URLs. The current URL for calculating local URLs SHALL be the root of the ZIP package, regardless of the location of the referring asset within the ZIP package.

Assets other than the root.xjmf MAY be placed in a directory tree structure within the ZIP file.

### 11.6.3.3 MIME Headers

New in JDF 1.2

This section defines the normative extensions when using MIME to package **JMF** or **JDF**.

#### 11.6.3.3.1 Content-Type Header

This MIME header is REQUIRED for an individual **JDF** or **JMF**, the root, and the individual bodyparts of a MIME Multipart/Related package. *"Content-Type"* identifies the MIME type of the message or body part). The *"Content-Type"* header can identify a message as a MIME Multipart message and each body part also has a *"Content-Type"* header to identify its content. The following *"Content-Type"* are used with **JDF**:

**Table 11-5: MIME Content-Types**

MIME Type	Description
application/vnd.cip4-jdf+xml	A <b>JDF An XJDF</b> File. The root XML element SHALL be <b>JDF XJDF</b> .
application/vnd.cip4-jmf+xml	A <b>JMF An XJMF</b> File. The root XML element SHALL be <b>JMF XJMF</b> .
Multipart/Related	A package of a <b>JDF an XJDF</b> or <b>JMF XJMF</b> file + optional additional referenced data[RFC2387]. The root XML element of the first bodypart SHALL be <b>JDF XJDF</b> or <b>JMF XJMF</b> .

#### 11.6.3.3.2 Content-ID Header

This field is REQUIRED for every body part that is referenced from another body part in a Multipart/Related message. *"Content-ID"* identifies each different body part within a MIME Multipart message. Its value SHALL be an Email address as long as it is defined using US-ASCII. Each value of *"Content-ID"* SHALL be unique within the message, but it need not be a working Email address. Thus *"Content-ID"* can be a somewhat random sequence and need not be related to the original filename. It is good practice to limit yourself to using only alphanumeric characters or only the first 127 characters of the US-ASCII character set in order to avoid confusing less intelligent MIME Agents.

#### 11.6.3.3.3 Content-Transfer-Encoding

This field is OPTIONAL. [RFC2045]. It defines the following different encodings:

- `"7bit"`
- `"quoted-printable"`
- `"base64"`
- `"8bit"`: This specifies that no additional encoding is applied to the data. Use `"8bit"` if the **JDF** stream contains CR or LF separators (e.g., for body parts containing **JDF** or **JMF**).
- `"binary"`: This specifies that no additional encoding is applied to the data. Use `"binary"` if there is no CR or LF separators in the stream (e.g., for body parts containing JPEG).

Private encodings MAY be defined and begin with the prefix `"X-"`. When no encoding is used, the data are only encapsulated by MIME headers. `"base64"` and `"quoted-printable"` encodings are commonly used algorithms for converting eight-bit and binary data into seven-bit data and vice versa. Consumers that support MIME SHOULD support `"8bit"` and `"binary"` and SHALL support `"base64"`. The other encodings are OPTIONAL.

It is RECOMMENDED to also specify the encoding for the JDF/JMF parts of a Multipart/Related package.

#### 11.6.3.3.4 Content-Disposition Header

This field is OPTIONAL. See [RFC2231] It allows a filename to be specified for a body part. The "Disposition-Type" SHALL be set to "attachment".

The Disposition filename parameter contains a suggested file name for storing the attachment. This file name MAY be the original file name when creating the MIME file and can be visible to the operator. Note that the filename is a value that needs special MIME encoding rules, these are [RFC2822]and [RFC2231].

It is RECOMMENDED to use quoted-strings for file names with only US-ASCII characters see [RFC2822] and [RFC2231]for file names with non-USASCII characters.

##### Example for [RFC2822]:

A name = "Cover page.pdf" becomes:

```
Content-Disposition: attachment; filename="Cover page.pdf";
```

##### Example for [RFC2231]:

A name = "Dollar€\_1.pdf" becomes:

```
Content-Disposition: Attachment; filename*=UTF-8 ''Dollar%E2%82%AC_1.pdf;
```

#### Example 11-2: Packaging of Individual JDF/JMF files in MIME

New in JDF 1.2

The following example displays MIME packaging of a JDF file as an individual MIME object:

```
MIME-Version: 1.0
Content-Type: multipart/related; boundary=abcdefg0123456789
Content-Transfer-Encoding: 8bit
--abcdefg0123456789
Content-Type: application/vnd.cip4-jdf+xml
<JDF ... >
  <PreviewImage Separation = "PANTONE 128" URL="cid:123456.png" />
</JDF>
--abcdefg0123456789--
```

#### 11.6.3.4 CID URL Scheme

New in JDF 1.2

One of the benefits of the MIME Multipart/Related @MediaType is the ability of a URL in one body part to refer to the content of another body part. This is done by using a "cid" scheme in a URL, specified in [RFC2392]. Please look at the example to see how it is used.

#### Example 11-3: CID URL Scheme

```
MIME-Version: 1.0
Content-Type: multipart/related; boundary=abcdefg0123456789
Content-Transfer-Encoding: 8bit
--abcdefg0123456789
Content-Type: application/vnd.cip4-jdf+xml

<JDF ... >
  <PreviewImage Separation="PANTONE 128" URL="cid:123456.png@cip4.org" />
</JDF>

--abcdefg0123456789
Content-Type: image/png
Content-Transfer-Encoding: base64
Content-ID: <123456.png@cip4.org>

BASE64DATA
BASE64DATA
```

```
--abcdefg0123456789--
```

**Note:** [RFC2392] requires that the value of the Content-ID be enclosed in angle brackets ( $\langle \rangle$ ). Also the characters that [RFC2392] allows in Content-ID include characters that [RFC3986] does not permit in URLs; any such character (such as "+" or "&") SHALL be hex-encoded using the %hh escape mechanism in the URL (see [RFC3986]). Therefore, matching the cid URL with the Content-ID SHALL take account of the escaped equivalencies. Case-insensitive matching SHALL be used.

### 11.6.3.5 Ordering of Body Parts in MIME Multipart/Related

New in JDF 1.2

The first body part of the MIME Multipart message SHALL be the **JMF Message**. Internal links are defined using the **cid** URL and a corresponding Content-ID MIME header. Subsequent sections are the **JDF Jobs** followed by the linked entities, such as the preview images shown in the following example:

#### Example 11-4: MIME Multipart/Related

A Multipart/Related message is received that contains:

- [Message.jmf](#)
- [Ticket01.jdf](#)
- [Pages.pdf](#)

```
MIME-Version: 1.0
Content-Type: multipart/related; boundary=unique-boundary

--unique-boundary
Content-Type: application/vnd.cip4-jmf+xml
Content-Transfer-Encoding: 8bit
...
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="JMFCClient"
     TimeStamp="2005-07-07T13:15:56+01:00" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
  <Command ID="C0001" Type="SubmitQueueEntry" xsi:type="CommandSubmitQueueEntry">
    <QueueSubmissionParams Hold="true" URL="cid:JDF1@hostname.com"/>
  </Command>
</JMF>

--unique-boundary
Content-Type: application/vnd.cip4-jdf+xml
Content-Transfer-Encoding: 8bit
Content-ID: <JDF1@hostname.com>
Content-Disposition: attachment; filename="Ticket01.jdf";

<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" Activation="Active" ID="JDF_c"
      JobID="Geef62b72-0f6e-4195-a412-aaa3123d200b" Status="Waiting" Type="Product"
      Version="1.4" JobPartID="345">
  <ResourceLinkPool>
    <ComponentLink Usage="Output" rRef="ID125"/>
  </ResourceLinkPool>
  <ResourcePool>
    <RunList Class="Parameter" DocCopies="1" FirstPage="0" ID="RunList4"
            IsPage="true" NDoc="1" PageCopies="1" Status="Available">
      <LayoutElement ElementType="Document" HasBleeds="false" ID="LayoutElement_1"
          IgnorePDCopies="true" IgnorePDLImposition="true" IsPrintable="true">
        <FileSpec AppOS="Windows" Compression="None" Disposition="Retain"
                  ID="FileSpec_9" URL="cid:Asset01@hostname.com">
```

```

        UserFileName="Christmas Cards" />
    </LayoutElement>
</RunList>
<Component ID="ID125" Class="Quantity" Status="Unavailable"
    ComponentType="Sheet" />
</ResourcePool>
<JDF ID="JDF-3" Status="Waiting" Type="DigitalPrinting" JobPartID="400">
    <ResourceLinkPool>
        <DigitalPrintingParamsLink Usage="Input" rRef="ID123"/>
        <RunListLink Usage="Input" rRef="RunList4"/>
        <ComponentLink Usage="Output" rRef="ID125"/>
    </ResourceLinkPool>
    <ResourcePool>
        <DigitalPrintingParams ID="ID123" Class="Parameter" Status="Available" />
    </ResourcePool>
</JDF>
</JDF>

--unique-boundary
Content-type: application/pdf
Content-ID: <Asset01@hostname.com>
Content-Transfer-Encoding: binary
Content-Disposition: attachment; filename="Pages 1.pdf";

The pdf goes in here.
--unique-boundary--

```

When such a stream arrives at the server, it is decoded and the parts stored locally either in memory or persistent storage. The contents of the stream are extracted. The designer of the Controller chose to save package contents into a uniquely named directory.

- Assets are saved first — Pages.pdf is placed in /root/temp/a39e9503-a96b-4e86-9c1d-f4188d19810e/Assets/
- The Controller then internally maps cid:Asset01@hostname.com in the ticket into file:///root/temp/a39e9503-a96b-4e86-9c1d-f4188d19810e/Assets/Pages.pdf.
- Then Ticket01.jdf is placed in a directory /root/temp/a39e9503-a96b-4e86-9c1d-f4188d19810e/
- The Controller then internally maps cid:JDF1@hostname.com in the message into file:///root/temp/a39e9503-a96b-4e86-9c1d-f4188d19810e/Ticket01.jdf and either executes or stores the Message.

## 11.7 MIS Requirements

MIS systems MAY:

- Ignore Audit Elements if they receive complete information about a Process execution via JMF.
- Decompose JDF into an internal format such as database tables.

## 11.8 Job Modification

While jobs are waiting for execution in a queue or even during execution of a job, circumstances may arise that require modifications to that job. XJDF enables modifications to jobs using the `ModifyQueueEntry` and `ResubmitQueueEntry` messages.

Note: Although the XJDF mechanisms for modifying jobs are fairly simple, the underlying physical changes may make modifications difficult or even impossible. The actual implementation of changes is always device dependent, and Controllers SHOULD always expect modification requests to fail and process failure appropriately.

### 11.8.1 Rescheduling with ModifyQueueEntry

`ModifyQueueEntry` is designed to allow rescheduling of jobs without changing any job's. Typical use cases for `ModifyQueueEntry` are:

- Reordering the sequence of execution to optimize setup times by running similar jobs in sequence;
- Suspending a running job so that a rush job can be processed before the current job is completed;

### 11.8.2 Modifying Jobs

`ResubmitQueueEntry` is designed to modify the s of the underlying sets of XJDF nodes of a job. 4 types of job modification are supported. These are differentiated by `ResubmissionParams/@UpdateMethod` and the related `XJDF/@JobPartID`

**Table 11-6: Modifying Job Parameters**

<code>ResubmissionParams/@UpdateMethod</code>	<code>XJDF/@JobPartID</code>	Description
Complete	-	If <code>XJDF/@JobPartID</code> is omitted, the job parameters of all XJDFs that belong to the queue entry SHALL be completely overwritten with new information.
Complete	known	The job parameters relating to <code>@JobPartID</code> SHALL be completely overwritten with new information.
Incremental	known	The job parameters that relate to the existing XJDF are overwritten by the data that is explicitly supplied in the referenced XJDF.
Incremental	new	A new process step is requested. Details SHALL be supplied in the referenced XJDF.
Delete	known	The job parameters that are explicitly supplied in the referenced XJDF SHALL be removed. If no XJDF is provided, the entire process step described by <code>@JobPartID</code> SHALL be removed.

Typical use cases for `ResubmitQueueEntry` are:

- Change the number of copies requested;
- Change the number or details of physical inks required for printing;
- Change content data such as number of pages or page size;
- Change the details of the physical substrate to print on;
- Change binding or other finishing options;
- Select a different device with differing properties, e.g. sheet size, to optimize utilization of multiple devices.

## 11.9 Interoperability Conformance Specifications

Interoperability Conformance Specifications (i.e., ICS documents) are developed by CIP4 working committees. They establish the minimum **JDF** support requirements for Devices of a common class, including expected behavior. An ICS document can subset **JDF** but can not expand upon **JDF**. For instance, an ICS that covers desktop printers can either omit or prohibit all of the postpress Processes related to case binding. ICS documents can also establish minimum **JDF** support requirements for a class of Devices.

Once published, ICS documents will form the basis for testing and certification by CIP4-sanctioned facilities. **JDF**-enabled products that pass these tests will be deemed “**JDF Certified**” to conform to an identified level of one or more ICS documents and will be permitted upon certification to use a “**JDF Certified**” logo in connection with certified **JDF**-enabled products.

The development of ICS documents are done in parallel, but not in synchronization, with the development of editions of the JDF specification (e.g., an ICS is related to a specific edition of the JDF Specification, but might be released at a later date). Once approved, all published ICS documents will be available at [http://www.cip4.org/document\\_archive/ics.php](http://www.cip4.org/document_archive/ics.php).

## 11.10 Use of XML Schema for Capability Descriptions

Individual devices will never implement the entire XJDF specification. Meaningful communication between a Controller and a Device is only possible if the Controller is aware of the limitations of the Device.

XJDF does not provide a proprietary method to define Device capabilities. Since XJDF is an XML dialect, standard XML tools such as XML schema [XMLSchema] SHOULD be used to declare the supported features of a device.

CIP4 provides schema for the entire XJDF specification and reduced schema for ICS documents. Vendors are encouraged to provide XML schemas that define the supported XJDF features of their Devices.

Device schema for XJDF SHALL use the XJDF namespace for standard XJDF features.



# Appendix A Encoding

This appendix lists a number of commonly used JDF XJDF data types and structures and their XML encoding. Data types are simple data entities such as strings, numbers (as doubles) and dates. They have a very straightforward string representation and are used as XML Attribute Values. Data structures, on the other hand, describe more complex structures that are built from the defined data types, such as colors.

## A.1 Notes About Encoding

All of the JDF XJDF types are derived from XML Schema types, either by extension, use of lists or by restriction. Each type will refer back, either directly or indirectly, to such a type and reference ought to be made to “XML Schema Part 2 – Datatypes” [XMLSchema].

### A.1.1 List, Range and Range List Data Types

Some data types are derived from a base type that represents a single value. Such data types include a list, a range and a range list. For a data type  $X$ , the name of such data types are  $XList$ ,  $XRange$  and  $XRangeList$ , respectively. Each data type represents a set of values of the base data type. A range consists of a pair of (possibly) compound values, where each (compound) value is specified by one or more values (possibly a number), each separated by whitespace character. For example, a rectangle is a compound value that is specified by 4 numbers. A list is an enumerated set of values, which is expressed as a list of space separated values. A range is a continuous inclusive range of values, which is expressed as a pair of values separated by a ‘~’ whitespace character. A range list is a set of values that includes range values and may also include individual values. A range list is expressed as a list of space separated ranges and individual values. Some data types with a range and range list data types do not have a list data type. In this case, the range list may allow only range values.

### A.1.2 Whitespace

The addition of whitespace characters for single types is NOT RECOMMENDED. Items in a list of values are separated by whitespace. A range consists of two items separated by a ‘~’; although not mandatory (to maintain compatibility with JDF 1.1), it is strongly RECOMMENDED that whitespace is used between the items and the ‘~’.

Note: The JDF 1.2 schema will only correctly validate ranges if whitespace is used around the ‘~’.

### A.1.3 Infinity Limits

Several types require the ability to set an unbounded range, or to select a single terminating value (e.g., Integer or date ranges). These types have been extended with the tokens “-INF” or “INF” to indicate the maximum negative and positive limits of the values in question, details are shown where appropriate for each value.

## A.2 Simple Types — Attribute Values

### A.2.1 boolean

Has the value space for supporting the mathematical concept of binary-valued logic:

#### Encoding

boolean Attributes are encoded as either of the string values “true” or “false”. The XML Schema data type boolean values of “1” or “0” are not permitted.

#### Example A-1: boolean

<Example Enable="true" />

### A.2.2 CMYKColor

XML Attributes of type CMYKColor are used to specify CMYK colors.

## Encoding

CMYKColor Attributes are primitive data types and are encoded as a string of four numbers (as doubles) in the range of [0...1.0] separated by whitespace. A value of 0.0 specifies no ink and a value of 1.0 specifies full ink. The sequence of colors is “C M Y K”.

### Example A-2: CMYKColor

```
<Color cmyk = "0.3 0.6 0.8 0.1"/><!--brick red-->
```

## A.2.3 date

A calendar date, it represents a time period that starts at midnight on a specified day and lasts for 24 hours. Based on [ISO8601:2004].

## Encoding

It is represented identically to the XML Schema type: *date*

### Example A-3: date

```
<Example StartDate="1999-05-31"/>
```

## A.2.4 dateTime

Represents a specific instant of time. It SHALL be a Coordinated Universal Time (UTC) or the time zone SHALL be indicated by the offset to UTC. In other words, the time SHALL be unique in all time zones around the world. It also allows infinity limits to allow for explicit ‘don’t care’ values (i.e., it SHALL be finished before ‘anytime’).

## Encoding

It is represented as a union of the XML Schema type: *dateTime* and the infinity value tokens *INF* and *-INF*.

Note that [ISO8601:2004] allows a wider range of time zone specifications than XML. *dateTime* SHALL adhere to the stricter limitations defined in [XMLSchema]. For instance the colon ‘:’ in the time zone field SHALL be present when writing time zones in the format “*hh:mm*”.

### Example A-4: dateTime

```
<Example Start="1999-05-31T18:20:00Z"/>
<Example Start="1999-05-31T13:20:00-05:00"/>
```

## A.2.5 DateTimeRange

New in JDF 1.2

XML Attributes of type *DateTimeRange* are used to describe a range of points in time. More specifically, it describes a time span that has an absolute start and end. Unbounded ranges can use the infinity value tokens *INF* and *-INF*.

## Encoding

A *DateTimeRange* is represented by two *dateTime* or infinity tokens separated by the whitespace “*~*” whitespace sequence.

### Example A-5: DateTimeRange

```
<XXX range="1999-05-31T18:20:00Z ~ 1999-05-31T18:20:00Z"/>
<XXX range="1999-05-31T18:20:00Z ~ INF"/>
<XXX range="-INF ~ 1999-05-31T18:20:00Z"/>

<XXX range="1999-05-31T18:20:00Z 1999-05-31T18:20:00Z"/>
<XXX range="1999-05-31T18:20:00Z INF"/>
<XXX range="-INF 1999-05-31T18:20:00Z"/>
```

## A.2.6 DateTimeRangeList

[New in JDF 1.2](#)

XML Attributes of type DateTimeRangeList are used to describe a list of ranges of points in time. More specifically, it describes a list of time spans, which each have a relative start and end.

### Encoding

A DateTimeRangeList is represented by sequence of either DateTimeRange values (See 1.5), separated by whitespace or dateTme values.

#### Example A-6: DateTimeRangeList

```
<XXX RangeList=
      "1999-05-31T18:20:00Z ~ 1999-05-31T18:20:00Z 1999-05-31T13:20:00-05:00 ~ INF"/>
<XXX RangeList=
      "1999-05-31T18:20:00Z 1999-05-31T18:20:00Z 1999-05-31T13:20:00-05:00 INF"/>
```

## A.2.7 double

double Corresponds to IEEE double-precision 64-bit floating point type. It includes the infinity limit tokens *INF* and *-INF*, but does not allow the not a number token *NaN*.

### Encoding

It is represented similarly to the XML Schema type: *double*. However string value *NaN*, is not permitted.

#### Example A-7: double

```
<Example NegativePi="-3.14"/>
```

## A.2.8 DoubleList

[New in JDF 1.2](#)

XML Attributes of type DoubleList are used to describe a variable length list of numbers (as doubles). This type is used as the base for other **JDF XJDF** types that use a fixed length list of number (e.g., CMYKColor which is restricted to four number in the list).

### Encoding

A DoubleList is encoded as a string of whitespace-separated double values as defined in Section A.2.7, “double”.

#### Example A-8: DoubleList

```
<XXX list="3.14 1 .6"/>
```

## A.2.9 DoubleRange

[New in JDF 1.2](#)

XML Attributes of type DoubleRange are used to describe a range of numbers (as doubles). Mathematically spoken, the two numbers define a closed interval.

### Encoding

A DoubleRange is represented by two double values separated by a “~” (tilde) space character and OPTIONAL additional whitespace. Note: It is now RECOMMENDED that the ‘~’ is surrounded by whitespace to aid validation and parsing.

#### Example A-9: DoubleRange

```
<XXX range="-3.14 ~ 5.13"/>
<XXX range="0 ~ INF"/>
<XXX range="-3.14 5.13"/>
```

```
<xxx range="0 INF"/>
```

### A.2.10 DoubleRangeList

New in JDF 1.2

XML Attributes of type DoubleRangeList are used to describe a list of DoubleRange values and/or enumerated numbers as doubles).

#### Encoding

A DoubleRangeList is a sequence of DoubleRange values and single double values separated by whitespace.

#### Example A-10: DoubleRangeList

```
<xxx list="-1 ~ -6 3.14 ~ 5.13 7 9 ~ 128 131 255 ~ INF"/>
<xxx list="-1 -6 3.14 5.13 7 7 9 128 131 131 255 INF"/>
```

### A.2.11 duration

Represents a duration of time. Based on [ISO8601:2004]. The single infinity limit token *INF* is permitted.

#### Encoding

It is represented as a union of the XML Schema type: "*duration*" and the string value "*INF*"

Note that [XMLSchema] explicitly allows negative durations. Thus a value of -PT15M is valid and describes a negative duration of 15 minutes in the past.

#### Example A-11: duration

```
<Example Duration= "P1Y2M3DT10H30M"/>
```

### A.2.12 DurationRange

XML Attributes of type DurationRange are used to describe a range of time durations. More specifically, it describes a time span that has a relative start and end.

#### Encoding

A DurationRange is represented by two duration values, separated by the “~” (tilde) space character and optional additional whitespace. Note: It is now RECOMMENDED that the ‘~’ is surrounded by whitespace to aid validation and parsing.

#### Example A-12: DurationRange

```
<xxx range="P1Y2M3DT10H30M ~ P1Y2M3DT10H35M"/>
<xxx range="P1Y2M3DT10H30M ~ INF"/>
<xxx range="P1Y2M3DT10H30M P1Y2M3DT10H35M"/>
<xxx range="P1Y2M3DT10H30M INF"/>
```

### A.2.13 DurationRangeList

New in JDF 1.2

XML Attributes of type DurationRangeList are used to describe a list of ranges of time durations. More specifically, it describes a list of time spans that have a relative start and end.

#### Encoding:

A DurationRangeList is represented by sequence of DurationRange values and durations, separated by whitespace.

#### Example A-13: DurationRangeList

```
<xxx RangeList="P1Y2M3DT10H30M ~ P1Y2M3DT10H35M P1Y3M2DT10H30M"/>
<xxx RangeList="P1Y2M3DT10H30M P1Y2M3DT10H35M P1Y3M2DT10H30M P1Y3M2DT10H30M "/>
```

## A.2.14 gYearMonth

Represents a specific Gregorian month in a specific Gregorian year. Based on [ISO8601:2004].

### Encoding

It is represented identically to the XML Schema type: *gYearMonth*

#### Example A-14: gYearMonth

```
<Example Month="2002-11"/>
```

## A.2.15 hexBinary

Represents arbitrary hex encoded binary data.

### Encoding

It is represented identically to the XML Schema type: *hexBinary*

#### Example A-15: hexBinary

```
<Example Hex="0A1C"/>
```

## A.2.16 ID

Modified in JDF 1.3

Represents the @*ID* Attribute from [XMLSchema]. It represents a name or string that contains no space characters and starts with a letter, or '\_'. Each ID value SHALL be unique within a **JDF** an **XJDF** document and thus uniquely identify the elements that bear them.

Note that the @*ID* Attribute definition in [XMLSchema] is more restrictive than the @*ID* Attribute definition in [XML]. [XMLSchema] explicitly forbids the use of ':' in ID.

### Encoding

It is represented identically to the XML Schema type: *ID*

#### Example A-16: ID

```
<Example ID="R-16"/>
```

## A.2.17 IDREF

IDREF Represents the IDREF Attribute from [XMLSchema]. For a valid XML-document, an element with the ID value specified in IDREF SHALL be present in the scope of the document.

### Encoding

It is represented identically to the XML Schema type: *IDREF*

#### Example A-17: IDREF

```
<Example IDREF="R-16"/>
```

## A.2.18 IDREFS

IDREFS Represents the IDREFS Attribute from [XMLSchema]. More specifically, this is a whitespace-separated list of IDREF values.

### Encoding

It is represented identically to the XML Schema type: *IDREFS*

**Example A-18: IDREFS**

```
<Example IDREFS="R-12 R-16"/>
```

**A.2.19 integer**

Represents numerical integer values with tokens for representing infinity limits.

Implementation note: Except where explicitly noted otherwise, integers are not expected to exceed a value that can be represented as signed 32 bits.

**Encoding**

It is represented as a union of the XML Schema type: *integer* and the infinity value tokens *INF* and *-INF*

**Example A-19: integer**

```
<Example Copies="36"/>
```

**A.2.20 IntegerList**

XML Attributes of type IntegerList are used to describe a variable length list of integer values.

**Encoding**

An IntegerList is encoded as a string of integers separated by whitespace.

**Example A-20: IntegerList**

```
<XXX list="-INF 0 1 2 3 4 INF 1 3 0"/>
```

**A.2.21 IntegerRange**

XML Attributes of type IntegerRange are used to describe a range of integers. In some cases, ranges are defined for an unknown number of objects. In these cases, a negative value denotes a number counted from the end. For example, *-1* is the last object, *-2* the second to last and so on. IntegerRanges that follow this convention are marked in the respective Attribute descriptions.

If the first element of an IntegerRange specifies an element that is behind the second element, the Range specifies a list of integers in reverse order, counting backwards. For example "*6 ~ 4*" = "*6 5 4*" and "*-1 ~ 0*" = "last... 2 1 0".

Negative values SHALL reference elements in an ordered list from the back of the list. In other words, *-1* SHALL refer the last entry in the list, *-2* the second to last, etc. The ordering of elements in the Thus a value of "*0 ~ -1*" refers to the complete range of entries from first to last and "*-1 ~ 0*" refers to the reverse ordered complete range of entries from last to first.

**Encoding**

An IntegerRange is represented by a list of two xs:integer two integers, separated by a “~” (tilde) character and optional additional whitespace. Note: It is now RECOMMENDED that the ‘~’ is surrounded by whitespace to aid validation and parsing.

**Schema representation**

```
<xs:simpleType name="IntegerRange">
  <xs:simpleType>
    <xs:restriction>
      <xs:length value="2" fixed="true"/>
      <xs:simpleType>
        <xs:list itemType="xs:integer"/>
      </xs:simpleType>
    </xs:restriction>
  </xs:simpleType>
</xs:simpleType>
```

### Example A-21: IntegerRange

```
<XXX range="-3 ~ -5"/>
<XXX range="INF ~ -5"/>
<XXX range="-3 -5"/>
<XXX range="INF -5"/>
```

### A.2.22 IntegerRangeList

XML Attributes of type IntegerRangeList are used to describe a list of IntegerRanges [and/or enumerated integers](#).

#### Encoding

An IntegerRangeList is represented by a sequence of IntegerRanges [and integers, separated by whitespace](#).

#### Schema representation

```
<xs:simpleType name="IntegerRangeList">
  <xs:list itemType="jdf:IntegerRange"/>
</xs:simpleType>
```

### Example A-22: IntegerRangeList

```
<XXX list="-1 ~ -6 3 ~ 5 7 9 ~ 128 131"/>
<XXX list="-1 -6 3 5 7 7 9 128 131 131"/>
```

### A.2.23 LabColor

XML Attributes of type LabColor are used to specify absolute Lab colors. The Lab values are normalized to a Light of D50 and an angle of 2 degrees as specified in [CIE 15:2004] and [ISO13655:1996].

This corresponds to a white point of X = 0.9642, Y = 1.0000 and Z = 0.8249 in CIEXYZ color space. The value of L is restricted to a range of [0..100]; a and b are unbounded.

#### Encoding

LabColors are primitive data types and are encoded as a list of three numbers (as doubles) separated by whitespace in the sequence: "L a b"

### Example A-23: LabColor

```
<Color Lab="51.9 12.6 -18.9"/>
```

### A.2.24 language

Represents a natural language defined in [RFC1766].

#### Encoding

It is represented identically to the XML Schema type: *language*

### Example A-24: language

```
<Example Language="de"/> <!-- German -->
<Example Language="de-CH"/> <!-- Swiss German -->
<Example Language="en"/> <!-- English -->
<Example Language="en-GB"/> <!-- British English -->
```

### A.2.25 languages

[New in JDF 1.4](#)

XML Attributes of type languages are used to describe a variable length list of language values.

#### Encoding

A languages value is encoded as a string of languages, each language separated by whitespace.

**Example A-25: languages**

```
<Example Languages ="de-CH de en-GB en"/>
```

**A.2.26 matrix**

Coordinate transformation matrices are widely used throughout the whole printing Process, especially in **Layout** Resources. They represent two dimensional transformations as defined by [PS] and [PDF1.6]. For more information, refer to the respective reference manuals, and look for “Coordinate Systems and Transformations.” The “identity matrix”, which is “1 0 0 1 0 0”, is often used as a default throughout this specification. When another matrix is factored against a matrix with the identity matrix value, the result is that the original matrix remains unchanged.

**Encoding**

Coordinate transformation matrices are primitive data types and are encoded as a list of six numbers (as doubles), separated by whitespace: “a b c d Tx Ty”. The variables *Tx* and *Ty* describe distances and are defined in points.

**Example A-26: matrix**

```
<ContentObject CTM="1 0 0 1 3.14 21631.3" />
```

**A.2.27 NameRange**

XML Attributes of type NameRange are used to describe a range of NMOKEN data that are acquired from a list of named elements, such as named pages in a PDL file. It depends on the ordering of the targeted list, which names are assumed to be included in the NameRange. The following two possibilities exist:

- 1 There is no explicit ordering. In this case, case sensitive alphabetical ordering [Unicode5.0] is implied. This behavior is the default unless called out explicitly in the specification.
- 2 There is explicit ordering, such as in a list of named pages in a **RunList**. In this case, the ordering of the **RunList** defines the order and all pages between the end pages are included in the NameRange.

**Modification note:** starting with JDF 1.4, the first item is specified as the default behavior.

**Encoding**

A NameRange typed Attribute is represented by two NMOKEN values separated by a “~” (tilde) space character and optional additional whitespace. Note: It is now RECOMMENDED that the ‘~’ is surrounded by whitespace to aid validation and parsing.

**Example A-27: NameRange**

```
<XXX NameRange="Jack ~ Jill"/>
<XXX NameRange="Jack Jill"/>
```

**A.2.28 NameRangeList**

XML Attributes of type NameRangeList are used to describe a list of NameRanges.

**Encoding**

A NameRangeList is represented by a sequence of NameRanges and NMOKEN, separated by whitespace.

**Example A-28: NameRangeList**

```
<XXX list="A brian ~ fred x z"/>
<XXX list="A A brian fred x x z z"/>
```

**A.2.29 NMOKEN**

Represents the NMOKEN Attribute type from [XML]. It represents a name or string that contains no space characters.

## Encoding

It is represented identically to the XML Schema type: *NMTOKEN*

### Example A-29: NMTOKEN

```
<Example Alias="ABC_6" />
```

## A.2.30 NMTOKENS

NMTOKENS Represents the NMTOKENS Attribute type from [XML]. More specifically, this is a whitespace-separated list of NMTOKEN values.

## Encoding

It is represented identically to the XML Schema type: *NMTOKENS*

### Example A-30: NMTOKENS

```
<Example AliasList="ABC_6 ABCD_3 DEGF" />
```

## A.2.31 PDFPath

Modified in JDF 1.3

XML Attributes of type PDFPath are used in **JDF XJDF** for describing parameters such as trap zones and clip paths. In PJTF, PDFPaths are encoded as a series of **moveto-lineto** operations. **JDF XJDF** has a different encoding, which is able to describe more complex paths, such as Bezier curves. The non-zero winding rule is used to fill closed paths.

## Encoding

PDFPaths are encoded by restricting an XML *string* Attribute formatted with PDF path operators. This allows for easy adoption in PS and PDF workflows. PDF operators are limited to those described in “Path Construction Operators” in [PDF1.6].

### Example A-31: PDFPath

```
<ElementWithPath path="0 0 m 10 10 l 20 20 z" />
```

## A.2.32 rectangle

XML Attributes of type rectangle are used to describe rectangular locations on the page, Sheet or other printable surface. A rectangle is represented as an array of four numbers — llx lly urx ury — specifying the lower-left x, lower-left y, upper-right x and upper-right y coordinates of the rectangle, in that order. This is equivalent to the ordering: Left Bottom Right Top. All numbers are defined in points.

## Encoding

To maintain compatibility with PJTF, rectangles are primitive data types and are encoded as a string of four *numbers*, separated by whitespace: “llx lly urx ury” or “l b r t”.

### Example A-32: rectangle

```
<ContentObject ClipBox="0 0 3.14 21631.3" />
```

## Implementation Remark

Since all numbers are real numbers, any comparison of boxes SHOULD take into account certain rounding errors. For example, different XYPair values MAY be considered equal when all numbers are the same within a range of 1 point.

### A.2.33 RectangleRange

[New in JDF 1.2](#)

XML Attributes of type RectangleRange are used to describe a range of rectangles.

#### Encoding

A RectangleRange is represented by one or two Rectangles, separated by a “~” (tilde) space character and optional additional whitespace. Note: It is now RECOMMENDED that the ‘~’ is surrounded by whitespace to aid validation and parsing.

#### Example A-33: RectangleRange

```
<XXX range="1 2 3 4 ~ 5 6 7 8"/>
<XXX range="-INF -INF 3 4 ~ 0 1 INF INF"/>
<XXX range="1 2 3 4 5 6 7 8"/>
<XXX range="-INF -INF 3 4 0 1 INF INF"/>
```

### A.2.34 RectangleRangeList

[New in JDF 1.2](#)

XML Attributes of type RectangleRangeList are used to describe a list of rectangle ranges.

#### Encoding

A RectangleRangeList is represented by sequence of RectangleRange values and Rectangle values, separated by whitespace.

#### Example A-34: RectangleRangeList

```
<XXX RectangleRangeList="1 2 3 4 ~ 5 6 7 8 9 10 11 12 13 14 15 16"/>
```

### A.2.35 regExp

Represents a regular expression as defined in [XMLSchema].

#### Encoding

It is represented identically to the XML Schema type: *normalizeString*

#### Example A-35: regExp

```
<Example expression="Foo({1|2}*)"/>
```

### A.2.36 shape

XML Attributes of type shape are used to describe a three dimensional box.

#### Encoding

A shape is represented as an array of three (positive or zero) *numbers* — x y z — specifying the Width x, height y and depth z coordinates of the shape, in that order.

#### Example A-36: shape

```
<XXX Dimensions="10 20 40"/>
```

### A.2.37 ShapeRange

XML Attributes of type ShapeRange are used to describe a range of shapes (three dimensional boxes). The range “*x1 y1 z1 ~ x2 y2 z2*” describes the area  $x_1 \leq x \leq x_2$  and  $y_1 \leq y \leq y_2$  and  $z_1 \leq z \leq z_2$ . Thus the shape “*2 3 4*” is within “*1 2 1 ~ 3 4 4*”.

Note that this implies that all three values of the second entry SHALL be  $\geq$  the corresponding values of the first entry. The following example is therefore invalid: "1 2 1 ~ 0 4 4".

### Encoding

A ShapeRange is represented by two shapes, separated by a “~” (tilde) space character and optional additional whitespace. Note: It is now RECOMMENDED that the ‘~’ is surrounded by whitespace to aid validation and parsing.

#### Example A-37: ShapeRange

```
<XXX Shaperange="1 2 3 ~ 4 5 6"/>
<XXX Shaperange="1 2 3 ~ 4 INF 6"/>
<XXX Shaperange="1 2 3 4 5 6"/>
<XXX Shaperange="1 2 3 4 INF 6"/>
```

#### A.2.38 ShapeRangeList

XML Attributes of type ShapeRangeList are used to describe a list of ShapeRange and/or shapes.

### Encoding

A ShapeRangeList is a sequence of ShapeRange and shapes separated by whitespace.

#### Example A-38: ShapeRangeList

The brackets below the example illustrate the grouping of shapes and ShapeRange values.

```
<XXX Shapelist="100 200 300 ~ 110 220 330 150 300 150 2 3 0 ~ 3 4 5">
[ ] [ ] [ ] [ ]
```

#### A.2.39 sRGBColor

XML Attributes of type sRGBColors are used to specify sRGB colors.

### Encoding

sRGBColors are primitive data types and are encoded as a string of three numbers in the range of [0...1.0] separated by whitespace. A value of 0 specifies no intensity (black) and a value of 1 specifies full intensity. The sequence is defined as: “r g b”

#### Example A-39: sRGBColor

```
<Color sRGB="0.3 0.6 0.8" />
```

#### A.2.40 string

Represents character strings in XML.

### Encoding

It is represented identically to the XML Schema type: *normalisedString NB*. This means that tabs, linefeeds and so on are not valid characters.

#### Example A-40: string

```
<Example Name="Test With Space" />
```

#### A.2.41 TimeRange

Deprecated in JDF 1.2

#### A.2.42 TransferFunction

XML Attributes of type TransferFunction are functions that have a one-dimensional input and output. In **JDF XJDF**, they are encoded as a simple kind of sampled functions and used to describe transfer curves of image transfer Processes from one medium to the next (e.g., film to plate, or plate to press).

A transfer curve consists of a series of XY pairs where each pair consist of the stimuli (X) and the resulting value (Y). To calculate the result of a certain stimuli, the following algorithms SHALL be applied:

- 1 If  $x \leq$  first stimuli, then the result is the y value of the first xy pair.
- 2 If  $x \geq$  the last stimuli, then the result is the y value of the last xy pair.
- 3 Search the interval in which x is located.
- 4 Return the linear interpolated value of x within that interval.

### Encoding

A TransferCurve is encoded as a string of space-separated *numbers* (as doubles). The numbers are the XY pairs that build up the transfer curve. Note that the end points of a TransferFunction SHALL be explicitly specified and are NOT defaulted to "0 0" or "1 1".

#### Example A-41: TransferFunction

```
<someElementWithTransferCurve someCurve="0 0 .1 .2 .5 .6 .8 .9 1 1"/>
```

### A.2.43 URI

[Modified in JDF 1.3](#)

Short for URI-reference. Represents a Uniform Resource Identifier (URI) Reference as defined in [RFC3986]. In JDF 1.3 and above, the The URI data typed is represented as an Internationalized Resource Identifier (IRI) as defined in [RFC3987].

### Encoding

A URI is represented identically to the XML Schema type: *anyURI*.

#### Example A-42: URI

```
<Example URI="http://www.w3.org/1999/XMLSchema"/>
```

### A.2.44 URL

Short for URL-reference. Represents a Uniform Resource Locator (URL) Reference as defined in [RFC3986]. In JDF 1.3 and above, the The URL data typed is represented as an Internationalized Resource Identifier (IRI) as defined in [RFC3987].

### Encoding

A URL is represented identically to the XML Schema type: *anyURI*.

Some characters in a URL SHALL be escaped and all characters MAY be escaped by encoding their UTF-8 representation into a '%' followed by the double digit hex representation of the character. The list of characters that SHALL be encoded is dependent on the URL scheme. Non-escaped characters SHALL be encoded in the encoding of the containing JDF XJDF document.

#### Example A-43: URL

[New in JDF 1.4](#)

A UNC path to be displayed as a URL:

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<Example URL="\\\\myHost\\a\\c äöü%.pdf"/>
```

### Example A-44: URL: UTF-8

[New in JDF 1.4](#)

The UNC path encoded as an IRL with internationalized characters in UTF-8:

```
<?xml version="1.0" encoding="UTF-8" standalone="no" ?>
<Example URL="file:///myHost/a/c%20äöü%25.pdf"/>
```

### Example A-45: URL: Windows Locale 1252

[New in JDF 1.4](#)

The same UNC path encoded as an IRL with internationalized characters in UTF-8 viewed in a Windows locale 1252:

```
<Example URL="file:///myHost/a/c%20Ã¤Ã¶Ã%25.pdf"/>
```

### Example A-46: URL: Escaped Characters

[New in JDF 1.4](#)

The same UNC path encoded as an IRL with internationalized characters escaped:

```
<Example URL="file:///myHost/a/c%20%c3%a4%c3%b6%c3%bc%25.pdf"/>
```

## A.2.45 XPath

[New in JDF 1.2](#)

Represents an XPath expression. [XPath]

### Encoding

It is represented identically to the XML Schema type: *token*

### Example A-47: XPath

```
<Example xpath= "JDF/AuditPool/Created/@TimeStamp" />
```

## A.2.46 XYPair

XML Attributes of type XYPair are used to describe sizes like *@Dimensions* and *@StartPosition*. They can also be used to describe positions on a page. All numbers that describe lengths are defined in points.

### Encoding

XYPair Attributes are primitive data types and are encoded as a string of two *numbers*, separated by whitespace: “x”  
“y”

### Example A-48: XYPair

```
<CutBlock BlockSize="612 792"/>
<Media Dimension ="1984 2834"/>
```

### Implementation Remark

Since all numbers are real numbers, comparison of XYPair values SHOULD take into account certain rounding errors. For example, different XYPair values MAY be considered equal when all numbers are the same within a range of 1 point.

## A.2.47 XYPairRange

XML Attributes of type XYPairRange are used to describe a range of XYPair values. The range “x1 y1 ~ x2 y2” describes the area  $x_1 \leq x \leq x_2$  and  $y_1 \leq y \leq y_2$ . Thus the XYPair “2 3” is within “1 2 ~ 3 4”. Note

that this implies that both values of the second entry SHALL be  $\geq$  the corresponding values of the first entry. The following example is therefore invalid: "1 2 ~ 0 4".

### Encoding

An XYPairRange is represented by two XYPair values, separated by a “~” (tilde) space character and optional additional whitespace. Note: It is now RECOMMENDED that the ‘~’ is surrounded by whitespace to aid validation and parsing.

#### Example A-49: XYPairRange

```
<XXX XYrange="1 2 ~ 3 4"/>
<XXX XYrange="-INF 2 ~ 3 INF"/>
<XXX XYrange="1 2 3 4"/>
<XXX XYrange="-INF 2 3 INF"/>
```

### A.2.48 XYPairRangeList

XML Attributes of type XYPairRangeList are used to describe a list of XYPairRange and/or XYPair values.

### Encoding

A XYPairRangeList is a sequence of XYPairRange and XYPair values separated by whitespace.

#### Example A-50: XYPairRangeList

The brackets below the example illustrate the grouping of XYPair values and XYPairRange values.

```
<XXX XYlist="100 200 ~ 110 220 150 300 150 350 200 300 ~ INF INF"/>
[           ] [           ] [           ] [           ]
```

## A.3 Enumerations and Lists

### A.3.1 enumeration

Represents a closed set of values.

### Encoding

It is represented by an enumerated list of values derived from the XML Schema type: *NMTOKEN*

#### Example A-51: enumeration

```
<Example Rotate="Rotate90"/>
```

### A.3.2 enumerations

Represents a list of values taken from a closed set. Values MAY be repeated within the list. If there are any implications to the order of the values this will be detailed in the appropriate items description, otherwise none is implied.

### Encoding

It is represented by a whitespace-separated list of enumeration values derived from the XML Schema type: *NMTOKEN*

#### Example A-52: enumerations

```
<Example AcknowledgeType="Applied Completed"/>
```

### A.3.3 Defined JDF XJDF enumeration Data Types

This section is a list of defined enumeration data types. These types are to be used wherever possible for enumerated values and lists of values.

### A.3.3.1 Anchor

[New in JDF 1.4](#)

Attributes with a data type of Anchor describe the 9 anchor points of a rectangle.

**Table A-1: Anchor Enumeration Values**

Enumeration Value	Comment
<i>TopLeft</i>	
<i>TopCenter</i>	
<i>TopRight</i>	
<i>CenterLeft</i>	
<i>Center</i>	
<i>CenterRight</i>	
<i>BottomLeft</i>	
<i>BottomCenter</i>	
<i>BottomRight</i>	

### A.3.3.2 JDFJMFVersion

Describes the schema version of [a JDF](#) [an XJDF](#) or [JMF](#) [XJMF](#) instance.

**Table A-2: JDFJMFVersion Enumeration Values**

Enumeration Value	Comment
1.1	JDF 1.1
1.2	JDF 1.2
1.3	JDF 1.3
1.4	JDF 1.4
1.5	JDF 1.5
2.0	XJDF 2.0

### A.3.3.3 NamedColor

Machine readable definition of a color. For a list of allowed values see:

<http://www.w3.org/TR/html4/types.html#h-6.5>

Colors of preprocessed products such as Wire-O binders and cover leaflets. The entries in the following table MAY be prefixed by either “Dark” or “Light”. The result MAY additionally be prefixed by “Clear” to indicate translucent material. For example, “*ClearDarkBlue*” indicates a translucent dark blue, “*ClearBlue*” a translucent blue and “*Blue*” indicates an opaque blue.

**Table A-3: NamedColor Enumeration Values (Sheet 1 of 2)**

Color name/ Enumeration Value	Comment	Color name/ Enumeration Value	Comment
<i>Black</i>	—	<i>MultiColor</i> <a href="#">New in JDF 1.1</a>	
<i>Blue</i>	—	<i>Mustard</i> <a href="#">New in JDF 1.1</a>	

**Table A-3: NamedColor Enumeration Values (Sheet 2 of 2)**

Color name/ Enumeration Value	Comment	Color name/ Enumeration Value	Comment
<i>Brown</i>	—	<i>NoColor</i>	—
<i>Buff</i>	—	<i>Orange</i>	—
<i>Cyan</i> <i>New in JDF 1.2</i>		<i>Pink</i>	—
<i>Gold</i>	—	<i>Red</i>	—
<i>Goldenrod</i>	—	<i>Silver</i>	—
<i>Gray</i>	—	<i>Turquoise</i>	—
<i>Green</i>	—	<i>Violet</i>	—
<i>Ivory</i>	—	<i>White</i>	—
<i>Magenta</i> <i>New in JDF 1.2</i>		<i>Yellow</i>	—

**A.3.3.4 Orientation**

Orientation of a **PhysicalResource Resource**. For details see Table 2-4, “Matrices and Orientation values for describing the orientation of a Component” on page 39.

**Table A-4: Orientation Enumeration Values**

Enumeration Value	Comment
<i>Rotate0</i>	
<i>Rotate90</i>	
<i>Rotate180</i>	
<i>Rotate270</i>	
<i>Flip0</i>	
<i>Flip90</i>	
<i>Flip180</i>	
<i>Flip270</i>	

**A.3.3.5 Sides**

**Sides** defines the sides of the media or product that SHALL be imaged.

**Table A-5: Sides Enumeration Values**

Enumeration value	Comment
<i>OneSided</i>	<u>Page contents SHALL be imposed on the front side.</u>
<i>OneSidedBack</i>	<u>Page contents SHALL be imposed on the back side.</u>
<i>TwoSidedHeadToFoot</i>	<u>Page contents SHALL be imposed on the front and back sides of media Sheets so that the head (top) of the front backs up to the foot (bottom) of the back.</u>
<i>TwoSidedHeadToHead</i>	<u>Page contents SHALL be imposed on the front and back sides so that the head (top) of page contents back up to each other.</u>

### A.3.3.6 Scope

Attributes of type define the availability of features or resources in a device.

**Table A-6: Scope Enumeration Values**

Enumeration Values	Comment
<i>Allowed</i>	The feature is potentially available but currently not available without operator intervention.
<i>Job</i>	The feature is currently available within the scope of a job.
<i>Present</i>	The feature is currently available without operator intervention.

### A.3.3.7 WorkStyle

**Table A-7: WorkStyle Enumeration Values**

Enumeration Value	Comment
<i>Simplex</i>	No turning.
<i>Perfecting</i>	Many Sheet-Fed printing presses have perfecting cylinder(s) built in. The leading edge of the print Sheet changes as the Sheet is turned by the perfecting cylinder, but the side lays remain unaltered. In this regard, this @WorkStyle is similar to "WorkAndTumble", but "Perfecting" is an in-line operation during the press run. Therefore, an additional plate (set) is needed during this press run.
<i>WorkAndBack</i>	This @WorkStyle describes the printing on both sides of the substrate with a different plate (set) in the second run. After the first run the side lays are altered but the front lays stay as they were. Lays can be turned by hand or using a pile reverser. Two-plate sets are necessary for "WorkAndBack".
<i>WorkAndTurn</i>	"WorkAndTurn" refers to the turning of the first-run Sheet for subsequent perfecting. The front lays remain unchanged but the side lays SHALL be altered. The alteration can be made by hand or using a pile turner. Turning happens after the first press run and the plate (set) is used again in the second press run, imaging the other Sheet surface.
<i>WorkAndTumble</i>	The "WorkAndTumble" method is also used for perfecting. The leading edge of the print Sheet changes as the Sheet is turned, but the side lays remain unaltered. Tumbling happens after the first press run and the plate (set) is used again in the second press run, imaging the other Sheet surface.
<i>WorkAndTwist</i>	Done between two press runs. The palette is twisted 180 degree before the second run is performed so that the front lay and the side lay both change. The surface to be imaged is the same at both runs. Each run prints only part of the surface. The plate (set) stay in the machine. This @WorkStyle is used for saving plate or film material. It is no longer a common @WorkStyle.

### A.3.4 XYRelation

[New in JDF 1.2](#)

XML Attributes of type XYRelation define the relationship between two ordered numbers.

**Table A-8: XYRelation Enumeration Values (Sheet 1 of 2)**

Enumeration Value	Comment
<i>gt</i>	X > Y
<i>ge</i>	X >= Y

**Table A-8: XYRelation Enumeration Values (Sheet 2 of 2)**

Enumeration Value	Comment
<i>eq</i>	X = Y
<i>le</i>	X <= Y
<i>lt</i>	X < Y
<i>ne</i>	X != Y

## A.4 JDF XJDF File Formats

This section describes the specific file formats used by **JDF XJDF**. **JDF XJDF** uses TIFF and JPEG file formats, as well as the PNG image file format. The following sections explain in what ways PNG is used in **JDF XJDF**.

### A.4.1 PNG Image Format

**JDF XJDF** uses the PNG images for representing preview images. CIP3 defined two formats: composite CMYK and separated. With PNG, only the separated format is supported for color spaces other than RGB. The composite CMYK or spot color representations SHALL be represented as separated CMYK or spot colors. Thus, preview images are stored as separate PNG images and **JDF XJDF** links them together. Viewable images and thumbnails can be represented as composite RGB PNG images.

References: <http://www.w3.org/Graphics/png>.

## Appendix B Schema

XML Schema for **JDF XJDF** (and **JMF XJMF**) will be published on: <http://www.CIP4.org>.

The XML Schema is not sufficient to completely validate a **JDF** an **XJDF** Job. For example, Partitioned Resources or Process Node types as defined in **JDF XJDF** cannot be validated by XML Schema processors. In other words, the structure of some elements depends on the context of usage which cannot be completely described by XML Schema. Thus, the XML Schema for **JDF XJDF** will be structured in a way that it enables a pre-validation of valid **JDF XJDF**-candidates but does not preclude all syntactically invalid files to be validated.



### Using JDF Schema

Any JDF processor SHOULD be capable of validating whether or not a JDF Job meets JDF requirements. This can be accomplished by using a schema when parsing or by using an application derived from a schema. The schema itself MAY be subsetted into multiple schemas that are used for validation purposes at different points in the workflow. For instance, a JMF schema subset MAY be used to test JDF-compliant Devices on your shop floor. A Product Intent subset MAY be used to check customer submitted Job specifications.

## B.1 Using xsi:type

[New in JDF 1.2](#)

XML Schema permits that multiple type definitions be derived from a base type. Wherever the schema has define an element of that base type, it is possible for the document to indicate to a validator the particular derived type that it has used. This it does by using the `@xsi:type` Attribute with a value of the name of the type, where the "`xsi`" tag is associated with the Schema Instance namespace that has to be declared in the document.

Note: Use of "`xsi`" as the tag is normal practice.

Note: The selected type is namespace qualified (which permits extensions)

### B.1.1 Using xsi:type with **JDF XJDF** Nodes

[New in JDF 1.2](#)

When used with **JDF XJDF** Nodes then all Processes defined in Section 6 are supported. Furthermore the value to be used is identical to the Process type, thus a **JDF** an **XJDF** Node that has a `@Type` of "`DigitalPrinting`" can inform validators to use the schema definition for **DigitalPrinting** Nodes by also setting `@xsi:type` to "`DigitalPrinting`".

Some **JDF XJDF** Nodes are general in their nature and do not have a restricted definition (i.e., Product Intent Nodes, Combined Process Nodes and so on). General definitions with the appropriate name are provided to enable consistent use of `@xsi:type`.

The **JDF XJDF** Schema defines types for JDF Process Nodes and **JMF XJMF** Messages. It is RECOMMENDED that these types are used with `@xsi:type`.

#### Example B-1: JDF Nodes: xsi:type

TBD 2.x Example.

```
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="BackCover"
      Status="InProgress"
      Type="DigitalPrinting" Version="1.4" JobPartID="345"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:schemaLocation="http://www.CIP4.org/Schema/JDFSchema_1_1"
      xsi:type="DigitalPrinting">
  <ResourceLinkPool>
    <DigitalPrintingParamsLink Usage="Input" rRef="ID123"/>
    <RunListLink Usage="Input" rRef="ID124"/>
    <ComponentLink Usage="Output" rRef="ID125"/>
  </ResourceLinkPool>
  <ResourcePool>
    <DigitalPrintingParams ID="ID123" Class="Parameter" Status="Available" />
```

```

<RunList ID="ID124" Class="Parameter" Status="Available" />
<Component ID="ID125" Class="Quantity" Status="Unavailable"
    ComponentType="Sheet" />
</ResourcePool>
</JDF>

```

### Example B-2: JDF XJDF Nodes: xsi:type (not in Default Namespace)

If the JDF XJDF is not in the default namespace then the type name needs to be altered accordingly:

TBD 2.x Example:

```

<jdf:JDF xmlns:jdf="http://www.CIP4.org/JDFSchema_1_1" ID="BackCover"
    Status="InProgress"
    Type="DigitalPrinting" Version="1.4" JobPartID="345"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
    xsi:type="jdf:DigitalPrinting">
    <jdf:ResourceLinkPool>
        <jdf:DigitalPrintingParamsLink Usage="Input" rRef="ID123"/>
        <jdf:RunListLink Usage="Input" rRef="ID124"/>
        <jdf:ComponentLink Usage="Output" rRef="ID125"/>
    </jdf:ResourceLinkPool>
    <jdf:ResourcePool>
        <jdf:DigitalPrintingParams ID="ID123" Class="Parameter"
            Status="Available" />
        <jdf:RunList ID="ID124" Class="Parameter" Status="Available" />
        <jdf:Component ID="ID125" Class="Quantity" Status="Unavailable"
            ComponentType="Sheet" />
    </jdf:ResourcePool>
</jdf:JDF>

```

### B.1.2 Using xsi:type with JMF XJMF Messages

New in JDF 1.2

JMF XJMF Messages are organized into families — Command, Query, etc. (See Section 5.3, “JMF XJMF Message Families” on page 208) — and each of these families has Messages for each Message @Type — Events, @Status, KnownDevices, etc. Because it is the convolution of these two that are the unique derived types, the name used in @xsi:type has to be the convolution of the Message Family and Type.

To query an event a Query Message with an Events/QueryTypeObj would be used. The type definition name employed by the JDF Schema would therefore be *“QueryEvents”*.

Note JMF XJMF Messages also do not have to be in the default namespace as in the JDF XJDF Node example below.

### Example B-3: JMF XJMF: xsi:type

TBD 2.x Example:

```

<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="TestSender"
    TimeStamp="2003-11-07T12:15:56Z" MaxVersion="1.4" Version="1.4"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
    <Query ID="Message_001Q" Type="Events" xsi:type="QueryEvents">
        <NotificationFilter/>
    </Query>
    <Response ID="Message_001R" Type="Events" refID="Q001"
        xsi:type="ResponseEvents">
        <NotificationDef Classes="Error" Type="Barcode"/>
    </Response>
</JMF>

```



## Appendix B Schema

# Appendix C Supported String and NMOKEN values

## C.1 StatusDetails Supported Strings

The `@StatusDetails` Attribute refines the concept of a Job status to be Job specific or a device status to be device specific. The following tables define individual `@StatusDetails` values and map them to the appropriate Job specific state `JDF/@StatusNodeInfo/@NodeStatus` or device specific state `DeviceInfoDeviceInfo/@DeviceStatus`. Note that `JDF/@StatusNodeInfo/@NodeStatus` = "Setup", "Cleanup" and "Stopped" can include the description of a device with no Job assigned to it.

**Note:** Although `@StatusDetails` has a datatype of string, it SHOULD be machine readable and thus SHOULD NOT be localized. Localized user data SHOULD be specified in `@DescriptiveName` or `Comment` elements.

Table C-1: StatusDetails Mapping for Generic Devices (Sheet 1 of 4)

StatusDetails	JDF/ @StatusNodeInfo/ @NodeStatus	DeviceStatus	Description
<u>AbortedBySystem</u> <u>New in JDF 1.3</u>	"Aborted"	"Stopped"	The Job is being or has been aborted by the Device
<u>BreakDown</u>	"Stopped"	"Down"	Breakdown of the device, repair needed.
<u>Calibrating</u>	"Setup"	"Setup"	The Device is calibrating, either manually or automatically.
<u>ControlDeferred</u> <u>Modified in JDF 1.4</u>	-	"Unknown"	The Machine is not accessible by the Device. <b>Note:</b> <code>JDF/@Status</code> is unknown if the device is not accessible. <b>Modification note:</b> starting with JDF 1.4, the <code>@DeviceStatus</code> value changed from "Stopped" to "Unknown".
<u>CoverOpen</u> <u>New in JDF 1.3</u>	"Stopped"	"Stopped"	One or more covers on the Device are open.
<u>DocumentAccessError</u> <u>New in JDF 1.3</u>	"Aborted"	"Stopped"	The Device could not access one or more documents passed by reference.
<u>DoorOpen</u> <u>New in JDF 1.3</u>	"Stopped"	"Stopped"	One or more doors on the Device are open.
<u>Failure</u>	"Stopped"	"Stopped"	Failure of the device. Requires some maintenance in order to restart the device. "Failure" has specialized subcategories: "PaperJam", "DoubleFeed", "BadFeed", "BadTrim", "ObliqueSheet", "IncorrectComponent", "IncorrectThickness".
<u>Good</u>	"InProgress"	"Running"	Production of products in progress, good copy counter is on, waste copy counter is off

**Table C-1: StatusDetails Mapping for Generic Devices (Sheet 2 of 4)**

StatusDetails	JDF/ @StatusNodeI nfo/ @NodeStatus	DeviceStatus	Description
<i>Idling</i>	<i>"Stopped"</i>	<i>"Running"</i>	Device is running, but no products are produced or consumed. Good and waste copy counter are off.
<i>InputTrayMissing</i> <small>New in JDF 1.3</small>	<i>"Stopped"</i>	<i>"Stopped"</i>	One or more input trays are not in the Device
<i>InterlockOpen</i> <small>New in JDF 1.3</small>	<i>"Stopped"</i>	<i>"Stopped"</i>	One or more interlock devices on the printer are unlocked.
<i>IterationPaused</i> <small>New in JDF 1.4</small>	<i>"Suspended"</i>	-	<i>"Suspended"</i> specifies that at least one iteration cycle has completed but additional iteration cycles MAY still occur.
<i>JobCanceledByOperator</i> <small>New in JDF 1.3</small>	<i>"Aborted"</i>	-	The Job was canceled by the Device operator using <i>AbortQueueEntry</i> <i>"AbortQueueEntry"</i> <i>@Operation</i> of <i>ModifyQueueEntry</i> or means local to the Device.
<i>JobCanceledByUser</i> <small>New in JDF 1.3</small>	<i>"Aborted"</i>	-	The Job was canceled by the owner of the Job using <i>AbortQueueEntry</i> <i>"AbortQueueEntry"</i> <i>@Operation</i> of <i>ModifyQueueEntry</i> .
<i>JobCompletedSuccessfully</i> <small>New in JDF 1.3</small>	<i>"Completed"</i>	-	The Job completed successfully.
<i>JobCompletedWithErrors</i> <small>New in JDF 1.3</small>	<i>"Completed"</i>	-	The Job completed with errors (and possibly warnings too)
<i>JobCompletedWithWarnings</i> <small>New in JDF 1.3</small>	<i>"Completed"</i>	-	The Job completed with warnings.
<i>JobHeld</i> <small>New in JDF 1.3</small>	<i>"Waiting"</i>	-	The Device held the Job that had been waiting (by performing a <i>HoldQueueEntry</i> <i>"HoldQueueEntry"</i> <i>@Operation</i> of <i>ModifyQueueEntry</i> request on a Waiting QueueEntry).
<i>JobHeldOnCreate</i> <small>New in JDF 1.3</small>	<i>"Waiting"</i>	-	The Job was submitted to the queue with the <i>Queue/@Status = "Held"</i> , the Job's <i>QueueSubmissionParams</i> / <i>QueueSubmissionParams/@Held = "true"</i> , or <i>JDF/@Activation = "Held"</i> .
<i>JobIncoming</i> <small>New in JDF 1.3</small>	<i>"Waiting"</i>	-	The Device is retrieving/accepting document data.

**Table C-1: StatusDetails Mapping for Generic Devices (Sheet 3 of 4)**

StatusDetails  <a href="#">JobResuming</a> <a href="#">New in JDF 1.3</a>	JDF/ @StatusNodeI nfo/ @NodeStatus	DeviceStatus	Description
<a href="#">JobResuming</a> <a href="#">New in JDF 1.3</a>	"Waiting"	-	The Device is in the process of moving the Job from a suspended condition to a candidate for processing ( <a href="#">ResumeQueueEntry</a> "ResumeQueueEntry" @Operation of <a href="#">ModifyQueueEntry</a> ).
<a href="#">JobScheduling</a> <a href="#">New in JDF 1.3</a>	"Waiting"	-	The Device is scheduling the Job for processing.
<a href="#">JobStreaming</a> <a href="#">New in JDF 1.3</a>	"InProgress"	-	Same as " <a href="#">JobIncoming</a> " with the specialization that the Device is processing the document data as it is being received (that is, the Job data is not being spooled, but rather is being processed in chunks by the output device and is being imaged during reception).
<a href="#">JobSuspended</a> <a href="#">New in JDF 1.3</a>	"Suspended"	-	The Device suspended the Job that had been processing (e.g., by performing a <a href="#">SuspendQueueEntry</a> "SuspendQueueEntry" @Operation of <a href="#">ModifyQueueEntry</a> request on a Running QueueEntry) and other Jobs can be processed by the Device.
<a href="#">JobSuspending</a> <a href="#">New in JDF 1.3</a>	"InProgress"	"Running"	The Device is in the process of moving the Job from a processing condition to a suspended condition where other Jobs can be processed.
<a href="#">Maintenance</a>	"Stopped"	"Stopped"	Maintenance of the device. " <a href="#">Maintenance</a> " has specialized subcategories: " <a href="#">BlanketChange</a> " and " <a href="#">SleeveChange</a> ".
<a href="#">MissResources</a>	"Stopped"	"Stopped"	Production has been stopped because Resources are missing or unavailable. Waits for new Resources; subcategory of " <a href="#">Pause</a> ".
<a href="#">MovingToPaused</a> <a href="#">New in JDF 1.3</a>	"InProgress"	"Running"	The Device has been paused, but the Machine(s) are taking an appreciable time to stop.
<a href="#">OutputAreaFull</a> <a href="#">New in JDF 1.3</a>	"Stopped"	"Stopped"	One or more output areas are full (e.g., tray, stacker, collator).
<a href="#">OutputTrayMissing</a> <a href="#">New in JDF 1.3</a>	"Stopped"	"Stopped"	One or more output trays are not in the Device
<a href="#">PaperJam</a>	"Stopped"	"Stopped"	Media jam in the device; subcategory of " <a href="#">Failure</a> ".

**Table C-1: StatusDetails Mapping for Generic Devices (Sheet 4 of 4)**

StatusDetails	JDF/ @StatusNodeI nfo/ @NodeStatus	DeviceStatus	Description
Pause	"Stopped"	"Stopped"	Machine paused; restart is possible. "Pause" has specialized subcategories: "MissResources" and "WaitForApproval".
ProcessingToStopPoint <u>New in JDF 1.3</u>	"InProgress"	"Running"	The requester has issued an AbortQueueEntry "AbortQueueEntry" @Operation of ModifyQueueEntry request or the Device has aborted the Job, but is still performing some actions on the Job until a specified stop point occurs or Job termination/cleanup is completed.
Repair	"Stopped"	"Down"	The device is being repaired after a break down.
ShutDown	"Stopped"	"Down"	Machine stopped (can be switched off), restart requires a run up.
SizeChange	"Setup"	"Setup"	Changing setup for media size.
WaitForApproval	"Stopped"	"Stopped"	Production has been stopped because a necessary approval is still missing, subcategory of "Pause".
WarmingUp	"Setup"	"Setup"	Device is warming up after power up or power saver mode wake-up.
Waste	"InProgress"	"Running"	Production of products in progress, good copy counter is off, waste copy counter is on.
WasteFull	"Stopped"	"Stopped"	The Device waste receptacle is full.

**Table C-2: StatusDetails Mapping for Printing Devices (Sheet 1 of 3)**

StatusDetails	JDF/ @StatusNodeI nfo/ @NodeStatus	DeviceStatus	Description
BlanketChange	"Stopped"	"Stopped"	Changing of blankets; subcategory of "Maintenance" (e.g., a 'specialization').
BlanketWash	"Cleanup"	"Cleanup"	Washing of the blanket; subcategory of "WashUp".
CleaningInkFountain	"Cleanup"	"Cleanup"	Cleaning of the ink fountain; subcategory of "WashUp".
CylinderWash	"Cleanup"	"Cleanup"	Washing of impression cylinders; subcategory of "WashUp".
DampeningRollerWash	"Cleanup"	"Cleanup"	Washing of the dampening roller; subcategory of "WashUp".

**Table C-2: StatusDetails Mapping for Printing Devices (Sheet 2 of 3)**

StatusDetails	JDF/ @StatusNodeI nfo/ @NodeStatus	DeviceStatus	Description
<i>FormChange</i>	<i>"Setup"</i>	<i>"Setup"</i>	In conventional printing, changing of plates; in direct imaging printing, imaging or re-imaging of plates.
<i>InkRollerWash</i>	<i>"Cleanup"</i>	<i>"Cleanup"</i>	Washing of the inking roller; subcategory of <i>"WashUp"</i> .
<i>PlateWash</i>	<i>"Cleanup"</i>	<i>"Cleanup"</i>	Washing of the plate; subcategory of <i>"WashUp"</i> .
<i>Processing</i> <u>New in JDF 1.4</u>	<i>"InProgress"</i>	-	Other productive processing (RIP, etc.) is taking place but no final output is being produced. All input data has arrived (not <i>"InProgress"/"JobStreaming"</i> nor <i>"Waiting"/"JobIncoming"</i> ).
<i>SleeveChange</i>	<i>"Stopped"</i>	<i>"Stopped"</i>	Changing of sleeves; subcategory for <i>"Maintenance"</i> .
<i>WashUp</i>	<i>"Cleanup"</i>	<i>"Cleanup"</i>	Machine is washed before, during or after production. <i>"WashUp"</i> has specialized subcategories: <i>"BlanketWash"</i> , <i>"CleaningInkFountain"</i> , <i>"CylinderWash"</i> , <i>"DampeningRollerWash"</i> , <i>"InkRollerWash"</i> , or <i>"PlateWash"</i> . <i>"WashUp"</i> is the default which is assumed if <i>@StatusDetails</i> is not specified.
<i>WaitingForMarker</i> <u>New in JDF 1.4</u>	<i>"Suspended"</i> or <i>"Ready"</i>	-	The <i>@StatusNodeInfo/@NodeStatus</i> is <i>"Suspended"</i> if the Printing Device models any module prior to the Marker module, otherwise, the <i>@StatusNodeInfo/@NodeStatus</i> is <i>"Ready"</i> . The Node is automatically Suspended by the Worker because it is waiting behind other Jobs for the Marker module and the Worker will resume the Node when a Marker module becomes available.
<i>WaitingForReferenceDataCollector</i> <u>New in JDF 1.4</u>	<i>"Suspended"</i> or <i>"Ready"</i>	-	The <i>@StatusNodeInfo/@NodeStatus</i> is <i>"Suspended"</i> if the Printing Device models any module prior to the Referenced-Data-Collector module, otherwise, the <i>@StatusNodeInfo/@NodeStatus</i> is <i>"Ready"</i> . The Node is automatically Suspended by the Worker because it is waiting behind other Jobs for the Referenced-Data-Collector module and the Worker will resume the Node when a Referenced-Data-Collector module becomes available.

**Table C-2: StatusDetails Mapping for Printing Devices (Sheet 3 of 3)**

StatusDetails	JDF/ @StatusNodeInfo/ Info/ @NodeStatus	DeviceStatus	Description
<i>WaitingForRIP</i> <u>New in JDF 1.4</u>	"Suspended" or "Ready"	-	The <b>@StatusNodeInfo/@NodeStatus</b> is "Suspended" if the Printing Device models any module prior to the RIP module, otherwise, the <b>@StatusNodeInfo/@NodeStatus</b> is "Ready".  The Node is automatically Suspended by the Worker because it is waiting behind other Jobs for a RIP module (process slot) and the Worker will resume the Node when a RIP module becomes available.

**Table C-3: StatusDetails Mapping for Postpress Devices**

StatusDetails	JDF/ @StatusNode Info/ @NodeStatus	DeviceStatus	Description
<i>BadFeed</i> <u>New in JDF 1.2</u>	"Stopped"	"Stopped"	Bad feed on a feeder; subcategory of "Failure".
<i>BadTrim</i> <u>New in JDF 1.2</u>	"Stopped"	"Stopped"	Bad trimmed components; subcategory of "Failure".
<i>DoubleFeed</i> <u>New in JDF 1.2</u>	"Stopped"	"Stopped"	Double feeds on a feeder; subcategory of "Failure".
<i>IncorrectComponent</i> <u>New in JDF 1.2</u>	"Stopped"	"Stopped"	Incorrect components on a feeder; subcategory of "Failure".
<i>IncorrectThickness</i> <u>New in JDF 1.2</u>	"Stopped"	"Stopped"	Incorrect thickness of components; subcategory of "Failure".
<i>ObliqueSheet</i> <u>New in JDF 1.2</u>	"Stopped"	"Stopped"	Oblique Sheets on components; subcategory of "Failure". Oblique Sheets are Sheets or Signatures which are not properly aligned within a pile (e.g., on a gathering or collecting chain).

## C.2 ModuleType Supported Strings

The ModuleStatus Element (see Table 5-97, “ModuleStatus Element” on page 288), the ModulePhase Element (see Table 3-48, “ModulePhase Element” on page 159) and VarnishingParams (see Section 8.170, “VarnishingParams” on page 943) contain a @ModuleType Attribute that defines individual modules within a Machine. The following table defines individual @ModuleType values.

**Table C-4: ModuleType Attribute Values for Conventional Printing Devices (Sheet 1 of 2)**

ModuleType	Description
<i>CoatingModule</i>	Unit for coatings, for example, full coating of varnish.
<i>Delivery</i>	Delivery module, unit for gathering the printed Sheets.
<i>Drier</i>	Module for drying the previously printed color or varnish.

**Table C-4: ModuleType Attribute Values for Conventional Printing Devices (Sheet 2 of 2)**

ModuleType	Description
<i>ExtensionModule</i>	Unit for extending the distance between modules, for example to increase the distance between the last printing module and the delivery module.
<i>Feeder</i>	Feeder module, feeds the device with paper.
<i>Imaging</i>	Imaging Module in a direct to plate Machine.
<i>Numbering</i>	Numbering unit.
<i>PerfectingModule</i>	Unit for perfecting, reversing device.
<i>PrintModule</i>	Unit for printing a color. Describes one cylinder and one side.

**Table C-5: ModuleType Attribute Values for Postpress**

ModuleType	Description
<i>BlockPreparer</i> <a href="#">New in JDF 1.4</a>	The Block Preparer prepares the book block for a hardcover book. See Section 6.6.2, “BlockPreparation”.
<i>BoxFolder</i> <a href="#">New in JDF 1.4</a>	The Box Folder folds and glues blanks into folded boxes for packaging. See Section 6.6.3, “BoxFolding”.
<i>CaseMaker</i> <a href="#">New in JDF 1.4</a>	The Case Maker produces the hard case for books. See Section 6.6.6, “CaseMaking”.
<i>Caser</i> <a href="#">New in JDF 1.4</a>	The Caser joins the hard cover book case and the book block. ( <i>CasingIn</i> ). See Section 6.6.7, “CasingIn”.
<i>Chain</i> <a href="#">New in JDF 1.2</a>	Transport chain or conveyer to transport gathered / collected product.
<i>EndSheetGluer</i> <a href="#">New in JDF 1.4</a>	The End-Sheet Gluer merges the front-end sheet, the book block and the back-end sheet together. See Section 6.6.17, “EndSheetGluing”.
<i>Feeder</i> <a href="#">New in JDF 1.2</a>	Feeder module, feeds the device with paper. See Section 6.6.18, “Feeding”.
<i>Gluer</i> <a href="#">New in JDF 1.4</a>	The Gluer applies glue to a component. See Section 6.6.21, “Gluing”.
<i>HeadBandApplicator</i> <a href="#">New in JDF 1.4</a>	The Head Band Applicator applies a head band to the book block. See Section 6.6.22, “HeadBandApplication”.
<i>InkjetPrinter</i> <a href="#">New in JDF 1.4</a>	Prints images or texts on a component. ( <i>Numbering</i> , <i>DigitalPrinting</i> )
<i>Inserter</i> <a href="#">New in JDF 1.4</a>	The Inserter inserts one or more “child” components to one “mother” component. See Section 6.6.24, “Inserting”.
<i>Jacketer</i> <a href="#">New in JDF 1.4</a>	The Jacketer wraps a jacket around a book. See Section 6.6.25, “Jacketing”.
<i>PaperPath</i> <a href="#">New in JDF 1.2</a>	Paper path module, path that paper follows through the Machine.
<i>PressingStation</i> <a href="#">New in JDF 1.4</a>	The Pressing Station presses the cover to the book block.

**Table C-5: ModuleType Attribute Values for Postpress**

<b>ModuleType</b>	<b>Description</b>
<i>ShapeCutter</i> <a href="#">New in JDF 1.4</a>	The Shape Cutter produces special shapes like an envelope window or a heart-shaped beer mat. Note that the Shape Cutter Module MAY contain Tools that correspond to the actual dies etc. See Section 6.6.37, “ShapeCutting”.
<i>SpinePreparer</i> <a href="#">New in JDF 1.4</a>	The Spine Preparer prepares the spine of a book for hard and soft cover production. See Section 6.6.41, “SpinePreparation”.
<i>SpineTaper</i> <a href="#">New in JDF 1.4</a>	The Spine Taper applies a tape strip to the spine of a book block. See Section 6.6.42, “SpineTaping”.
<i>Strapper</i> <a href="#">New in JDF 1.4</a>	The Strapper straps a bundle of products. See Section 6.6.46, “Strapping”.
<i>ThreadSealer</i> <a href="#">New in JDF 1.4</a>	The Thread sealer sews and seals a signature at the spine. See Section 6.6.48, “ThreadSealing”.
<i>ThreadSewer</i> <a href="#">New in JDF 1.4</a>	The Thread sewer sews all signatures of a book block together. See Section 6.6.49, “ThreadSewing”.

**Table C-6: ModuleType Attribute Values for DigitalPrinting**

<b>ModuleType</b>	<b>Description</b>
<i>FarmPrinter</i> <a href="#">New in JDF 1.3</a>	Individual Printer in a printer farm of printers.
<i>Fuser</i> <a href="#">New in JDF 1.2</a>	Fuser module — fuses the toner onto the media.
<i>Marker</i> <a href="#">New in JDF 1.4</a>	Marker module, excluding in-line finishing.
<i>MimeUnpacker</i> <a href="#">New in JDF 1.4</a>	Module that receives and unpacks the <b>MIME ZIP</b> package and fetches the <b>JDF XJDF</b> if it is referenced from the <b>JMF XJMF</b> .
<i>ReferencedDataCollector</i> <a href="#">New in JDF 1.4</a>	Module that fetches data referenced from the <b>JDF XJDF</b> and MAY include data referenced from the PDL. Does not include accepting <b>MIMEZIP</b> , unpacking <b>MIMEZIP</b> , or fetching the <b>JDF XJDF</b> itself.
<i>RIP</i> <a href="#">New in JDF 1.4</a>	RIP module. See <a href="#">Section 6.4.33, “RIPing”</a> <a href="#">Section 6.4.20.1, “RIPing”###</a>

**Table C-7: ModuleType Attribute Values for PrintingUnitWebPath Modules of Web Printing Devices (Sheet 1 of 2)**

<b>ModuleType</b>	<b>Description</b>
<i>ChillUnit</i> <a href="#">New in JDF 1.3</a>	Chill unit that chills down the heated printed paper.
<i>ImprintUnit</i> <a href="#">New in JDF 1.3</a>	Printing unit that allows changing plates during production run, doing imprints.
<i>PrintUnit</i> <a href="#">New in JDF 1.3</a>	A Print Unit consists of multiple Print Module units.

**Table C-7: ModuleType Attribute Values for PrintingUnitWebPath Modules of Web Printing Devices (Sheet 2 of 2)**

ModuleType	Description
<i>Rollstand</i> <a href="#">New in JDF 1.3</a>	The Roll stand feeds the Web into the Process-unit chain.
<i>RemoisteningModule</i> <a href="#">New in JDF 1.3</a>	Module that can be used for high gloss varnish, remoistened glue, rub-off ink or encapsulated fragrances. The Remoistening Module is located between last printing unit and dryer.
<i>UVCoater</i> <a href="#">New in JDF 1.3</a>	The UV-Coater module applies UV-varnish with subsequent drying in a UV-dryer.

**Table C-8: ModuleType Attribute Values for FolderSuperstructureWebPath Modules of Web Printing Devices (Sheet 1 of 2)**

ModuleType	Description
<i>CrossCutter</i> <a href="#">New in JDF 1.3</a>	Cuts the Web / ribbon n-times into Sheets and transports the Sheets to inline postpress-equipment
<i>Delivery</i> <a href="#">New in JDF 1.3</a>	Delivers the printed and/or folded Sheets out of the folder
<i>Folder</i> <a href="#">New in JDF 1.3</a>	Module for cutting the collected ribbons into Sheets, in some cases collecting these Sheets, and folding the Sheets (quarter and cross folds)
<i>Former</i> <a href="#">New in JDF 1.3</a>	Module for gathering ribbons and in most instances doing the first fold of the ribbons (quarter fold).
<i>GluingAndSofteningModule</i> <a href="#">New in JDF 1.3</a>	Consists multiple heads, spread out in the press for gluing or/and softening of ribbons or folded Sheets
<i>MoebiusDeinfinitizer</i> <a href="#">New in JDF 1.3</a>	Used to resolve the infinite loops caused by printing on interleaving surfaces of Möbius banded webs.
<i>PerforatingModule</i> <a href="#">New in JDF 1.3</a>	Module for doing cross, longitudinal or diagonal perforations and die cuts on a Web. Module is placed between Chill Unit and Folder.
<i>PlanoModule</i> <a href="#">New in JDF 1.3</a>	The Plano Module cuts the Web / ribbon into Sheets and stacks the Sheets to a pile
<i>PloughFoldModule</i> <a href="#">New in JDF 1.3</a>	The Plough Fold Module does a quarter fold to ribbons or webs, mostly found in front of a Folder module
<i>Rewinder</i> <a href="#">New in JDF 1.3</a>	Rewinds the printed Web to a Roll.
<i>RibbonCompensator</i> <a href="#">New in JDF 1.3</a>	Controls the Web / ribbons in running direction regarding the cross cut
<i>Slitter</i> <a href="#">New in JDF 1.3</a>	Module for cutting in Machine direction
<i>Stitcher</i> <a href="#">New in JDF 1.3</a>	Stitches folded Sheets together
<i>Superstructure</i> <a href="#">New in JDF 1.3</a>	Module in which a Web will be cut into ribbons and these will be moved to the correct position for folding.

**Table C-8: ModuleType Attribute Values for FolderSuperstructureWebPath Modules of Web Printing Devices (Sheet 2 of 2)**

ModuleType	Description
<i>TurnerBar</i> <a href="#">New in JDF 1.3</a>	Turns the front side of a Web to the back side and vice versa.
<i>TurnerBarUnit</i> <a href="#">New in JDF 1.3</a>	Turns the front side of a Web to the back side and vice versa in a separate unit.

**Table C-9: ModuleType Attribute Values for PostPressComponentPath Modules of Web Printing Devices**

ModuleType	Description
<i>BundlingModule</i> <a href="#">New in JDF 1.3</a>	The Bundling Module is used for bundling components
<i>LabelingModule</i> <a href="#">New in JDF 1.3</a>	The Labeling Module is used for labelling a bundle.
<i>PalletizingModule</i> <a href="#">New in JDF 1.3</a>	The Palletizing Module collects the Bundles on a pallet. See Section 6.6.31, “Palletizing” on page 411.
<i>PrintRoll</i> <a href="#">New in JDF 1.3</a>	The Print Roll is used for rolling components. See Section 6.6.34, “PrintRolling” on page 413.
<i>Stacker</i> <a href="#">New in JDF 1.3</a>	Stacks the component to a pile. See Section 6.6.43, “Stacking” on page 416.
<i>Trimmer</i> <a href="#">New in JDF 1.3</a>	Trims the component to its final size. See Section 6.6.50, “Trimming” on page 419.

## C.3 NotificationDetails

The Notification Element is used for messaging and logging of events. It is defined in Section 3.16.3.7, “Notification”. Notifications are grouped into five Classes: “Event”, “Information”, “Warning”, “Error” and “Fatal”. For more about Notification Classes, see [Notification/@Class](#) in Table 3.16.3.7, “Notification” on page 153. In addition to the Classes, the [@Type](#) Attribute and Abstract NotificationDetails Element provide a container for detailed information about the notification.

Elements derived from the Abstract NotificationDetails Element represent a structured and extensible data type. The structure of various predefined NotificationDetails types and their descriptions are listed in the following sections.

### C.3.1 Abstract NotificationDetails

The Abstract NotificationDetails Element is empty.

**Table C-10: Abstract NotificationDetails**

Name	Page	Description

### C.3.2 NotificationDetails

Table C-11 defines the Elements that are derived from the Abstract NotificationDetails Element. The value of [Notification/@Type](#) is the same as the Element name for the corresponding Notification/NotificationDetails.

**Table C-11: List of NotificationDetails Elements**

Name	Page	Description
Barcode	page 1143	A bar code has been scanned
FCNKey	page 1143	A function key has been activated at a console.
SystemTimeSet	page 1143	The system time of a device/Controller/Agent has been set
CounterReset	page 1143	The production counter of a device has been reset.
Error	page 1143	This Element provides additional information for common errors
Event	page 1144	This Element provides additional information for common events.
Milestone	page 1145	Tracks certain overall milestones concerning the entire Job across all Resources and Processes.

**C.3.2.1 Barcode**

A bar code has been scanned.

**Table C-12: Barcode Element**

Name	Data Type	Description
Code	string	Contains the scanned bar code.

**C.3.2.2 FCNKey**

A function key has been activated at a console.

**Table C-13: FCNKey Element**

Name	Data Type	Description
Key	integer	Contains the number of that function key.

**C.3.2.3 SystemTimeSet**

The system time of a device/Controller/Agent has been set (e.g., readjusted, changed to daylight saving time, etc.).

**Table C-14: SystemTimeSet Element**

Name	Data Type	Description
NewTime	dateTime	Contains the new time.
OldTime ?	dateTime	Contains the old time.

**C.3.2.4 CounterReset**

The production counter of a device has been reset.

**Table C-15: CounterReset Element**

Name	Data Type	Description
CounterID ?	string	Identification of the counter that has been set.
LastCount ?	integer	Last counter value before reset.

**C.3.2.5 Error**

This Element provides additional information for common errors.

**Table C-16: Error Element**

Name	Data Type	Description
<i>ErrorID</i> ? <a href="#">New in JDF 1.3</a>	string	Internal Error ID of the application that declares the error.
<i>Resend</i> ? <a href="#">New in JDF 1.3</a>	enumeration	Expected re-sending policy to fix the error. <b>Allowed values are:</b> <i>Required</i> – A corrected version of the offending <b>JMF XJMF</b> SHALL be resent. <i>Prohibited</i> – A corrected version of the offending <b>JMF XJMF</b> SHALL NOT be resent.
<i>ReturnCode</i> ? <a href="#">New in JDF 1.2</a>	integer	<b>JDF XJDF</b> defined return code for an error. See Section D, “Supported Error Codes in JMF XJMF and Notification Elements” on page 1151.
<i>ErrorData</i> * <a href="#">New in JDF 1.3</a>	element	Additional details of the error.

**C.3.2.5.1    [ErrorData](#)**

This Element provides additional information for locating errors.

**Table C-17: ErrorData Element**

Name	Data Type	Description
<i>ErrorType</i>	enumeration	Details of the error of the Attribute or Element specified in <i>@Path</i> . <b>Allowed values are:</b> <i>Invalid</i> – the Attribute or Element has an invalid value <i>Missing</i> – the Attribute or Element is missing. <i>Unsupported</i> – the Attribute or Element is not known by the receiver.
<i>ErrorURL</i> ?	URL	URL of the referenced entity (e.g., <b>JDF XJDF</b> or PDL) where the error occurred. If not specified, the error occurred in the received <b>JMF XJMF</b> .
<i>FixExpression</i> ?	regExp	Expression that defines the acceptable valid values for the Attribute de-fined by <i>@Path</i> . <i>@FixExpression</i> SHALL NOT be specified if <i>@Path</i> specifies an Element.
<i>Path</i> ?	XPath	XPath location of the erroneous Attribute or Element in the offending <b>JMF XJMF</b> or referenced file. If <i>@ErrorURL</i> is specified, <i>@Path</i> refers to the XML that is referenced by <i>@ErrorURL</i> , otherwise it refers to the <b>JMF XJMF</b> that caused the error. <i>@Path</i> SHALL NOT be specified if <i>@ErrorURL</i> references a format other than XML.

**C.3.2.6    [Event](#)**

[New in JDF 1.2](#)

This Element provides additional information for common events.

**Table C-18: Event Element**

Name	Data Type	Description
<i>EventID</i>	string	Internal Event ID of the application that emits the event.
<i>EventValue</i> ?	string	Additional user defined value related to this event.

### C.3.2.7 Milestone

New in JDF 1.3

In addition to the concrete **JMF** feedback both from production to MIS and MIS to production with respect to finished Processes (see Section 5.9.9, “Status” on page 279) and available/consumed Resources (see Section 5.9.6, “Resource” on page 260), many Actors in the workflow want to track certain overall milestones concerning the entire Job across all Resources and Processes in order to display this to the operator. Sometimes the **JMF** recipients cannot determine these milestones from the detailed **JDF/JMF**. Therefore a more abstract representation of Job status is described by **Milestone** events. Note that **Milestone** Elements usually refer to events involving multiple objects, although the **Milestone/@MilestoneType** is specified as a singular. The scope of the **Milestone** is defined by the parent **Notification** element

**Table C-19: Milestone Element**

Name	Data Type	Description
<i>MilestoneType</i>	NMTOKEN	Type of Milestone. <b>Values include those from:</b> Table C-20, “MessageEvents and MilestoneType Values” on page 1146.
<i>TypeAmount</i> ?	integer	Indication of how many Elements have been processed (if the milestone refers to certain Resources) (e.g., number of pages proofed, number of different printed Sheets (not the cumulative amount)).

#### Example C-1: Milestone in JMF

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="WorkflowController"
     TimeStamp="2005-07-25T12:32:48+02:00" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
  <Signal ID="S1" Type="Notification" xsi:type="SignalNotification">
    <Notification Class="Event" JobID="myJobID"
                 TimeStamp="2005-05-25T12:32:48+02:00"
                  Type="Milestone">
      <Comment>All Proofs sent to customer</Comment>
      <Milestone MilestoneType="ProofSent" TypeAmount="24"/>
    </Notification>
  </Signal>
</JMF>
```

## C.4 Milestone Values

The following table defines a list of values that are valid for **PageList/PageData/@PageStatus Content/@ContentStatus** and **Milestone/Milestone/@MilestoneType**. The column “**JDF XJDF** Process” specifies the **XJDF@Category** or **XJDF@Types@Type** of the Node that the **Milestone/Milestone** applies to. “**PageStatus**” specifies whether the value MAY be used as **PageList/PageData/@PageStatus Content ContentList/@ContentStatus**. “**Milestone**” specifies whether the value MAY be used as **Milestone/Milestone/@MilestoneType**. Note that Milestones usually refer to events involving multiple objects, although the **Milestone/Milestone/@MilestoneType** is specified as a singular. The scope of the **Milestone/Milestone** is defined by the parent **Notification/Notification** Element.

Note: the following symbols are used in the table below:

- **DigDel** means **DigitalDelivery** that the files specified in the originating XJDF have arrived in the **JDF XJDF** Process column.
- **Delivery** means **Delivery** in the **JDF XJDF** Process column.
- **ArtDelI** means **ArtDeliveryIntent DeliveryParams** in the **JDF XJDF** Intent Resource column.
- **DeliveryI** means **DeliveryIntent DeliveryParams** in the **JDF XJDF** Intent Resource column.

- **ProofingI** means **ProofingIntentContentCheckIntent** in the **JDF XJDF** Intent Resource column

**Table C-20: MessageEvents and MilestoneType Values (Sheet 1 of 2)**

MessageEvents and MilestoneType Values	XJDF Process	Miles tone	Page-Status Co-ntent Status	Description
Accepted	<b>DigDel</b>	—	Yes	The receiver acknowledged that the files are accessible for their destination.
BindingCompleted	—	Yes	Yes	All binding Nodes including packing of the Job have been completed. Postpress Nodes are defined according to Section 6.6, “Postpress Processes”.
BindingInProgress	—	Yes	Yes	At least one of the binding Nodes of the Job is in progress status.
Delivered	<b>DigDel</b>	Yes	Yes	The files were delivered to the destination.
DeviceStopped	All	—	—	The device that executes the Node has been stopped.
DigitalArtArrived	—	Yes	Yes	Digital content has been received.
JobCompletedSuccessfully	All	Yes	Yes	Job completed successfully.
JobCompletedWithErrors	All	Yes	Yes	Job completed with errors.
JobCompletedWithWarnings	All	Yes	Yes	Job completed with warnings.
JobInProgress	All	Yes	Yes	Job is in progress.
PageApproved	—	Yes	Yes	Planned page proofs have been approved.
PageCompleted	—	Yes	Yes	Pages are ready (no further page processing or page proofing required).
PageDeleted	—	—	Yes	Specifies that this, originally planned, page was deleted. For instance, in the past, the page status was “PagePreliminary”. Due to a reduction of the total number of pages, this specific page may have been deleted.
PagePlanned	—	Yes	Yes	Specifies that this page is ready for further processing. Its planning process is finished.
PagePreliminary	—	Yes	Yes	It is planned to produce this page, but its planning process is not finished yet.
PageProofed	—	Yes	Yes	Planned page proofs have been made
PDLProduced	All	Yes	Yes	Indicates that content data has been produced and is ready for production.
PostPressCompleted	—	Yes	Yes	All Postpress Nodes including packing of the Job have been completed. Postpress Nodes are defined according to Section 6.6, “Postpress Processes”.
PostPressInProgress	—	Yes	Yes	At least one of the Postpress Nodes of the Job is in progress status.

**Table C-20: MessageEvents and MilestoneType Values (Sheet 2 of 2)**

MessageEvents and MilestoneType Values	XJDF Process	Miles tone	Page-StatusContent	Description
<i>PrePressCompleted</i>	—	Yes	Yes	All Prepress Nodes of the Job have been completed. Prepress Nodes are defined according to Section 6.4, “Prepress Processes”. In conventional prepress, this is the case when all plates have been made.
<i>PrePressInProgress</i>	—	Yes	Yes	At least one of the Prepress Nodes of the Job is in progress status.
<i>PressCompleted</i>	—	Yes	Yes	All Press Nodes of the Job have been completed. Press Nodes are defined according to Section 6.5, “Press Processes”.
<i>PressInProgress</i>	—	Yes	Yes	At least one of the Press Nodes of the Job is in progress status.
<i>ProofSent</i>	—	Yes	Yes	Planned proofs sent to customer.
<i>ShippingCompleted</i>	<b>Delivery</b>	Yes	Yes	Final product was delivered to the customer or distributors.
<i>ShippingInProgress</i>	<b>Delivery</b>	Yes	Yes	Final product is being shipped.
<i>SurfaceApproved</i>	—	Yes	Yes	Planned imposition proofs have been approved.
<i>SurfaceAssigned</i>	—	Yes	Yes	Surfaces have their corresponding pages assigned (e.g., could be proofed).
<i>SurfaceCompleted</i>	—	Yes	Yes	Planned surfaces are ready (i.e., plates could be made).
<i>SurfaceProofed</i>	—	Yes	Yes	Planned imposition proofs have been made.

## C.5 Input Tray and Output Bin Names

New in JDF 1.2

**Location****Location**/@**LocationName** MAY also be used to specify a @**Location** within a device (e.g., a paper tray). When specifying paper trays, the following locations are predefined. When specifying input paper trays (indicated with “I”) and/or output bins (indicated with “O”), the following values for **Location****Location**/@**LocationName** locations are predefined. When specifying input tray names, the following values for **Location****Location**/@**LocationName** are suggested. The input tray names that specify a position (e.g., Top) are identified by an asterisk (\*). These positional input tray names SHOULD NOT be used if devices are clustered because the position of the input tray might not be the same for all of the devices in the cluster. (See [Section 3.15.6.4, “Locations of PhysicalResources” on page 139](#)[Section 8.1.1, “Location” on page 505](#) for more details on the use of **Location****Location**.)

**Table C-21: Input Tray and Output Bin Names (Sheet 1 of 3)**

Name	I/O	Description
<i>AnyLargeFormat</i>	IO	The location that holds larger format media with one dimension larger than 11 inches. The media dimensions SHALL be specified. “ <i>AnyLargeFormat</i> ” is defined for a PPD.

**Table C-21: Input Tray and Output Bin Names (Sheet 2 of 3)**

Name	I/O	Description
<i>AnySmallFormat</i>	IO	The location that holds smaller format media. The media dimensions SHALL be specified. " <i>AnySmallFormat</i> " is defined for a PPD.
<i>AutoSelect</i>	IO	The location that the device selects based on the <b>Media</b> specification.
<i>Back</i>	IO*	The value " <i>Rear</i> " is analogous; " <i>Rear</i> " SHOULD be used instead when possible.
<i>Booklet</i>	O	The bin where the Device places booklets.
<i>Bottom</i>	IO*	The bin that, when facing the device, can best be identified as 'bottom'.
<i>BypassTray</i>	I	The input tray used to handle odd or special papers. MAY be used to specify the input tray that is used for inserts Sheets that are not to be imaged.
<i>BypassTray-N</i>	I	The input tray used to handle odd or special papers. MAY be used to specify the input tray that is used for inserts Sheets that are not to be imaged. N = '1', '2', ...
<i>Cassette</i>	IO	The value " <i>Tray-N</i> " is analogous; " <i>Tray-N</i> " SHOULD be used instead when possible.
<i>Center</i>	—	The bin that, when facing the device, can best be identified as 'center.' <a href="#">Deprecated in JDF 1.2</a> — use Middle instead.
<i>Continuous</i>	IO	The location to handle continuous media (i.e., continuously connected Sheets).
<i>Disc</i>	IO	The location to handle CD or DVD discs to be printed on.
<i>Disc-N</i>	IO	The location to handle CD or DVD discs to be printed on. N = '1', '2', ...
<i>Envelope</i>	IO	The location that is to contain envelopes.
<i>Envelope-N</i>	IO	The location that is to contain envelopes. N = '1', '2', ...
<i>FaceDown</i>	O	The bin that can best be identified as 'face down' with respect to the device.
<i>FaceUp</i>	O	The bin that can best be identified as 'face up' with respect to the device.
<i>FitMedia</i>	O	Requests the device to select a bin based on the size of the media.
<i>Front</i>	IO*	The location that, when facing the device, can best be identified as 'front.'
<i>InsertTray</i>	I	The input tray that can best be identified as 'insert tray.' Used to specify the input tray that is used for inserts Sheets (insert Sheets are never imaged).
<i>InsertTray-N</i>	I	The input tray that can best be identified as 'insert tray-1', 'insert tray-2', ... etc. Used to specify the input tray that is used for inserts Sheets (insert Sheets are never imaged).
<i>LargeCapacity</i>	IO	The bin that can best be identified as the 'large capacity' bin (in terms of the number of Sheets) with respect to the device.
<i>LargeCapacity-N</i>	IO	The location that can best be identified as the 'large capacity-1', 'large-capacity-2', ... etc., input tray (in terms of the number of Sheets) with respect to the device.
<i>Left</i>	IO*	The bin that, when facing the device, can best be identified as 'left.'
<i>Lower</i>	IO*	The value " <i>Bottom</i> " is analogous; " <i>Bottom</i> " SHOULD be used instead when possible.
<i>Mailbox-N</i>	O	The Job will be output to the bin that is best identified as "Mailbox #1", "Mailbox #2", etc.
<i>Main</i>	IO	The value " <i>LargeCapacity</i> " is analogous; " <i>LargeCapacity</i> " SHOULD be used instead when possible.

**Table C-21: Input Tray and Output Bin Names (Sheet 3 of 3)**

Name	I/O	Description
<i>Middle</i>	IO*	The bin that, when facing the device, can best be identified as “middle”.
<i>MyMailbox</i>	O	The Job will be output to the bin that is best identified as “My Mailbox”
<i>PostMarkerInserter</i> <i>New in JDF 1.4</i>	I	The input tray that is downstream of the marking engine and allows the user to pass media through a non-marking paper path for covers and/or inserts.
<i>Rear</i>	IO*	The bin that, when facing the device, can best be identified as “rear”.
<i>Right</i>	IO*	The bin that, when facing the device, can best be identified as “right”.
<i>Roll</i>	IO	The location to handle Web-Fed media.
<i>Roll-N</i>	IO	The Nth location to handle the Nth Web-Fed media.
<i>Side</i>	IO*	The bin that, when facing the device, can best be identified as “side”.
<i>Stacker-N</i>	O	The Job will be output to the bin that is best identified as “Stacker #1”, “Stacker #2”, etc.
<i>Top</i>	IO*	The bin that, when facing the device, can best be identified as “top”.
<i>Tray</i>	IO	The location for a single tray device.
<i>Tray-N</i>	IO	The Job will be output to the tray that is best identified as “Tray #1”, “Tray #2”, etc.
<i>Upper</i>	IO*	The value “ <i>Top</i> ” is analogous; “ <i>Top</i> ” SHOULD be used instead when possible.



## Appendix D    Supported Error Codes in **JMF XJMF** and Notification Elements

The following list defines the standard *ReturnCode* for messaging. Return code values are integers. Error Messages below 100 are reserved for protocol errors. Error messages above 100 are used for Device and Controller errors and error messages above 200 for Job and pipe specific errors. [Error Codes above 300 are used for errors related to authentication and certificate exchange.](#)

**Table D-1: Return codes for **JMF XJMF** (Sheet 1 of 3)**

ReturnCode	Description
0	Success
1 – 99	Protocol errors
1	General error
2	Internal error
3	XML parser error (e.g., if a <b>MIME ZIP</b> file is sent to an <b>XML Controller</b> a <b>Device</b> that does not support ZIP packaging).
4	XML validation error
5	Query Message/Command Message not implemented
6	Invalid parameters
7	Insufficient parameters
8	Device not available (Controller exists but not the Device or queue)
9	Message incomplete.
10 <a href="#">New in JDF 1.3</a>	Message Service is busy.
11 <a href="#">New in JDF 1.4</a>	Synchronous mode not supported for message. No <i>@AcknowledgeURL</i> is specified and the Message can only be processed asynchronously and was not processed. (Error)
12 <a href="#">New in JDF 1.4</a>	Asynchronous acknowledge not supported for message. No <i>@AcknowledgeURL</i> is specified and the Message was processed. The resulting <i>Acknowledge</i> can only be emitted asynchronously. (Warning)
13 <a href="#">New in JDF 1.4</a>	Reliable Signals not supported. Subscription denied.
14	Subscription denied. An identical subscription already exists.
100 – 199	Device and Controller errors
100	Device not running
101	Device incapable of fulfilling request (e.g., a RIP that has been asked to cut a Sheet).
102	No executable Node exists in the <b>JDF XJDF</b>
103	<i>@JobID</i> not known by Controller
104	<i>@JobPartID</i> not known by Controller
105	Queue entry not in queue
106	Queue request failed because the queue entry is already executing
107	The queue entry is already executing. Late change is not accepted
108	Selection or applied filter results in an empty list
109	Selection or applied filter results in an incomplete list. A buffer cannot provide the complete list queried for.

**Table D-1: Return codes for JMF XJMF (Sheet 2 of 3)**

ReturnCode	Description
110	Queue request of a Job submission failed because the requested completion time of the Job cannot be fulfilled.
111	Subscription request denied.
112 <a href="#">New in JDF 1.1</a>	Queue request failed because the Queue is " <i>Closed</i> " or " <i>Blocked</i> " and does not accept new entries.
113 <a href="#">New in JDF 1.2</a>	Queue entry is already in the resulting status.
114 <a href="#">Modified in JDF 1.4</a>	QueueEntry/@ <i>Status</i> is already " <i>PendingReturn</i> ", " <i>Completed</i> " or " <i>Aborted</i> " and therefore does not accept changes. <b>Modification note:</b> starting with JDF 1.4, " <i>PendingReturn</i> " added.
115 <a href="#">New in JDF 1.2</a>	Queue entry is not running.
116 <a href="#">New in JDF 1.3</a>	Queue entry already exists. Used when a QueueEntry with identical @ <i>JobID</i> , @ <i>JobPartID</i> and PartPart already exists.
120 <a href="#">New in JDF 1.3</a>	Cannot access referenced URL. URI Reference cannot be resolved. Used when a referenced entity (e.g., a JDF in a SubmitQueueEntry cannot be found).
121 <a href="#">New in JDF 1.3</a>	Unknown <i>DeviceID</i> . No Device is known with the <i>DeviceID</i> specified.
130 <a href="#">New in JDF 1.3</a>	Ganging is not supported. A gang Job has been submitted to a queue that does not support ganging.
131 <a href="#">New in JDF 1.3</a>	<i>GangName</i> not known. A Job has been submitted with an unknown <i>GangName</i> .
140	<b>Resource Command</b> rejected
141	<b>Resource Command</b> partially rejected
200 – ...	Job and pipe specific errors
200	Invalid Resources
201	Insufficient Resource parameters
202	<i>PipeID</i> unknown
203	Unlinked <b>ResourceLink</b> <b>Resource</b> .
204 <a href="#">New in JDF 1.3</a>	Could not create new JDF Node.
205 <a href="#">New in JDF 1.6</a>	Pipe request failed because the Pipe is closed and does not accept new requests
300 <a href="#">New in JDF 1.3</a>	Authentication denied.
301 <a href="#">New in JDF 1.3</a>	Secure channel not supported - I don't support secure channel for this Message.
302 <a href="#">New in JDF 1.3</a>	Secure channel required - I require secure channel for this Message.
303 <a href="#">New in JDF 1.3</a>	Certificate expired (Some implementations might not be able to send this response because the SSL layer will reject the Message before passing it to the <b>JMF XJMF</b> implementation for parsing)

**Table D-1: Return codes for JMF XJMF (Sheet 3 of 3)**

ReturnCode	Description
304 <a href="#">New in JDF 1.4</a>	Authentication pending.
305 <a href="#">New in JDF 1.4</a>	Authentication already established.
306 <a href="#">New in JDF 1.4</a>	No authentication request in process.
307 <a href="#">New in JDF 1.4</a>	Certificate Invalid

## Appendix D Supported Error Codes in JMF XJMF and Notification Elements

# Appendix E Color Adjustment Attribute Description and Usage

[New in JDF 1.2](#)

This appendix describes several alternative usages of some Attributes in the **ColorCorrectionOp** Element (see **ColorCorrectionParams/ColorCorrectionOp** in Section 8.24, “**ColorCorrectionParams**” on page 567). that are intended to allow simple, late-in-the-workflow, minor adjustments to the overall color appearance of a Job or portions of a Job.

Note: These color adjustments are not available in any Intent Resource, such as **ColorIntent**. In order to request such adjustment in a Product Intent Job ticket supplied to a print provider, attach to a Product Intent Node an incomplete **ColorCorrection** Process with a **ColorCorrectionParams** Resource specifying the requested **ColorCorrectionOp** Element Attributes.

## E.1 Adjustment Using Direct Attributes

This section describes the following Attributes that provide direct adjustments to various aspect of the color space:

**Table E-1: Attributes for Color Space Adjustment**

Attribute Name	Allowed Value Range
<i>AdjustCyanRed</i>	-100 to +100
<i>AdjustMagentaGreen</i>	-100 to +100
<i>AdjustYellowBlue</i>	-100 to +100
<i>AdjustContrast</i>	-100 to +100
<i>AdjustHue</i>	-180 to +180
<i>AdjustLightness</i>	-100 to +100
<i>AdjustSaturation</i>	-100 to +100

These Attributes can be applied at a point where an abstract profile would be applied (following any abstract profiles used) in the order:  $@AdjustLightness$ ,  $@AdjustContrast$ ,  $@AdjustSaturation$ ,  $@AdjustHue$ ,  $\{@AdjustCyanRed/@AdjustMagentaGreen/@AdjustYellowBlue\}$ . The operation of each adjustment Attribute is described in relation to colors expressed in the L\*a\*b\* connection color space (with L\* expressed on a scale of 0 to 100).

Note: in the C-language-like assignment statements below, the variables L, a and b are used to represent values of the L\*, a\* and b\* channels to avoid ambiguity with the “\*” used to denote multiplication in these statements.

- $@AdjustLightness$  offsets the L\* channel.  $[L += @AdjustLightness]$
- $@AdjustContrast$  scales the L\* channel about mid-scale (where L = 50).  
 $[L = 50 + (L - 50) * (@AdjustContrast / 100 + 1)]$
- $@AdjustSaturation$  scales the a\* and b\* channels about zero.  $[a *= (@AdjustSaturation / 100 + 1)]$  and  
 $[b *= (@AdjustSaturation / 100 + 1)]$

$@AdjustCyanRed$ ,  $@AdjustMagentaGreen$  and  $@AdjustYellowBlue$  offset the colors in the a\*b\* plane along the respective color vector. Lightness (L\*) is not changed. Positive values offset towards red, green or blue, and negative values offset towards cyan, magenta or yellow. The adjustment vectors are aligned with the standard SWOP inks. When adjusting Device colors, these adjustments can be approximated by offsets along the vectors of the actual ink colors being used. The angles and unit vectors for SWOP inks (from the CGATS TR001 print characterization) are:

Red-cyan      Green-Magenta      Blue-yellow

<b>Angle</b>	-129.9	-5.3	94.5
<b>a*</b>	0.641	-0.996	0.078
<b>b*</b>	0.767	0.092	-0.997

So

$$\begin{aligned} \mathbf{a}^* &+= 0.641 * @AdjustCyanRed \\ &\quad - 0.996 * @AdjustMagentaGreen \\ &\quad + 0.078 * @AdjustYellowBlue \end{aligned}$$

$$\begin{aligned} \mathbf{b}^* &+= 0.767 * @AdjustCyanRed \\ &\quad + 0.092 * @AdjustMagentaGreen \\ &\quad - 0.997 * @AdjustYellowBlue \end{aligned}$$

**@AdjustHue** offsets the hue angle value when the colors have been transformed to the CIE- L\* C\* H\* (luminance, chroma and hue) color space from the L\*a\*b\* connection color space. The **@AdjustHue** angle is expressed in degrees.

Note: in the C-language-like assignment statements below, the variables L, a and b are used to represent values of the L\*, a\* and b\* channels to avoid ambiguity with the “\*” used to denote multiplication in these statements.

- $a = a * \cos(@AdjustHue) - b * \sin(@AdjustHue)$
- $b = a * \sin(@AdjustHue) + b * \cos(@AdjustHue)$

## E.2 Adjustment using ICC Profile Attributes

This section describes two alternatives to the direct color adjustment Attributes providing adjustments of the same nature using ICC profiles. The ICC profile approach provides a standard mechanism for applying a set of multi-dimensional adjustments with a single operation. The ICC profile approach also has an advantage in that it minimizes algorithm and interpretation dependency on the receiving end.

## E.3 Adjustment using an ICC Abstract Profile Attribute

A color adjust can be encapsulated in an ICC abstract profile that is applied in ICC Profile Connection Space (PCS). The **FileSpec** Resource of the **ColorCorrectionOp** Element with the **@ResourceUsage** Attribute set to **"AbstractProfile"** references an ICC profile to be used in this manner.

## E.4 Adjustment using an ICC DeviceLink Profile Attribute

A color adjust can be encapsulated in an ICC DeviceLink profile that is applied in Device space. The **FileSpec** Resource of the **ColorCorrectionOp** Element with the **@ResourceUsage** Attribute set to **"DeviceLinkProfile"** references an ICC profile to be used in this manner.

## Appendix F North American and Japanese Media Weight Explained

In North America and Japan, each grade of paper has one basic size used to compute its basis weight per ream. For example, Bond basic size is 17" x 22" and Shiroku-ban basic size is 788 mm x 1091 mm.

### F.1 North American Media Weight

[New in JDF 1.2](#)

In North America, a paper's basis weight is the weight of five hundred Sheets of its basic size. For example, if five hundred 25" x 38" Sheets of offset paper weigh 60 pounds, it is called 60# offset. Paper mills outside of North America use the metric system to designate paper weight. The basis weight of foreign papers is grams per square meter (g/m<sup>2</sup>) known as the Sheet's grammage. Papers made to metric standards don't convert to basis weights familiar to North Americans. For example, 100 g/m<sup>2</sup> equals a basis weight of 67.5. Following is the English/grammage conversion formula:

$$\text{Basis Weight (lb.)} \times (1406.5 / \text{Square inches in basic size}) = \text{grams per square meter}$$

For example, the grammage of 65 lb. cover stock when the cover is 20 x 26 can be calculated as follows:

$$65 \times (1406.5 / (20 \times 26)) = 65 \times 2.70 = 176 \text{ g/m}^2$$

The following table defines the basic sizes and the factor that @USWeight is multiplied by to calculate @Weight for various stock types. Stock type is specified in **Media/@StockType** or **MediaIntent/@StockType**.

**Table F-1: Conversion Factor from USWeight (lbs) to Weight (g/m<sup>2</sup>)**

Stock Type	Basis size in Inches	Weight / USWeight	Equivalent
"Bond"	17" x 22"	3.76	"Ledger", "Manifold"
"Book"	25" x 38"	1.48	"Bible", "Coated", "Offset", "Text"
"Bristol"	22½" x 28½"	2.19	
"Cover"	20" x 26"	2.70	
"Index"	25½" x 30½"	1.81	
"Newsprint"	24" x 36"	1.63	"Tag"

In the following table, the right columns of each column pair list common basis weights for North American papers while the left columns list their corresponding grammage. The rows are ordered by grammage. Basis weights for bond, book, cover and other grades of papers are computed using different basic sizes, so the progression of weights down the right columns is untidy.

**Table F-2: Grammage Equivalents for Common (US) Basis Weights (Sheet 1 of 2)**

Grammage (g/m <sup>2</sup> )	Basis Weight	Grammage (g/m <sup>2</sup> )	Basis Weight
30	20# Book	150	40# Ledger
34	9# Manifold	152	60# Cover
36	24# Book	163	90 # Index
44	30# Book	163	100 # Tag
45	12# Manifold	175	80# Bristol
49	13# Bond	176	65# Cover
49	33# Book	178	120# Book
52	35# Book	197	90# Bristol

**Table F-2: Grammage Equivalents for Common (US) Basis Weights (Sheet 2 of 2)**

<b>Grammage (g/m<sup>2</sup>)</b>	<b>Basis Weight</b>	<b>Grammage (g/m<sup>2</sup>)</b>	<b>Basis Weight</b>
59	40# Book	199	110# Index
60	16# Bond	204	125# Tag
67	45# Bond	216	80# Cover
74	50# Book	219	100# Bristol
75	20# Bond	244	150# Tag
81	55# Book	253	140# Index
89	60# Book	263	120# Bristol
90	24# Bond	270	100# Cover
104	70# Book	285	175# Tag
105	28# Ledger	307	140# Bristol
108	40# Cover	307	170# Index
118	80# Book	325	200# Tag
120	32# Ledger	350	160# Bristol
133	90# Book	352	130# Cover
135	36# Ledger	394	180# Bristol
135	50# Cover	398	220# Index
147	67# Bristol	407	250# Tag
148	100# Book	438	200# Bristol
		488	300# Tag

## F.2 Japanese Media Weight

New in JDF 1.3

In Japan, a paper's basis weight is the weight of 1000 Sheets of its basic size and ream weights are given in kg.

The following table is originally published by EDS Inc., Editorial & Design Services at <http://www.edsebooks.com/paper/jpaper.html>. For more help with grammage and basis weight conversion, see also Basis Weight and Grammage Conversion Tables at <http://home.inter.net/eds/paper/grammage.html>.

Following is the Japanese/grammage conversion formula:

$$\text{Basis Weight (kg)} / \text{Basic Size (m}^2\text{)} = \text{grams per square meter}$$

For example, the grammage of 70 kg Shiroku-ban stock when the size is 0.788 x 1.091 can be calculated as follows:

$$70 / (0.788 \times 1.091) = 81.4 \text{ g/m}^2$$

In the table below, trade-sheet size is given in mm.

Table F-3: Japanese Media Weight

Paper Grade *	Shiroku-ban 788 x 1091	JIS B-ban 765 x 1085	Kiku-ban 636 x 939	JIS A-ban 625 x 880	Grammage (g/m <sup>2</sup> )
<b>上質紙</b> Joushitsushi	40	--	--	--	46.5
	45	--	31	20.5	52.3
	55	53	38	35	64.0
	70	67.5	48.5	44.5	81.4
	90	--	62.5	47.5	104.7
	110	--	71.5	70.5	127.9
	135	--	93.5	80.5	157.0
	180	--	--	--	209.3
<hr/>					
<b>中質紙</b> Chuushitsushi	--	45	--	30	54.2
	--	55	--	36.5	66.3
<hr/>					
<b>アート紙</b> Aatoshi	73	70.5	50.5	46.5	84.9
	90	87	62.5	57.5	104.7
	110	106	76.5	70.5	127.9
	135	130.5	93.5	86.5	157.0
<hr/>					
<b>マシンコート紙</b> Mashinkootoshi	63	61	--	--	73.3
	68	65.6	47	43.5	79.1
	73	70.5	50.5	46.5	84.9
	90	87	62.5	57.5	104.7
	110	106	76.5	70.5	127.9
	135	130.5	93.5	86.5	157.0
<hr/>					
<b>アートポスト紙</b> Aatoposutoshi	180	--	125	--	209.3
	200	--	139	--	232.6
	220	--	153	--	255.0

\* The following describes the five paper grades in the above table:

- **上質紙 Joushitsushi** (“top-quality paper”) contains 100% chemical pulp;
- **中質紙 Chuushitsushi** (“medium-quality paper”) contains a minimum of 70% chemical pulp;
- **アート紙 Aatoshi** (“art paper”) is machine coated paper, available in top quality and medium quality (Joushitsu and Chuushitsu);
- **マシンコート紙 Mashinkootoshi** (“machine coated paper”), also called Kootoshi (コート紙), is machine coated paper given only a thin coat of clay;
- **アートポスト紙 Aatoposutoshi** (“art-post paper”) is cover stock coated on one side.

## Appendix F North American and Japanese Media Weight Explained

## Appendix G Media Sizes

The following table defines a set of named media sizes as defined by [PPD].

### Implementation Remark

#### Modified in JDF 1.5

Since Media sizes may be real numbers, comparison of Media sizes SHOULD take into account certain rounding errors. For example, different Media sizes SHOULD be considered equal when all numbers are the same within a range of 5 point.

**Modification note:** starting with JDF 1.5, the recommended range has been changed from 1 point to 5 points.

### Key for Notes

- I — Size is defined by ISO standards, including [ISO216:1975].
- J — Size is defined by JIS standards.[JIS P0138:1998]
- E — This is an envelope size [ISO269:1985].

**Table G-1: Media Sizes (Sheet 1 of 4)**

Media Size	Size in Points	Size in Millimeters	Size in Inches	Notes
A0	2384 x 3370	841 x 1189	33.11 x 46.81	I, J
A1	1684 x 2384	594 x 841	23.39 x 33.11	I, J
A2	1191 x 1684	420 x 594	16.54 x 23.39	I, J
A3	842 x 1191	297 x 420	11.69 x 16.54	I, J
A3Extra	913 x 1262	322 x 445	12.67 x 17.52	
A4	595 x 842	210 x 297	8.27 x 11.69	I, J
A4Extra	667 x 914	235.5 x 322.3	9.27 x 12.69	
A4Plus	595 x 936	210 x 330	8.27 x 13	
A4Tab	638 x 842	225 x 297	8.86 x 11.69	
<u>New in JDF 1.4</u>				
A5	420 x 595	148 x 210	5.83 x 8.27	I, J
A5Extra	492 x 668	174 x 235	6.85 x 9.25	
A6	297 x 420	105 x 148	4.13 x 5.83	I, J
A7	210 x 297	74 x 105	2.91 x 4.13	I, J
A8	148 x 210	52 x 74	2.05 x 2.91	I, J
A9	105 x 148	37 x 52	1.46 x 2.05	I, J
A10	73 x 105	26 x 37	1.02 x 1.46	I, J
AnsiC	1224 x 1584	431.8 x 558.8	17 x 22	
AnsiD	1584 x 2448	558.8 x 863.6	22 x 34	
AnsiE	2448 x 3168	863.6 x 1118	34 x 44	
ARCHA	648 x 864	228.6 x 304.8	9 x 12	
ARCB	864 x 1296	304.8 x 457.2	12 x 18	
ARCHC	1296 x 1728	457.2 x 609.6	18 x 24	
ARCHD	1728 x 2592	609.6 x 914.4	24 x 36	
ARCHE	2592 x 3456	914.4 x 1219	36 x 48	

**Table G-1: Media Sizes (Sheet 2 of 4)**

<b>Media Size</b>	<b>Size in Points</b>	<b>Size in Millimeters</b>	<b>Size in Inches</b>	<b>Notes</b>
B0	2920 x 4127	1030 x 1456	40.55 x 57.32	J
B1	2064 x 2920	728 x 1030	28.66 x 40.55	J
B2	1460 x 2064	515 x 728	20.28 x 28.66	J
B3	1032 x 1460	364 x 515	14.33 x 20.28	J
B4	729 x 1032	257 x 364	10.12 x 14.33	J
B5	516 x 729	182 x 257	7.17 x 10.12	J
B6	363 x 516	128 x 182	5.04 x 7.17	J
B7	258 x 363	91 x 128	3.58 x 5.04	J
B8	181 x 258	64 x 91	2.52 x 3.58	J
B9	127 x 181	45 x 64	1.77 x 2.52	J
B10	91 x 127	32 x 45	1.26 x 1.77	J
C4	649 x 918	229 x 324	9.02 x 12.75	I, E
C5	459 x 649	162 x 229	6.38 x 9.02	I, E
C6	323 x 459	114 x 162	4.51 x 6.38	I, E
Comm10	297 x 684	104.8 x 241.3	4.125 x 9.5	E
DL	312 x 624	110 x 220	4.33 x 8.66	I, E
DoublePostcard	567 x 419	200 x 148	7.87 x 5.83	
Env9	279 x 639	98.4 x 225.4	3.875 x 8.875	E
Env10	297 x 684	104.8 x 241.3	4.125 x 9.5	E
Env11	324 x 747	113.3 x 263.5	4.5 x 10.375	E
Env12	342 x 792	120.7 x 279.4	4.75 x 11	E
Env14	360 x 828	127 x 292.1	5 x 11.5	E
EnvC0	2599 x 3676	917 x 1297	36.10 x 51.06	I, E
EnvC1	1837 x 2599	648 x 917	25.51 x 36.10	I, E
EnvC2	1298 x 1837	458 x 648	18.03 x 25.51	I, E
EnvC3	918 x 1296	324 x 458	12.75 x 18.03	I, E
EnvC4	649 x 918	229 x 324	9.02 x 12.75	I, E
EnvC5	459 x 649	162 x 229	6.38 x 9.02	I, E
EnvC6	323 x 459	114 x 162	4.51 x 6.38	I, E
EnvC65	324 x 648	114 x 229	4.51 x 9	E
EnvC7	230 x 323	81 x 113	3.19 x 4.49	I, E
EnvChou3	340 x 666	120 x 235	4.72 x 9.25	E
EnvChou4	255 x 581	90 x 205	3.54 x 8	E
EnvDL	312 x 624	110 x 220	4.33 x 8.66	I, E
EnvInvite	624 x 624	220 x 220	8.66 x 8.66	E
EnvISOB4	708 x 1001	250 x 353	9.84 x 13.9	E
EnvISOB5	499 x 709	176 x 250	6.9 x 9.8	E
EnvISOB6	499 x 354	176 x 125	6.9 x 4.9	E

**Table G-1: Media Sizes (Sheet 3 of 4)**

<b>Media Size</b>	<b>Size in Points</b>	<b>Size in Millimeters</b>	<b>Size in Inches</b>	<b>Notes</b>
EnvItalian	312 x 652	110 x 230	4.33 x 9	E
EnvKaku2	680 x 941	240 x 332	9.45 x 13	E
EnvKaku3	612 x 785	216 x 277	8.5 x 10.9	E
EnvMonarch	279 x 540	98.43 x 190.5	3.875 x 7.5	E
EnvPersonal	261 x 468	92.08 x 165.1	3.625 x 6.5	E
EnvPRC1	289 x 468	102 x 165	4 x 6.5	E
EnvPRC2	289 x 499	102 x 176	4 x 6.9	E
EnvPRC3	354 x 499	125 x 176	4.9 x 6.9	E
EnvPRC4	312 x 590	110 x 208	4.33 x 8.2	E
EnvPRC5	312 x 624	110 x 220	4.33 x 8.66	E
EnvPRC6	340 x 652	120 x 230	4.7 x 9	E
EnvPRC7	454 x 652	160 x 230	6.3 x 9	E
EnvPRC8	340 x 876	120 x 309	4.7 x 12.2	E
EnvPRC9	649 x 918	229 x 324	9 x 12.75	E
EnvPRC10	918 x 1298	324 x 458	12.75 x 18	E
EnvYou4	298 x 666	105 x 235	4.13 x 9.25	E
Executive	522 x 756	184.2 x 266.7	7.25 x 10.5	
FanFoldGerman	612 x 864	215.9 x 304.8	8.5 x 12	
FanFoldGermanLegal	612 x 936	215.9 x 330	8.5 x 13	
FanFoldUS	1071 x 792	377.8 x 279.4	14.875 x 11	
Folio	595 x 935	210 x 330	8.27 x 13	
ISOB0	2835 x 4008	1000 x 1414	39.37 x 55.67	I
ISOB01	2004 x 2835	707 x 1000	27.83 x 39.37	I
ISOB2	1417 x 2004	500 x 707	19.68 x 27.83	I
ISOB3	1001 x 1417	353 x 500	13.90 x 19.68	I
ISOB4	709 x 1001	250 x 353	9.84 x 13.90	I
ISOB5	499 x 709	176 x 250	6.9 x 9.8	I
ISOB5Extra	569 x 782	201 x 276	7.9 x 10.8	
ISOB6	354 x 499	125 x 176	4.92 x 6.93	I
ISOB7	249 x 354	88 x 125	3.46 x 4.92	I
ISOB8	176 x 249	62 x 88	2.44 x 3.46	I
ISOB9	125 x 176	44 x 62	1.73 x 2.44	I
ISOB10	88 x 125	31 x 44	1.22 x 1.73	I
Ledger	1224 x 792	431.8 x 279.4	17 x 11	
Legal	612 x 1008	215.9 x 355.6	8.5 x 14	
LegalExtra	684 x 1080	241.3 x 381	9.5 x 15	
Letter	612 x 792	215.9 x 279.4	8.5 x 11	
LetterExtra	684 x 864	241.3 x 304.8	9.5 x 12	

**Table G-1: Media Sizes (Sheet 4 of 4)**

<b>Media Size</b>	<b>Size in Points</b>	<b>Size in Millimeters</b>	<b>Size in Inches</b>	<b>Notes</b>
LetterPlus	612 x 913	215.9 x 322.3	8.5 x 12.69	
LetterTabThreeEighthsInch <u>New in JDF 1.4</u>	639 x 792	225.4 x 279.4	8.875 x 11	
LetterTabHalfInch <u>New in JDF 1.4</u>	648 x 792	228.6 x 279.4	9 x 11	
LetterTabFiveEighthsInch <u>New in JDF 1.4</u>	657 x 792	231.8 x 279.4	9.125 x 11	
Monarch	279 x 540	98.43 x 190.5	3.875 x 7.5	E
Postcard	284 x 419	100 x 148	3.94 x 5.83	
PRC16K	414 x 610	146 x 215	5.75 x 8.5	
SRA3 <u>New in JDF 1.4</u>	907 x 1276	320 x 450	12.60 x 17.72	

## Appendix H MimeType and MimeTypeVersion Attributes

### New in JDF 1.2

This appendix lists examples values for the following Attributes of the **FileSpec** Resource: **@MimeType** and **@MimeTypeVersion**. The preferred file name extension is also indicated for use in the **FileSpec/@URL** Attribute. **The tables below apply to the values of @PDLType and @PDLVersion defined in Section 9.2.2.5, “Document Properties” on page 1020**, respectively.

The listing is intended to be exhaustive for the most likely document formats that are routinely used in **JDF XJDF** applications. However, other document formats and other combinations of the listed document formats can be used as well. When these format standards are revised with new version numbers, they MAY be used and SHOULD follow the patterns established in the following tables.

Many **@MimeTypeVersion** values are taken from the *Printer MIB* [RFC1759] by using the a language (e.g., PS, PCL, etc.) as a prefix followed by the level or version defined for **prtInterpreterLangLevel** separated by a “/” character (e.g., “PS/3” for PostScript Level 3). For file formats not in the *Printer MIB*, the prefix is the common acronym for the format with “/” changed to “-” so that the prefix always ends with the first “/” (e.g. “DCS/2.0” for DCS version 2.0 and “TIFF-IT/BL/P1:1998” for TIFF/IT — Binary Line art image data — profile 1).

Table H-1 lists the **@MimeType** values that are MIME Media Types registered with IANA (as opposed to file types which are not registered with IANA) in alphabetical order, as well as possible **@MimeTypeVersion** values. A blank **@MimeTypeVersion** table entry indicates that there is no recognized version number for the **@MimeType**. Table H-1 also lists the associated RECOMMENDED file name extensions commonly used by **JDF XJDF** applications. Note: According to [RFC2046] the initial set of MIME media types start with the substrings: “application/”, “audio/”, “image/”, “message/”, “model/”, “multipart/”, “text/” or “video/”. File Types will not start with these strings. The **@Compression** values that do have a corresponding IANA MIME type are also listed, so that a file that is so compressed or encoded has an appropriate **@MimeType** value for the file, as shown below.

**Modification note:** starting with JDF 1.4, the second column “Sample MimeType Version” replaces “MimeType Version” and rows with same value of MimeType, but with different values of MimeType Version are reduced to a single row with just a sample MimeType Version

**Table H-1: MimeType Attribute Values (IANA Registered) (Sheet 1 of 3)**

MimeType	Sample MimeType- Version	File Extension	Description [iana-mt] indicates IANA registration
application/mac-binhex40	HQX/4.0	.hqx	Macintosh BinHex 4.0 7-bit encoding [RFC1741]  <b>Note:</b> BinHex encoding converts an 8-bit file into a 7-bit format [RFC1741], similar to Uuencoding. BinHex format preserves file Attributes, as well as Macintosh resource forks, and includes CRC (Cyclic Redundancy Check) error-checking. This encoding method works on any type of file, including formatted word processing and spreadsheet files, graphics files and even executable files (i.e., programs or applications). Note: BinHex is not to be confused with MacBinary encoding, which is an 8-bit format.
application/msword	MSWORD/XP	.doc	Microsoft Word

**Table H-1: MimeType Attribute Values (IANA Registered) (Sheet 2 of 3)**

MimeType	Sample MimeType- Version	File Extension	Description [iana-mt] indicates IANA registration
application/pdf	PDF/1.6, PDF/X-3:2003	.pdf	Adobe Portable Document Format [PDF1.6] and Portable Document Format (PDF) PDF/ X-3 [ISO15930-6:2003]
application/postscript	PS/3	.ps	Adobe PostScript™ See [RFC2045] and [RFC2046]
application/vnd.cip4-jdf+xml <a href="#">Modified in JDF 1.5</a>	JDF 1.5	.jdf	CIP4 Job Definition Format (JDF) version 1.5.
application/vnd.cip4-jmf+xml <a href="#">Modified in JDF 1.5</a>	JMF 1.5	.jmf	CIP4 Job Definition Format (JDF) version 1.5 (See Job Messaging Format).
application/vnd.cip4-ptk+xml <a href="#">New in JDF 1.5</a>	PrintTalk 1.5	.ptk	CIP4 PrintTalk version 1.5
application/vnd.cip3-ppf	PPF/3.0	.ppf	CIP3 Print Production Format (PPF) version 3.0, 1998 [PPF]
application/vnd.hp-PCL	PCL/X	.pcl	Hewlett Packard Printer Control Language (PCL™)
application/vnd.iccprofile <a href="#">New in JDF 1.4</a>		.icc .icm	International Color Consortium (ICC) File Format for Color Profiles taken from the binary coded decimal Profile Header Profile Version Number field (bytes 8 through 11) [ICC.1] <b>Creation note:</b> starting with JDF 1.4 this MimeType replaces “ICC Profile”. See Table H-2.
application/vnd.podi-ppml+xml	PPML/2.1	.ppml	Personalized Print Markup Language [PPML]
application/vnd.Quark.QuarkXPress	XPress/6.0	.qxd .qxt .qwd .qwt .qxl .qxb	QuarkXPress [Quark]
application/zip		.zip	ZIP packaging — The actual compression used for each file in a ZIP package is stored in the ZIP package as metadata for each file. Therefore, the <b>FileSpec/@Compression</b> Attribute for the contained file MAY use any <b>@Compression</b> value, including “None”, “Compress”, “Gzip” and “ZLIB”.

**Table H-1:MimeType Attribute Values (IANA Registered) (Sheet 3 of 3)**

MimeType	Sample MimeType- Version	File Extension	Description [iana-mt] indicates IANA registration
image/jpeg		.jpeg .jpg	JPEG See [RFC2045] and [RFC2046]. Note: image/jpeg is really an image format, not a file format. JFIF and EXIF are file formats that contain image/jpeg image format data, and some applications have their own formats that are similar to JFIF and EXIF but which are proprietary. None the less, the "image/jpeg" @MimeType value is used to identify these file types.
image/tiff	tiff/6.0	.tiff .tif	Tag Image File Format [RFC3302] <b>Note:</b> The image/tiff MIME @MediaType is assumed to be TIFF Revision 6.0 as defined in detail by Adobe in [TIFF6]. TIFF/IT is a different MIME type.
multipart/related		.mjd .mjm	Multipart/Related with <b>JDF XJDF</b> as the first part [RFC2387]
x-world/x-vrml <i>New in JDF 1.4</i>			

Table H-2 lists the @MimeType values that are file types assigned by CIP4 (as opposed to MIME Media Types which are registered with IANA) and possible @MimeTypeVersion values commonly used in **JDF XJDF** applications. A blank @MimeTypeVersion table entry indicates that there is no recognized version number for the @MimeType. Table H-2 also lists associated RECOMMENDED file name extensions values. A blank file extension column entry indicates that there is no recognized file name extension for the @MimeType. The @Compression values that do not have a corresponding IANA MIME type are also assigned a file type value, so that a file that is so compressed or encoded has an appropriate @MimeType value for the file, as shown in the table below.

**Table H-2:MimeType and File Type Combinations (Sheet 1 of 3)**

MimeType	File Extension	Description [iana-mt] indicates IANA registration
Base64	.mme	Base64 — A format for encoding arbitrary binary information for transmission by electronic mail. [RFC3548]
Compress		Compress — UNIX compression [RFC1977].
DCS	.eps	Document Color Separation (DCS), version 2.0. [DCS2.0]
Deflate		Deflate — The file is compressed using ZIP public domain compression format [RFC1951].
GZip	.gz	Gzip — GNU zip compression technology [RFC1952].
ICC Profile <i>Deprecated in JDF 1.4</i>	.icc .icm	International Color Consortium (ICC) File Format for Color Profiles taken from the binary coded decimal Profile Header Profile Version Number field (bytes 8 through 11) [ICC.1] <b>Deprecation note:</b> starting with JDF 1.4 this MimeType becomes "application/vnd.iccprofile". See Table H-1.

**Table H-2: MimeType and File Type Combinations (Sheet 2 of 3)**

MimeType	File Extension	Description [iana-mt] indicates IANA registration
MacBinary	.bin	MacBinary — An encoding format that combines the two forks of a Mac file, together with the file information (Name, Creator Application, File Type, etc.) into a single binary data stream that is suitable for storage or transferring through non-Mac systems. [macbinary]
Tar	.tar	UNIX packaging format.
TIFF/IT	.fp	TIFF/IT [ISO12639:2004] — Full Page — baseline <b>Note:</b> the file format TIFF/IT SHALL NOT use the “application/tiff” @MimeType. The “image/tiff” @MimeType conforms to baseline TIFF 6.0 [RFC3302], whereas TIFF/IT does not conform to TIFF 6.0. Consequently, the widely-deployed TIFF 6.0 readers are not able to read TIFF/IT. The [RFC3302] requires that an RFC be published in order to extend image/tiff with a parameter that would be needed in order to distinguish TIFF/IT from TIFF. There is no plan by the ISO committee that oversees TIFF/IT to register TIFF/IT with either a parameter to image/tiff or as new separate MIME type. Therefore, TIFF/IT will use the @FileType Attribute instead of the @MimeType Attribute.
TIFF/IT	.ct	TIFF/IT [ISO12639:2004] — Continuous Tone picture data — baseline
TIFF/IT	.lw	TIFF/IT [ISO12639:2004] — Continuous Line art — baseline
TIFF/IT	.hc	TIFF/IT [ISO12639:2004] — High-resolution Continuous tone image data — baseline
TIFF/IT	.mp	TIFF/IT [ISO12639:2004] — monochrome picture image data — baseline
TIFF/IT	.bp	TIFF/IT [ISO12639:2004] — Binary Picture image data — baseline
TIFF/IT	.bl	TIFF/IT [ISO12639:2004] — Binary Line art image data — baseline
TIFF/IT	.fp	TIFF/IT [ISO12639:2004] — Full Page — profile 1
TIFF/IT	.ct	TIFF/IT [ISO12639:2004] — Continuous Tone picture data — profile 1
TIFF/IT	.lw	TIFF/IT [ISO12639:2004] — Color Line art data — profile 1
TIFF/IT	.hc	TIFF/IT [ISO12639:2004] — High-resolution Continuous tone image data — profile 1
TIFF/IT	.mp	TIFF/IT [ISO12639:2004] — monochrome picture image data — profile 1
TIFF/IT	.bp	TIFF/IT [ISO12639:2004] — Binary Picture image data — profile 1
TIFF/IT	.bl	TIFF/IT [ISO12639:2004] — Binary Line art image data — profile 1
TIFF/IT	.fp	TIFF/IT [ISO12639:2004] — Full Page — baseline <b>Note:</b> this entry and following ones were created in the context of [ISO12639:2004], whereas preceding entries were created in the context of the 1998 version of [ISO12639:2004]
TIFF/IT	.ct	TIFF/IT [ISO12639:2004] — Continuous Tone picture data — baseline
TIFF/IT	.lw	TIFF/IT [ISO12639:2004] — Color Line art data — baseline
TIFF/IT	.hc	TIFF/IT [ISO12639:2004] — High-resolution Continuous tone image data — baseline
TIFF/IT	.mp	TIFF/IT [ISO12639:2004] — monochrome picture image data — baseline
TIFF/IT	.bp	TIFF/IT [ISO12639:2004] — Binary Picture image data — baseline
TIFF/IT	.bl	TIFF/IT [ISO12639:2004] — Binary Line art image data — baseline

**Table H-2: MimeType and File Type Combinations (Sheet 3 of 3)**

MimeType	File Extension	Description [iana-mt] indicates IANA registration
TIFF/IT	.sd	TIFF/IT [ISO12639:2004]
TIFF/IT	.fp	TIFF/IT [ISO12639:2004] — Full Page — profile 1
TIFF/IT	.ct	TIFF/IT [ISO12639:2004] — Continuous Tone picture data — profile 1
TIFF/IT	.lw	TIFF/IT [ISO12639:2004] — Color Line art data — profile 1
TIFF/IT	.hc	TIFF/IT [ISO12639:2004] — High-resolution Continuous tone image data — profile 1
TIFF/IT	.mp	TIFF/IT [ISO12639:2004] — monochrome picture image data — profile 1
TIFF/IT	.bp	TIFF/IT [ISO12639:2004] — Binary Picture image data — profile 1
TIFF/IT	.bl	TIFF/IT [ISO12639:2004] — Binary Line art image data — profile 1. <b>Note:</b> There is no TIFF/IT P1 conformance level of SD in [ISO12639:2004]
TIFF/IT	.fp	TIFF/IT [ISO12639:2004] — Full Page — profile 2
TIFF/IT	.ct	TIFF/IT [ISO12639:2004] — Continuous Tone picture data — profile 2
TIFF/IT	.lw	TIFF/IT [ISO12639:2004] — Color Line art data — profile 2
TIFF/IT	.hc	TIFF/IT [ISO12639:2004] — High-resolution Continuous tone image data — profile 2
TIFF/IT	.mp	TIFF/IT [ISO12639:2004] — monochrome picture image data — profile 2
TIFF/IT	.bp	TIFF/IT [ISO12639:2004] — Binary Picture image data — profile 2
TIFF/IT	.bl	TIFF/IT [ISO12639:2004] — Binary Line art image data — profile 2
TIFF/IT	.sd	TIFF/IT [ISO12639:2004]
Type 1 Font	.pfa .pfb	Type 1 Font [type1font]
True Type Font	.ttf	True Type Font [truetypefont]
Open Type Font	.otf	Open Type Font [opentypefont]
UUEncoded	.uue	Uuencode — A set of encoding algorithms for converting files into a series of 7-bit ASCII characters that can be transmitted over the Internet. Originally, uuencode stood for Unix-to-Unix encode, but it has since become a universal protocol used to transfer files between different platforms such as Unix, Windows and Macintosh. Uuencoding is especially popular for sending Email attachments. [uuencode]
ZLIB		ZLIB — ZLIB compression [RFC1950]

## Appendix HMimeType andMimeTypeVersion Attributes

# Appendix I Generating strings with Format and Template

New in JDF 1.3

**JDF XJDF** specifies a set of `@XXXFormat` `@XXXTemplate` pairs that allow dynamic generation of strings based on the standard C printf() function. (See [K&R].). The following instances are specified:

- `Query/@AcknowledgeFormat` and `Query/@AcknowledgeTemplate`
- `Command/@AcknowledgeFormat` and `Command/@AcknowledgeTemplate`
- `SubscriptionSubscription/@Format` and `SubscriptionSubscription/@Template`
- `FileSpec/@FileFormat` and `FileSpec/@FileTemplate`
- `IdentificationField/@ValueFormat` and `IdentificationField/@ValueTemplate`
- `JobField/@JobFormat` and `JobField/@JobTemplate`
- `JobField/@ShowList` with a fixed format
- `Layout/@SheetNameFormat` and `Layout/@SheetNameTemplate`
- `Layout/MarkObject/DynamicField@Format` and `Layout/MarkObject/DynamicField@Template.`
- `RunList/MetadataMap/@ValueFormat` and `RunList/MetadataMap/@ValueFormat`
- `StrippingParams/@SheetNameFormat` and `StrippingParams/@SheetNameTemplate`

The function defined when using the Attributes `@XXXFormat` and `@XXXTemplate` is based on the standard C printf() function. (See [K&R].) `@XXXFormat` is the first argument and `@XXXTemplate` is a comma-separated list of the additional arguments. `@XXXTemplate` MAY contain unary operators: “+” and “-”, binary operators: “+”, “-”, “\*”, “/” and “%”, as well as parentheses: “(” and “)”, which are evaluated using standard C-operator precedence and the variables defined in the following table which include any valid Partition Key of a Partitioned Resource.

When evaluating a mathematical expression involving variables, the format evaluation will convert variable values as necessary into the long float values needed to result in a numeric result, and then convert that result if necessary based on what the format specifier is. For example, if:

- 1 A Template contains "`Metadata0 * Metadata1`", and `@Metadata0 = "5"`, and `@Metadata1 = "1.5"`.
- 2 Both partition key values will be converted into long float values before the multiplication is performed
- 3 The result will be 7.5

Then, if the Format uses "`%d`", the value will be truncated to 7. If the Format uses "`%s`", the string "`7.5`" will be used. Finally, if the Format uses "`%f`", the long float value 7.5 will be used.

If a mathematical operation is attempted on a non numeric value, the results are undefined.

**Modification note:** starting with JDF 1.4, values from `@ShowList` are added to Table I-1 below and when two values differ only in case, the one starting with an uppercase letter is deprecated.

**Table I-1: Predefined variables used in `@XXXTemplate` and `@ShowList` (Sheet 1 of 4)**

Name	Description
<code>&lt;a Partition Key&gt;</code>	Any Partition Key that is a value of <code>@PartIDKeys</code> in Table 3-32, “Partitionable Resource Element” on page 128 Table 8-1, “Resource Element” on page 503.
<code>&lt;any Imposition Variable&gt;</code> <u>New in JDF 1.4</u>	The value of any variable defined by the <b>Imposition</b> process (see Section 6.4.18.2, “Variables for Automated Imposition”).

**Table I-1: Predefined variables used in @XXXTemplate and @ShowList (Sheet 2 of 4)**

Name	Description
<i>AcknowledgeType</i>  <a href="#">New in JDF 1.4</a>	Corresponds to the <b>JMF XJMF</b> <code>@AcknowledgeType</code> in the Acknowledge Message. See Section 5.3.5, “Acknowledge” on page 218.
<i>all</i>	Selects all matching Elements. Valid only when <b>FileSpec</b> is used as an Input Resource.
<i>Amount</i>  <a href="#">New in JDF 1.4</a>	Amount of the product that was produced.
<i>CustomerID</i>	<code>@CustomerID</code> .
<i>Date</i>	Current <code>@Date</code> in [ISO8601:2004] format.
<i>DeviceID</i>  <a href="#">New in JDF 1.4</a>	ID of the Device. This is a unique name within the workflow.
<i>element</i>	Integer iterator over all elements in a given page. Restarts at 0 for each page.
<i>EndTime</i>  <a href="#">New in JDF 1.4</a>	Actual end time of the Job.
<i>Error</i>  <a href="#">New in JDF 1.4</a>	Errors that happened during the Job.
<i>ErrorStats</i>  <a href="#">New in JDF 1.4</a>	Statistics on errors that happened during execution.
<i>ExposedMediaName</i>  <a href="#">New in JDF 1.4</a>	<code>@DescriptiveName</code> of the exposed media (e.g., plate or proof that is being imaged).
<i>FriendlyName</i>  <a href="#">New in JDF 1.4</a>	<code>@FriendlyName</code> of the Device.
<i>GeneralID:XXX</i>  <a href="#">New in JDF 1.4</a>	GeneralID/ <code>@IDValue</code> of a GeneralID[ <code>@IDUsage = "XXX"</code> ] For example if <code>@Format = "%i"</code> and <code>@Template= "GeneralID:foo"</code> then for:  <code>&lt;GeneralID IDUsage="foo" IDValue="1"/&gt;</code> the extracted value is 1.
<i>Generated</i>	System generated file name.
<i>i</i>	Integer iterator over all files produced by this Process. 0-based numbering.
<i>input</i>	Local file name of the input file. Valid only when <b>FileSpec</b> is used as an Output Resource.
<i>jobID</i>	Job ID <b>string</b> .
<i>JobID</i>  <a href="#">Deprecated in JDF 1.4</a>	<code>@JobID</code> of the Node that is executing. <b>Deprecation note:</b> starting with JDF 1.4, use " <code>jobID</code> ". Before JDF 1.4, " <code>JobID</code> " was only for <code>JobField/@ShowList</code>
<i>jobName</i>	<code>@DescriptiveName</code> of the Node that is being processed.
<i>JobName</i>  <a href="#">Deprecated in JDF 1.4</a>	" <code>DescriptiveName</code> " of the Node that is executing. <b>Deprecation note:</b> starting with JDF 1.4, use " <code>jobName</code> ". Before JDF 1.4, " <code>JobName</code> " was only for <code>JobField/@ShowList</code> .
<i>jobPartID</i>	<code>@JobPartID</code> string.
<i>JobRecipientName</i>  <a href="#">New in JDF 1.4</a>	Name of the recipient of the Job.

**Table I-1: Predefined variables used in @XXXTemplate and @ShowList (Sheet 3 of 4)**

Name	Description
<i>JobSubmitterName</i> <a href="#">New in JDF 1.4</a>	Name of the submitter of the Job.
<i>LayPartCount2in1</i> <a href="#">New in JDF 1.3</a>	Number of Partitions at level 2 within Partition level 1 (the base) within the <b>Layout</b> Resource. When using the RECOMMENDED <b>@SignatureName / @SheetName</b> Partition Keys, this equates to the number of Signatures within the <b>Layout</b> . All other variants of <b>@LayPartCount&lt;n&gt;in&lt;m&gt;</b> MAY be used, where <n> is an integer greater than <m>, and where <n> does not exceed the depth of the Partition tree within the <b>Layout</b> .
<i>LayPartIndex2in1</i> <a href="#">New in JDF 1.3</a>	Index (1-based) of Partition level 2 within Partition level 1 (the base) within the <b>Layout</b> Resource. When using the RECOMMENDED <b>@SignatureName / @SheetName</b> Partition Keys, this equates to the Signature number within the <b>Layout</b> . All other variants of <b>@LayPartIndex&lt;n&gt;in&lt;m&gt;</b> MAY be used, where <n> is an integer greater than <m>, and where <n> does not exceed the depth of the Partition tree within the <b>Layout</b> .
<i>MediaBrand</i> <a href="#">New in JDF 1.4</a>	Brand of the media that is being printed.
<i>MediaType</i> <a href="#">New in JDF 1.4</a>	" <i>DescriptiveName</i> " of the media that is being printed.
<i>MoonPhase</i> <a href="#">New in JDF 1.4</a>	Phase of the moon at the <b>@StartTime</b> of the Job.
<i>Operator</i> <a href="#">New in JDF 1.4</a>	Name of the operator.
<i>OperatorText</i> <a href="#">New in JDF 1.4</a>	Text from the operator as defined in <b>@OperatorText</b> .
<i>page</i>	Integer iterator over the page number of a document. This value is equivalent to value <i>r</i> (below) for the case that each run contains exactly one page.
<i>PrintQuality</i> <a href="#">New in JDF 1.4</a>	The quality of the printout. (High, Normal, Draft or Device specific name)
<i>ProoferProfileName</i> <a href="#">New in JDF 1.4</a>	Name of the ICC profile for the proofing Device.
<i>PressProfileName</i> <a href="#">New in JDF 1.4</a>	Name of the ICC profile for the final printing (used as intermediate space during proofing).
<i>r</i>	Integer iterator over all <b>RunList</b> Partitions with a Partition Key of "Run" in an input <b>RunList</b> .
<i>ri</i>	Integer iterator over all indices in an input "Run" of a <b>RunList</b> . This index is equivalent to looping over a <b>@RunIndex</b> .
<i>Resolution</i> <a href="#">New in JDF 1.4</a>	Output resolution.
<i>ResolutionX</i> <a href="#">New in JDF 1.4</a>	Output resolution in X direction.
<i>ResolutionY</i> <a href="#">New in JDF 1.4</a>	Output resolution in Y direction.

**Table I-1: Predefined variables used in @XXXTemplate and @ShowList (Sheet 4 of 4)**

Name	Description
<i>ScreeningFamily</i> <a href="#">New in JDF 1.4</a>	Name of the screening family of the output.
<i>sep</i> <a href="#">Deprecated in JDF 1.4</a>	Separation as defined in the separation Partition Keys of a Partitioned Resource. <b>Deprecation note:</b> starting with JDF 1.4, use the Partition Key " <i>Separation</i> ".
<i>SheetNum</i> <a href="#">New in JDF 1.3</a>	Integer iterator over the sheet number of a document.
<i>StartTime</i> <a href="#">New in JDF 1.4</a>	Actual start time of the Job
<i>surf</i> <a href="#">Deprecated in JDF 1.3</a>	Surface string, " <i>Front</i> " or " <i>Back</i> ". <b>Deprecation note:</b> starting with JDF 1.3, use the Partition Key " <i>Side</i> " instead.
<i>SystemRoot</i>	Root of system directory file structure. This token provides an operating system, independent way to refer to the root.
<i>TileX</i>	X coordinate of a Tile.
<i>TileY</i>	Y coordinate of a Tile.
<i>Time</i>	Current @ <i>Time</i> in [ISO8601:2004] format.
<i>TotalPagesInDoc</i> <a href="#">New in JDF 1.3</a>	Total # of pages in a document.
<i>UserText</i> <a href="#">New in JDF 1.4</a>	For JobField, " <i>UserText</i> " references user-defined text in JobField/@ <i>UserText</i> .
<i>Warning</i> <a href="#">New in JDF 1.4</a>	Warnings that happened during the Job. Warnings don't lose information in the resulting Job, while errors do.

**Example I-1: @FileTemplate and @FileFormat**

With @*JobID*="j001" and a **RunList** defining 2024 created files, this example will iterate over all created files and place them into:

```
"file://myserver.mydomain.com/next/j001/0000/m0000.pdf"
...
"file://myserver.mydomain.com/next/j001/0020/m0023.pdf"
```

**TBD 2.x Example.**

```
<RunList Class="Parameter" ID="R1" Status="Available">
  <LayoutElement>
    <FileSpec FileFormat=
      "file://myserver.mydomain.com/next/%s/%4.i/m%4.i.pdf"
      FileTemplate="JobID,i/100,i%100"/>
  </LayoutElement>
</RunList>
```

# Appendix J Pagination Catalog

This appendix provides a set of diagrams that explain how pages are arranged in groups when preparing to print on the surfaces of large sheets. The diagrams show a wide range of folding patterns to be used before binding. The folding patterns are specified in the **JDF XJDF** Fold Catalog (see Section 8-34, “Fold catalog part 1” on page 664 and Section 8-35, “Fold catalog part 2” on page 665) which describes how to paginate single-sheet bindery signatures.

The purpose of this appendix is to provide a reference for all agents involved in the use of imposition techniques in the printing industry.

## J.1 How to interpret the diagrams

### J.1.1 Legend

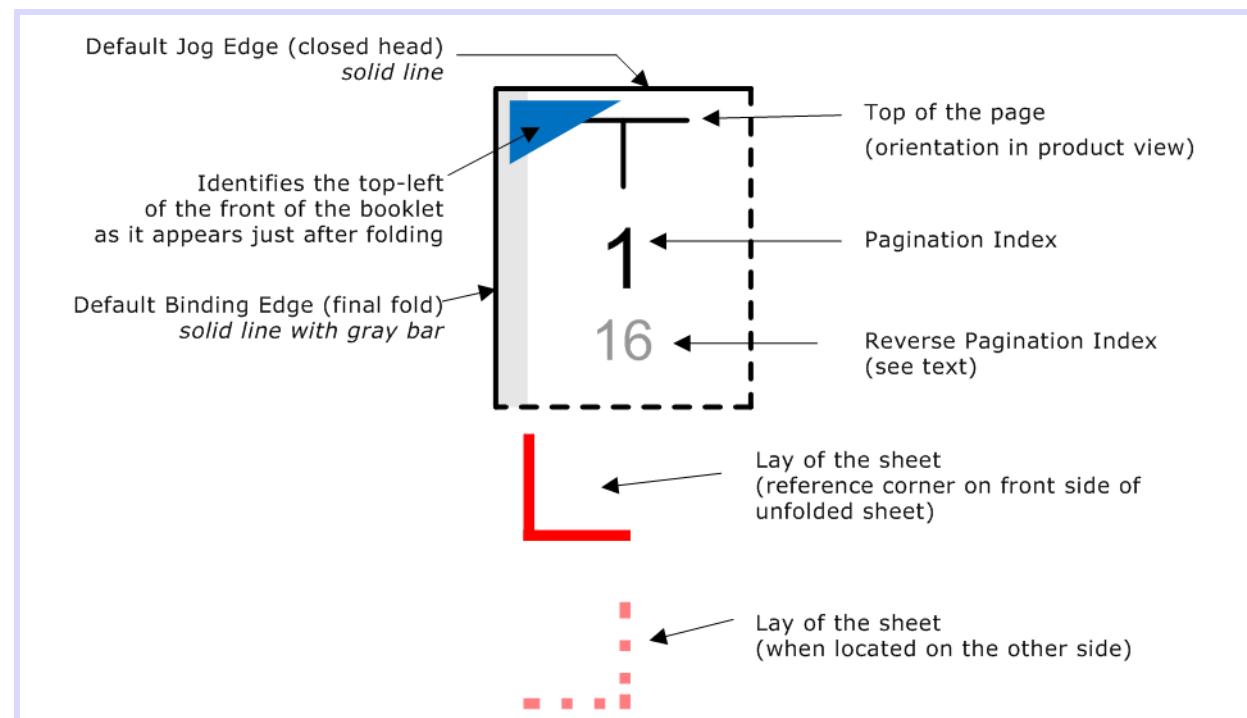
This document describes the structure and arrangement of bindery signatures into pagination schemes, which divide sheet surfaces into grids of rectangular areas to be filled by document pages during imposition process. These arrangements are the consequence of manipulations made on the sheets by folding, trimming and binding them in order to make booklets ready for assembly.

This document uses diagrams to describe the pagination schemes. Each diagram shows a side of an unfolded sheet, illustrating how it is divided into "signature cells". All cells are usually of the same size, allowing the entire sheet to be divided into equal portions, with each portion covering the whole area between surrounding folds. A signature cell is the space that "receives" a single document page and surrounding margins that are part of the gutters.

Each cell shown in the diagram displays how to orient the document page that is to be imposed there, and specifies the index of the page to be imposed. This means that the resulting booklet will have pages that are properly ordered and properly oriented in the product reader view, according to the default values defined in the this **[JDF XJDF]** specification. Note that pagination indexes start at number 1.

The diagrams also show the pagination to be used when pages are flowed in reverse order because of different binding options (see sections Section J.1.3, “Settings that Modify the Pagination Schemes” and Section J.1.4, “Getting a Specific Pagination Scheme”).

**Figure J-1: Legend for Interpreting Diagrams**



Folding sequences are described using the same notation found in this [JDF XJDF] Specification:

- $\uparrow$  means "left-hand part goes over right-hand part" or "bottom part goes over top part";
- $\downarrow$  means "left-hand part goes under right-hand part" or "bottom part goes under top part";
- The size of the part being folded is expressed as a fraction of unfolded sheet's size;
- First fold is always left-to-right, a "+" sign is used to toggle between left-to-right and bottom-to-top folding directions.

### J.1.2 Meaning of a Pagination Scheme

The diagrams in Section J.2, "Pagination Diagrams" show the configuration of the page cells that occurs when the bindery signature is specified in the **JDF XJDF** file using the **BinderySignature/@FoldCatalog** attribute. Each arrangement corresponds to the "fold catalog identifier" that is shown in the left column of the diagram. This identifier is used as a value of the **BinderySignature/@FoldCatalog** attribute, and refers to the recipe used to fold the sheet.

The pagination indexes shown in the diagram correspond to the imposition order, starting with 1, up to the number of pages in a booklet. This index does not correspond to the actual page numbers that will be imposed on the sheets, unless a finished product is made of a single booklet and the first page is numbered "1". These numbers specify the order that pages are imposed into signature cells, from an array of pages associated to a booklet.

These numbers have meaning only if the folded sheet are used as a booklet intended for binding or assembling (i.e., trimmed after folding). In many cases (i.e., accordion folds) the result is mostly theoretical, as those folds are not intended for such use in real life.

When multiple booklets are assembled together, the imposition indexes have to be translated into numbers referring to the list of source document pages. This is calculated using the parameters found in the Assembly resource and the **StrippingParams/@SectionList** parameter.

The numbers and page orientation shown in the diagram correspond to the finished product view in reader's perspective. The "top of the page", which is a product attribute, does not always correspond to the "head" of the booklet, which is a production attribute. Note, that the finished view is NOT a reference for locating the production measurements (head/foot/face trim and bleed sizes, spine size, overfolds, etc.) as their position is set by the **@BindingOrientation** attribute, independently of the final page flow.

### J.1.3 Settings that Modify the Pagination Schemes

#### J.1.3.1 BindingOrientation

When a sheet has been folded, the last fold is recognized as being the "binding edge", and a perpendicular edge is known as the "jog edge". Both edges join together around a corner known as the "reference corner", which appears at the bottom left of the folded sheet (the last fold always appear either at the bottom or at the left when using the fold catalog).

The attribute **BinderySignature/@BindingOrientation** may be set to indicate that the reference corner is displaced for production purposes. This manipulation is not made on the folded sheet. Only the "virtual" corner is changed, after edges had been identified. This means that the edges that are recognized as "binding" and "jog" are found at new places on the folded sheet, changing the location of the spine, head, face and foot on the booklet before pagination can be applied.

This **@BindingOrientation** attribute is very special because it has two default values, depending on the type of signature being defined: "*Flip0*" for single-row grids (no closed head), "*Rotate0*" for all other grids. This particularity reflects common practice of recognizing the jog edge to be at the top of signatures without closed heads.

The diagrams in Section J.2, "Pagination Diagrams" are based on these default values. If that parameter is set to another value, use the tables in Section J.1.4, "Getting a Specific Pagination Scheme" to convert the pagination scheme to reflect this change.

### J.1.3.2 Binding and Jog Sides

To make the bindery signatures be assembled together into a finished product, the pages must have been imposed in the order and orientation needed to get the right reader's perspective after assembling. Before setting the page numbers and orientation in cells to obtain the expected result, the "assembly" is virtually rotated and flipped to make the binding and jog edges be placed as requested, when looking at the very first page in the reader view.

The diagrams in this document show the pagination scheme where the front page of the booklet is oriented so that the binding side appears at the left, and the jog side appears at the top, according to the default parameters defined by this [JDF XJDF] specification. For other values, transformations must be applied on the diagrams to get the right scheme.

These settings are found in the Assembly resource that is used to describe how the booklet is assembled:

- **Assembly/@BindingSide**
- **Assembly/@JogSide**

If one or both of these attributes is set, use the tables in Section J.1.4, “Getting a Specific Pagination Scheme” to convert the pagination scheme to reflect this change.

The settings **BinderySignature/@BindingEdge** and **BinderySignature /@JogEdge** are ignored because they affect production view only. However, if **Assembly/@Order="None"**, then **BinderySignature/@BindingEdge** and **BinderySignature/@JogEdge** must be used as replacement settings, because assembly parameters must be ignored in that case, and production view becomes the product view.

## J.1.4 Getting a Specific Pagination Scheme

### J.1.4.1 Using the Settings to Find the Needed Scheme Transformation

Use the table below to locate the name of the scheme transformation to be applied on the diagram, according to the **@BindingSide**, **@JogSide** and **@BindingOrientation** settings. Default values for these settings are underlined in the table.

The obtained transformation is identified by a "scheme name", which refers to the table in Section J.1.4.2, “Scheme Transformations” where all pagination schemes are explained, based on the diagrams of the chapter 2.

**Table J-1: Schemes Names for Binding Orientations (Sheet 1 of 2)**

		Scheme Name (for @BindingOrientation setting shown in header) (for single-row signatures: use column footers)								
		<u>Rotate0</u> <u>Flip0</u>		<u>Rotate90</u> <u>Flip90</u>		<u>Rotate180</u> <u>Flip180</u>		<u>Rotate270</u> <u>Flip270</u>		
@Binding Side	@JogSide	top	Rotate0 Flip0	Rotate270/90* Flip90/270*	Rotate180 Flip180	Rotate90/270* Flip270/90*				
		bottom	Flip0 Rotate0	Flip270/90* Rotate90/270*	Flip180 Rotate180	Flip90/270* Rotate270/90*				
right		top	Flip180 Rotate180	Flip90/270* Rotate270/90*	Flip0 Rotate0	Flip270/90* Rotate90/270*				
		bottom	Rotate180 Flip180	Rotate90/270* Flip270/90*	Rotate0 Flip0	Rotate270/90* Flip90/270*				
		<u>Flip0</u> <u>Rotate0</u>		<u>Flip270</u> <u>Rotate270</u>		<u>Flip180</u> <u>Rotate180</u>		<u>Flip90</u> <u>Rotate90</u>		

**Table J-1: Schemes Names for Binding Orientations (Sheet 2 of 2)**

@Binding Side	@JogSide	Scheme Name (for @BindingOrientation setting shown in header) (for single-row signatures: use column footers)				
		<u>Rotate0</u> <i>Flip0</i>	<u>Rotate90</u> <i>Flip90</i>	<u>Rotate180</u> <i>Flip180</i>	<u>Rotate270</u> <i>Flip270</i>	
top	left	Flip90 Rotate90	Flip180/0 Rotate180/0	Flip270 Rotate270	Flip0/180 Rotate0/180	
	right	Rotate90 Flip90	Rotate0/180 Flip0/180	Rotate270 Flip270	Rotate180/0 Flip180/0	
bottom	left	Rotate270 Flip270	Rotate180/0 Flip180/0	Rotate90 Flip90	Rotate0/180 Flip0/180	
	right	Flip270 Rotate270	Flip0/180 Rotate0/180	Flip90 Rotate90	Flip180/0 Rotate180/0	
		<b><u>Flip0</u> <i>Rotate0</i></b>	<b><u>Flip270</u> <i>Rotate270</i></b>	<b><u>Flip180</u> <i>Rotate180</i></b>	<b><u>Flip90</u> <i>Rotate90</i></b>	

\* **Important note:** if binding edges appear horizontally on the diagram, the numbers must be swapped in the scheme names indicated by an asterisk (“Rotate90/270” would become “Rotate270/90”). This happens because the direction of rotation is reversed in those cases (e.g., F8-7, F12-7, F16-10, etc.).

#### J.1.4.2 Scheme Transformations

**Table J-2: Transformations for each Scheme**

Scheme Name	Getting the pagination scheme (using the diagram)		
	Page Numbers	Left-Bound Page	Right-Bound Page
Rotate0	Normal	as shown	as shown
Rotate0/180	Normal	as shown	Rotate 180°
Rotate90	Normal	Rotate 90° counterclockwise	Rotate 90° counterclockwise
Rotate90/270	Normal	Rotate 90° counterclockwise	Rotate 90° clockwise
Rotate180	Normal	Rotate 180°	Rotate 180°
Rotate180/0	Normal	Rotate 180°	as shown
Rotate270	Normal	Rotate 90° clockwise	Rotate 90° clockwise
Rotate270/90	Normal	Rotate 90° clockwise	Rotate 90° counterclockwise
Flip0	Reverse	Rotate 180°	Rotate 180°
Flip0/180	Reverse	Rotate 180°	as shown
Flip90	Reverse	Rotate 90° clockwise	Rotate 90° clockwise
Flip90/270	Reverse	Rotate 90° clockwise	Rotate 90° counterclockwise
Flip180	Reverse	as shown	as shown
Flip180/0	Reverse	as shown	Rotate 180°
Flip270	Reverse	Rotate 90° counterclockwise	Rotate 90° counterclockwise
Flip270/90	Reverse	Rotate 90° counterclockwise	Rotate 90° clockwise

In the “Page Numbers” column in the above table, the value “Normal” refers to the main numbers in Table J-3,

Table J-5 and Table J-7, while "Reverse" refers to the smaller numbers in gray. Note that the small gray numbers have been omitted from Table J-4 and Table J-6. If they were shown, they would be the same as for Table J-3 and Table J-5, respectively.

The "Left-Bound Pages" column in the above table refers to odd pages in the tables below, when looking at the main numbers. The "Right-Bound Pages" column in the above table refers to even pages.

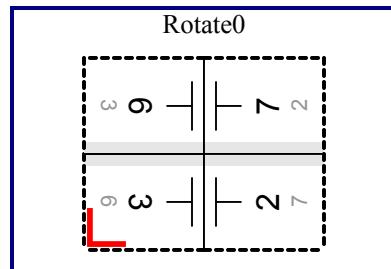
**Important note:** when a page is rotated 90° (clockwise or counterclockwise), this rotation is made inside the signature cell. The cell itself is not rotated because the folding operation remains the same. This means that the aspect ratio of the page must have been designed accordingly. Observe this situation in the examples in the next section.

## J.1.5 Examples

### J.1.5.1 Signature with Horizontal Binding Edges

The examples below show how to read the diagrams after applying the transformations explained previously. Each diagram is an interpretation of the lay-side diagram defined for fold catalog F8-7, indicating the scheme name above it

**Table J-3: Original Diagram**



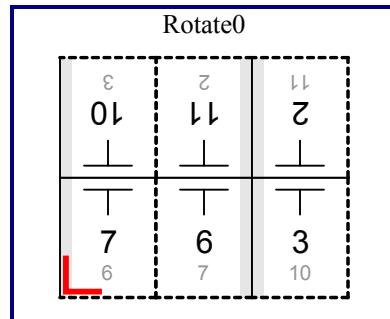
**Table J-4: Horizontal Binding Edges**

Rotate0	Rotate90	Rotate180	Rotate270
Rotate0/180	Rotate90/270	Rotate180/0	Rotate270/90
Flip0	Flip90	Flip180	Flip270
Flip0/180	Flip90/270	Flip180/0	Flip270/90

### J.1.5.2 Signature with Vertical Binding Edges

The examples below show how to read the diagrams after applying the transformations explained previously. Each diagram is an interpretation of the lay-side diagram defined for fold catalog F12-11, indicating the scheme name above it

**Table J-5: Original Diagram**



**Table J-6: Vertical Binding Edges**

Rotate0	Rotate90	Rotate180	Rotate270
A 3x4 grid with a vertical binding edge at the bottom-left. Values: 10, 11, 2, empty; 7, 6, 3, 10; 9, 7, 3, empty; 6, 7, empty, empty.	A 3x4 grid with a vertical binding edge at the bottom-left. Values: empty, empty, empty, empty; 10, 11, 2, empty; 7, 6, 3, 10; 9, 7, 3, empty.	A 3x4 grid with a vertical binding edge at the bottom-left. Values: empty, empty, empty, empty; empty, empty, empty, empty; 10, 11, 2, empty; 7, 6, 3, 10.	A 3x4 grid with a vertical binding edge at the bottom-left. Values: empty, empty, empty, empty; empty, empty, empty, empty; empty, empty, empty, empty; 10, 11, 2, empty; 7, 6, 3, 10.
Rotate0/180	Rotate90/270	Rotate180/0	Rotate270/90
A 3x4 grid with a vertical binding edge at the bottom-left. Values: 10, 11, 2, empty; 7, 6, 3, empty; empty, empty, empty, empty.	A 3x4 grid with a vertical binding edge at the bottom-left. Values: empty, empty, empty, empty; 10, 11, 2, empty; 7, 6, 3, empty; empty, empty, empty, empty.	A 3x4 grid with a vertical binding edge at the bottom-left. Values: empty, empty, empty, empty; empty, empty, empty, empty; 10, 11, 2, empty; 7, 6, 3, empty.	A 3x4 grid with a vertical binding edge at the bottom-left. Values: empty, empty, empty, empty; empty, empty, empty, empty; empty, empty, empty, empty; 10, 11, 2, empty; 7, 6, 3, empty.
Flip0	Flip90	Flip180	Flip270
A 3x4 grid with a vertical binding edge at the bottom-left. Values: 3, 2, 11, empty; 9, 6, 7, 10; empty, empty, empty, empty.	A 3x4 grid with a vertical binding edge at the bottom-left. Values: empty, empty, empty, empty; 3, 2, 11, empty; 9, 6, 7, 10; empty, empty, empty, empty.	A 3x4 grid with a vertical binding edge at the bottom-left. Values: empty, empty, empty, empty; empty, empty, empty, empty; 3, 2, 11, empty; 9, 6, 7, 10.	A 3x4 grid with a vertical binding edge at the bottom-left. Values: empty, empty, empty, empty; empty, empty, empty, empty; empty, empty, empty, empty; 3, 2, 11, empty; 9, 6, 7, 10.
Flip0/180	Flip90/270	Flip180/0	Flip270/90
A 3x4 grid with a vertical binding edge at the bottom-left. Values: 3, 2, 11, empty; 9, 6, 7, 10; empty, empty, empty, empty.	A 3x4 grid with a vertical binding edge at the bottom-left. Values: empty, empty, empty, empty; 3, 2, 11, empty; 9, 6, 7, 10; empty, empty, empty, empty.	A 3x4 grid with a vertical binding edge at the bottom-left. Values: empty, empty, empty, empty; empty, empty, empty, empty; 3, 2, 11, empty; 9, 6, 7, 10.	A 3x4 grid with a vertical binding edge at the bottom-left. Values: empty, empty, empty, empty; empty, empty, empty, empty; empty, empty, empty, empty; 3, 2, 11, empty; 9, 6, 7, 10.

## J.2 Pagination Diagrams

Table J-7: Pagination Diagrams (Sheet 1 of 41)

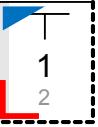
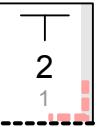
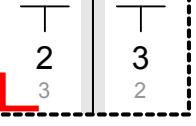
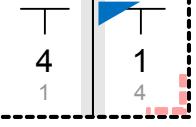
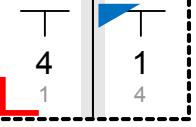
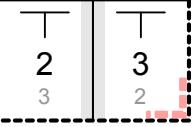
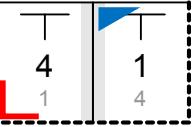
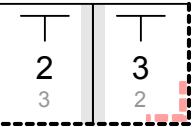
XJDF Fold Catalog	Grid Size	Front Side (Lay Side)	Back Side (Non-lay Side)
Folding Sequence			
F2-1	1x1		
	(no fold)		
F4-1	2x1		
	$\uparrow^{1/2}$		
F4-2	2x1		
	$\downarrow^{1/2}$		
F4-2	2x1		
	$\downarrow^{1/2}$		

Table J-7: Pagination Diagrams (Sheet 2 of 41)

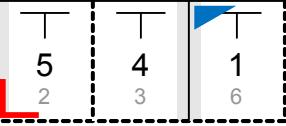
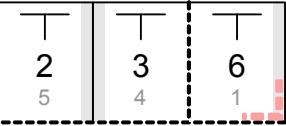
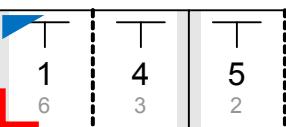
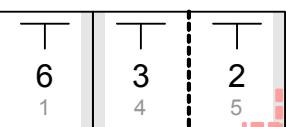
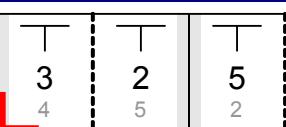
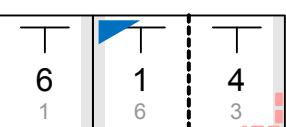
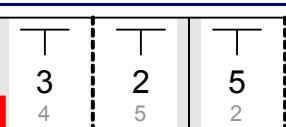
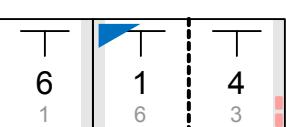
XJDF Fold Catalog	Grid Size	Front Side (Lay Side)		
		Folding Sequence	Back Side (Non-lay Side)	
<b>F6-1</b>	3x1			
		$\uparrow^{1/3} \downarrow^{1/3}$		
<b>F6-2</b>	3x1			
		$\downarrow^{1/3} \uparrow^{1/3}$		
<b>F6-3</b>	3x1			
		$\uparrow^{1/4} \uparrow^{1/2}$		
<b>F6-4</b>	3x1			
		$\uparrow^{1/3} \uparrow^{1/3}$		

Table J-7: Pagination Diagrams (Sheet 3 of 41)

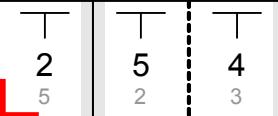
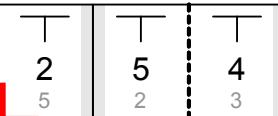
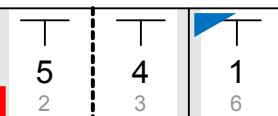
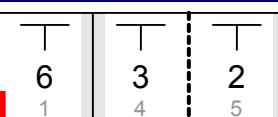
XJDF Fold Catalog	Grid Size	Front Side (Lay Side)		
		Folding Sequence	Back Side (Non-lay Side)	
<b>F6-5</b>	3x1		 $\uparrow^2/3 \downarrow^{1/3}$	
<b>F6-6</b>	3x1		 $\uparrow^{3/4} \downarrow^{1/4}$	
<b>F6-7</b>	3x1		 $\uparrow^{1/4} \downarrow^{1/4}$	
<b>F6-8</b>	3x1		 $\uparrow^{2/3} \uparrow^{1/3}$	

Table J-7: Pagination Diagrams (Sheet 4 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)			
		Folding Sequence		Back Side (Non-lay Side)	
F8-1	4x1				
		$\uparrow^{1/2} \uparrow^{1/4}$			
F8-2	4x1				
		$\uparrow^{1/2} \downarrow^{1/4}$			
F8-3	4x1				
		$\uparrow^{1/4} \downarrow^{1/4} \uparrow^{1/4}$			
F8-4	4x1				
		$\uparrow^{1/4} \uparrow^{1/2} \downarrow^{1/4}$			

Table J-7: Pagination Diagrams (Sheet 5 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)			
		Folding Sequence		Back Side (Non-lay Side)	
F8-5	4x1				
		$\uparrow^{1/4} \uparrow^{1/4} \uparrow^{1/4}$			
F8-6	4x1				
		$\uparrow^{3/4} \downarrow^{1/4} \downarrow^{1/4}$			
F8-7	2x2				
		$\uparrow^{1/2} + \uparrow^{1/2}$			
F10-1	5x1				
		$\uparrow^{1/5} \downarrow^{1/5} \uparrow^{1/5} \downarrow^{1/5}$			

Table J-7: Pagination Diagrams (Sheet 6 of 41)

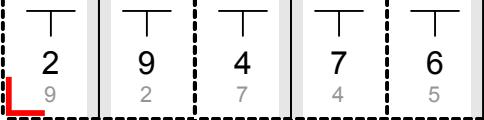
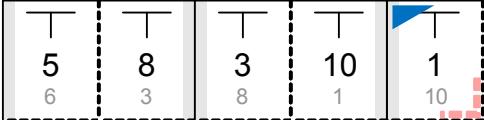
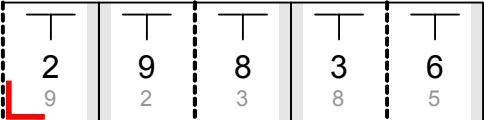
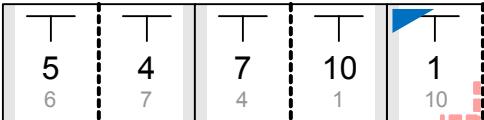
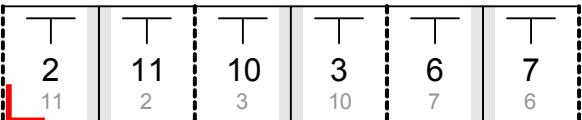
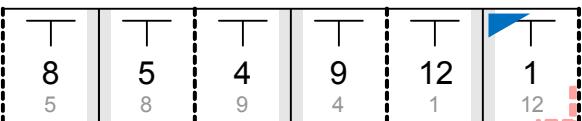
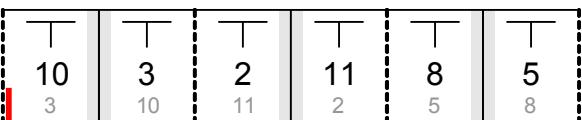
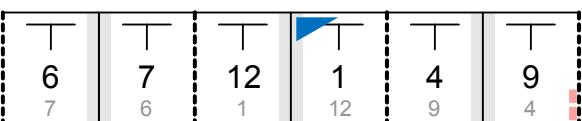
XJDF Fold Catalog	Grid Size	Front Side (Lay Side)				
		Folding Sequence		Back Side (Non-lay Side)		
<b>F10-2</b>	<b>5x1</b>					
		$\uparrow^4/5 \downarrow^1/5 \downarrow^1/5 \downarrow^1/5$				
<b>F10-3</b>	<b>5x1</b>					
		$\uparrow^2/5 \downarrow^2/5 \uparrow^1/5$				
<b>F12-1</b>	<b>6x1</b>					
		$\uparrow^1/3 \downarrow^1/3 \uparrow^1/6$				
<b>F12-2</b>	<b>6x1</b>					
		$\uparrow^1/3 \uparrow^1/3 \downarrow^1/6$				

Table J-7: Pagination Diagrams (Sheet 7 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)					
		Folding Sequence			Back Side (Non-lay Side)		
F12-3	6x1						
		$\uparrow^{1/2} \downarrow^{1/6} \uparrow^{1/6}$					
F12-4	6x1						
		$\uparrow^{1/2} \downarrow^{1/6} \downarrow^{1/6}$					
F12-5	6x1						
		$\uparrow^{1/2} \downarrow^{1/3} \uparrow^{1/6}$					
F12-6	6x1						
		$\uparrow^{1/6} \downarrow^{1/6} \uparrow^{1/6}$ $\downarrow^{1/6} \uparrow^{1/6}$					

Table J-7: Pagination Diagrams (Sheet 8 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)	
		Folding Sequence	Back Side (Non-lay Side)
F12-7	3x2		
		$\uparrow^{1/3} \downarrow^{1/3} + \uparrow^{1/2}$	
F12-8	3x2		
		$\uparrow^{2/3} \uparrow^{1/3} + \uparrow^{1/2}$	
F12-9	3x2		
		$\uparrow^{1/3} \uparrow^{1/3} + \uparrow^{1/2}$	

Table J-7: Pagination Diagrams (Sheet 9 of 41)

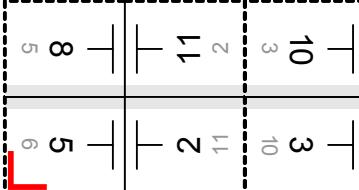
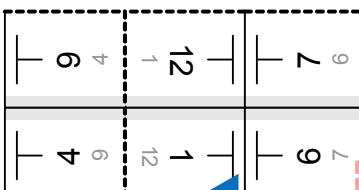
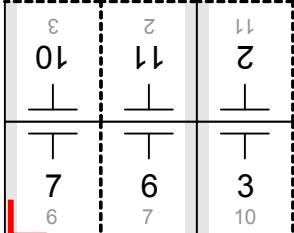
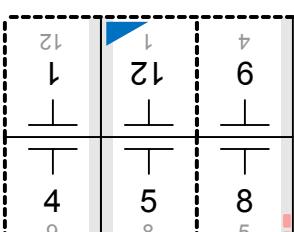
XJDF Fold Catalog	Grid Size	Front Side (Lay Side)	
		Folding Sequence	Back Side (Non-lay Side)
<b>F12-10</b>	<b>3x2</b>		
		$\uparrow^2/3 \downarrow^1/3 + \uparrow^1/2$	
<b>F12-11</b>	<b>3x2</b>		
		$\uparrow^1/3 + \uparrow^1/2 + \uparrow^1/3$	

Table J-7: Pagination Diagrams (Sheet 10 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)	
		Folding Sequence	Back Side (Non-lay Side)
<b>F12-12</b>	<b>2x3</b>		
		$\uparrow^{1/2} + \uparrow^{2/3} \downarrow^{1/3}$	
<b>F12-13</b>	<b>2x3</b>		
		$\uparrow^{1/2} + \uparrow^{1/3} \uparrow^{1/3}$	

Table J-7: Pagination Diagrams (Sheet 11 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)								Back Side (Non-lay Side)								
		Folding Sequence																
<b>F12-14</b>	<b>2x3</b>																	
<b>F14-1</b>	<b>7x1</b>																	
		$\uparrow^{1/2} + \uparrow^{1/3} \downarrow^{1/3}$																
<b>F16-1</b>	<b>8x1</b>																	
		$\uparrow^{1/2} \downarrow^{1/4} \uparrow^{1/8}$																

Table J-7: Pagination Diagrams (Sheet 12 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)																							
		Folding Sequence				Back Side (Non-lay Side)																			
<b>F16-2</b>	<b>8x1</b>	<table border="1"> <tr><td>2</td><td>15</td><td>10</td><td>7</td></tr> <tr><td>15</td><td>2</td><td>7</td><td>10</td></tr> </table>				2	15	10	7	15	2	7	10	<table border="1"> <tr><td>6</td><td>11</td><td>14</td><td>3</td></tr> <tr><td>11</td><td>6</td><td>3</td><td>14</td></tr> </table>				6	11	14	3	11	6	3	14
2	15	10	7																						
15	2	7	10																						
6	11	14	3																						
11	6	3	14																						
$\uparrow^{1/2} \downarrow^{1/4} \downarrow^{1/8}$		<table border="1"> <tr><td>4</td><td>13</td><td>12</td><td>5</td></tr> <tr><td>13</td><td>4</td><td>5</td><td>12</td></tr> </table>				4	13	12	5	13	4	5	12	<table border="1"> <tr><td>8</td><td>9</td><td>16</td><td>1</td></tr> <tr><td>9</td><td>8</td><td>1</td><td>16</td></tr> </table>				8	9	16	1	9	8	1	16
4	13	12	5																						
13	4	5	12																						
8	9	16	1																						
9	8	1	16																						
<b>F16-3</b>	<b>8x1</b>	<table border="1"> <tr><td>6</td><td>11</td><td>14</td><td>3</td></tr> <tr><td>11</td><td>6</td><td>3</td><td>14</td></tr> </table>				6	11	14	3	11	6	3	14	<table border="1"> <tr><td>2</td><td>15</td><td>10</td><td>7</td></tr> <tr><td>15</td><td>2</td><td>7</td><td>10</td></tr> </table>				2	15	10	7	15	2	7	10
6	11	14	3																						
11	6	3	14																						
2	15	10	7																						
15	2	7	10																						
$\uparrow^{1/2} \uparrow^{1/4} \downarrow^{1/8}$		<table border="1"> <tr><td>8</td><td>9</td><td>16</td><td>1</td></tr> <tr><td>9</td><td>8</td><td>1</td><td>16</td></tr> </table>				8	9	16	1	9	8	1	16	<table border="1"> <tr><td>4</td><td>13</td><td>12</td><td>5</td></tr> <tr><td>13</td><td>4</td><td>5</td><td>12</td></tr> </table>				4	13	12	5	13	4	5	12
8	9	16	1																						
9	8	1	16																						
4	13	12	5																						
13	4	5	12																						
<b>F16-4</b>	<b>8x1</b>	<table border="1"> <tr><td>14</td><td>3</td><td>6</td><td>11</td></tr> <tr><td>3</td><td>14</td><td>11</td><td>6</td></tr> </table>				14	3	6	11	3	14	11	6	<table border="1"> <tr><td>10</td><td>7</td><td>2</td><td>15</td></tr> <tr><td>7</td><td>10</td><td>15</td><td>2</td></tr> </table>				10	7	2	15	7	10	15	2
14	3	6	11																						
3	14	11	6																						
10	7	2	15																						
7	10	15	2																						
$\uparrow^{1/2} \uparrow^{1/4} \uparrow^{1/8}$		<table border="1"> <tr><td>16</td><td>1</td><td>8</td><td>9</td></tr> <tr><td>1</td><td>16</td><td>9</td><td>8</td></tr> </table>				16	1	8	9	1	16	9	8	<table border="1"> <tr><td>12</td><td>5</td><td>4</td><td>13</td></tr> <tr><td>5</td><td>12</td><td>13</td><td>4</td></tr> </table>				12	5	4	13	5	12	13	4
16	1	8	9																						
1	16	9	8																						
12	5	4	13																						
5	12	13	4																						
<b>F16-5</b>	<b>8x1</b>	<table border="1"> <tr><td>16</td><td>13</td><td>12</td><td>9</td></tr> <tr><td>1</td><td>4</td><td>5</td><td>8</td></tr> </table>				16	13	12	9	1	4	5	8	<table border="1"> <tr><td>5</td><td>4</td><td>1</td><td>16</td></tr> <tr><td>12</td><td>13</td><td>16</td><td>1</td></tr> </table>				5	4	1	16	12	13	16	1
16	13	12	9																						
1	4	5	8																						
5	4	1	16																						
12	13	16	1																						
$\downarrow^{1/8} \uparrow^{1/8} \downarrow^{1/8} \uparrow^{1/8}$ $\downarrow^{1/8} \uparrow^{1/8} \downarrow^{1/8}$		<table border="1"> <tr><td>2</td><td>3</td><td>6</td><td>7</td></tr> <tr><td>15</td><td>14</td><td>11</td><td>10</td></tr> </table>				2	3	6	7	15	14	11	10	<table border="1"> <tr><td>10</td><td>7</td><td>11</td><td>14</td></tr> <tr><td>7</td><td>10</td><td>6</td><td>3</td></tr> </table>				10	7	11	14	7	10	6	3
2	3	6	7																						
15	14	11	10																						
10	7	11	14																						
7	10	6	3																						

Table J-7: Pagination Diagrams (Sheet 13 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)								Back Side (Non-lay Side)																									
		Folding Sequence																																	
F16-6	4x2	<p>Front side diagram for F16-6 showing a 4x2 grid with fold lines and page numbers 1-15. The grid is divided into four quadrants by fold lines. A red L-shaped arrow indicates the folding sequence.</p> <table border="1"> <tr><td>14</td><td>3</td><td>14</td><td>2</td></tr> <tr><td>3</td><td>14</td><td>15</td><td>15</td></tr> <tr><td>6</td><td>11</td><td>10</td><td>7</td></tr> <tr><td>9</td><td>9</td><td>7</td><td>10</td></tr> </table>	14	3	14	2	3	14	15	15	6	11	10	7	9	9	7	10	<p>Back side diagram for F16-6 showing a 4x2 grid with fold lines and page numbers 1-16. The grid is divided into four quadrants by fold lines. A blue triangle indicates the starting point of the folding sequence.</p> <table border="1"> <tr><td>16</td><td>1</td><td>16</td><td>1</td></tr> <tr><td>1</td><td>13</td><td>4</td><td>13</td></tr> <tr><td>8</td><td>9</td><td>12</td><td>5</td></tr> <tr><td>9</td><td>8</td><td>5</td><td>12</td></tr> </table>	16	1	16	1	1	13	4	13	8	9	12	5	9	8	5	12
14	3	14	2																																
3	14	15	15																																
6	11	10	7																																
9	9	7	10																																
16	1	16	1																																
1	13	4	13																																
8	9	12	5																																
9	8	5	12																																
F16-7	4x2	<p>Front side diagram for F16-7 showing a 4x2 grid with fold lines and page numbers 1-11. The grid is divided into four quadrants by fold lines. A red L-shaped arrow indicates the folding sequence.</p> <table border="1"> <tr><td>9</td><td>11</td><td>10</td><td>7</td></tr> <tr><td>6</td><td>7</td><td>10</td><td>10</td></tr> <tr><td>14</td><td>3</td><td>2</td><td>15</td></tr> <tr><td>3</td><td>14</td><td>15</td><td>2</td></tr> </table>	9	11	10	7	6	7	10	10	14	3	2	15	3	14	15	2	<p>Back side diagram for F16-7 showing a 4x2 grid with fold lines and page numbers 1-16. The grid is divided into four quadrants by fold lines. A blue triangle indicates the starting point of the folding sequence.</p> <table border="1"> <tr><td>8</td><td>9</td><td>12</td><td>5</td></tr> <tr><td>6</td><td>8</td><td>5</td><td>12</td></tr> <tr><td>16</td><td>1</td><td>4</td><td>13</td></tr> <tr><td>1</td><td>16</td><td>13</td><td>4</td></tr> </table>	8	9	12	5	6	8	5	12	16	1	4	13	1	16	13	4
9	11	10	7																																
6	7	10	10																																
14	3	2	15																																
3	14	15	2																																
8	9	12	5																																
6	8	5	12																																
16	1	4	13																																
1	16	13	4																																

**Table J-7: Pagination Diagrams (Sheet 14 of 41)**

XJDF Fold Catalog		Grid Size	Front Side (Lay Side)	
Folding Sequence			Back Side (Non-lay Side)	
F16-8	4x2			
		$\uparrow^{1/2} + \downarrow^{1/2} + \downarrow^{1/4}$		
F16-9	4x2			
		$\uparrow^{1/2} \downarrow^{1/4} + \uparrow^{1/2}$		

Table J-7: Pagination Diagrams (Sheet 15 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)	
		Folding Sequence	Back Side (Non-lay Side)
<b>F16-10</b>	<b>4x2</b>		
		$\uparrow^{1/2} \uparrow^{1/4} + \uparrow^{1/2}$	
<b>F16-11</b>	<b>4x2</b>		
		$\uparrow^{1/4} \downarrow^{1/4} \uparrow^{1/4} + \uparrow^{1/2}$	
<b>F16-12</b>	<b>4x2</b>		
		$\uparrow^{1/4} \uparrow^{1/4} \uparrow^{1/4} + \uparrow^{1/2}$	

Table J-7: Pagination Diagrams (Sheet 16 of 41)

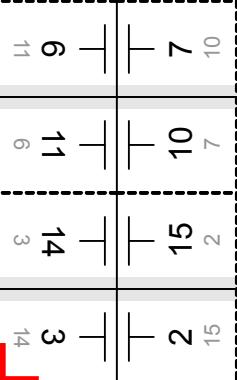
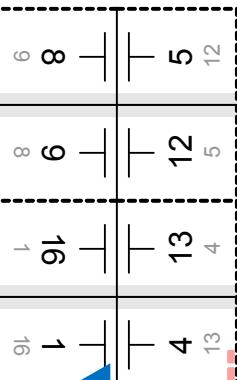
XJDF Fold Catalog	Grid Size		
		Front Side (Lay Side)	Back Side (Non-lay Side)
Folding Sequence			
<b>F16-13</b>	<b>2x4</b>		
		$\uparrow^{1/2} + \uparrow^{1/2} \downarrow^{1/4}$	

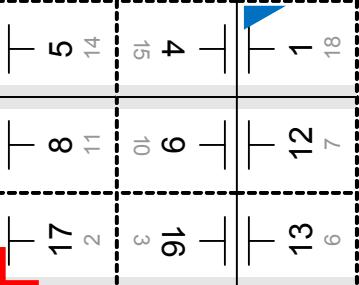
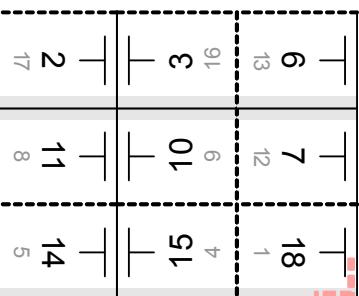
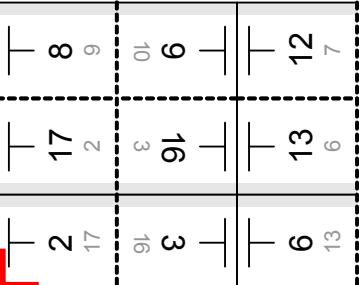
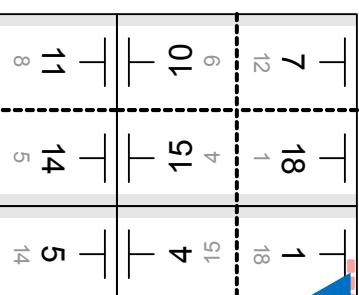
Table J-7: Pagination Diagrams (Sheet 17 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)								Back Side (Non-lay Side)							
		Folding Sequence															
F16-14	2x4																
		$\uparrow^1/2 + \uparrow^1/2 \uparrow^1/4$															
F18-1	9x1																
		$\uparrow^1/9 \downarrow^1/9 \uparrow^1/9 \downarrow^1/9$															
		$\uparrow^1/9 \downarrow^1/9 \uparrow^1/9 \downarrow^1/9$															

**Table J-7: Pagination Diagrams (Sheet 18 of 41)**

XJDF Fold Catalog		Grid Size	Front Side (Lay Side)										
Folding Sequence			Back Side (Non-lay Side)										
F18-2	9x1												
$\uparrow^2/3 \downarrow^1/3 \uparrow^1/9 \downarrow^1/9$													
F18-3	9x1												
$\uparrow^1/3 \downarrow^1/3 \uparrow^2/9 \downarrow^1/9$													
F18-4	9x1												
$\uparrow^1/3 \downarrow^1/3 \uparrow^1/9 \downarrow^1/9$													

Table J-7: Pagination Diagrams (Sheet 19 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)	
		Folding Sequence	Back Side (Non-lay Side)
<b>F18-5</b>	<b>3x3</b>		
		$\uparrow 1/3 \downarrow 1/3 + \uparrow 1/3 \downarrow 1/3$	
<b>F18-6</b>	<b>3x3</b>		
		$\uparrow 1/3 \downarrow 1/3 + \uparrow^2 1/3 \downarrow 1/3$	

**Table J-7: Pagination Diagrams (Sheet 20 of 41)**

XJDF Fold Catalog		Grid Size	Front Side (Lay Side)	
Folding Sequence			Back Side (Non-lay Side)	
F18-7	3x3			
$\uparrow^{1/3} \uparrow^{1/3} + \uparrow^{1/3} \downarrow^{1/3}$				
F18-8	3x3			
$\uparrow^{1/3} \uparrow^{1/3} + \uparrow^{2/3} \downarrow^{1/3}$				

Table J-7: Pagination Diagrams (Sheet 21 of 41)

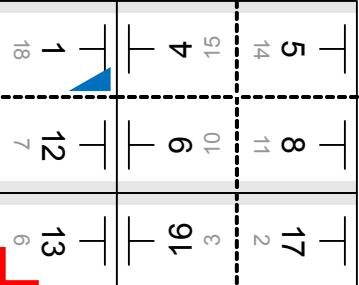
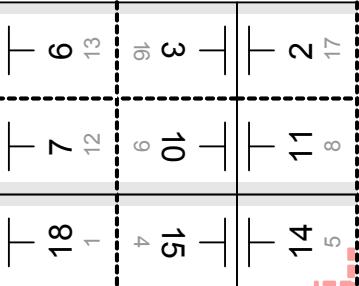
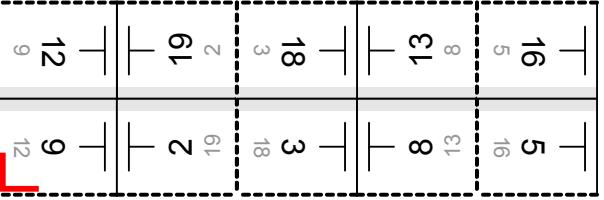
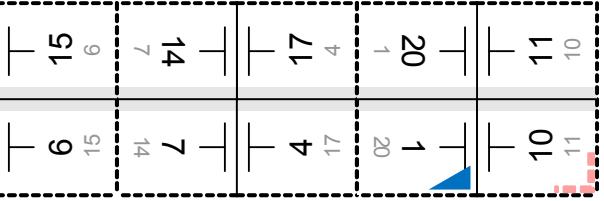
XJDF Fold Catalog	Grid Size	Front Side (Lay Side)	
		Folding Sequence	Back Side (Non-lay Side)
<b>F18-9</b>	<b>3x3</b>		
		$\uparrow^2/3 \uparrow^1/3 + \uparrow^2/3 \uparrow^1/3$	
<b>F20-1</b>	<b>5x2</b>		
		$\uparrow^2/5 \downarrow^2/5 \uparrow^1/5 + \uparrow^1/2$	

Table J-7: Pagination Diagrams (Sheet 22 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)										Back Side (Non-lay Side)									
		Folding Sequence																			
F20-2	5x2																				
		$\uparrow^1 /_5 \downarrow^1 /_5 \uparrow^1 /_5 \downarrow^1 /_5 + \uparrow^1 /_2$																			
F24-1	6x2																				
		$\uparrow^1 /_3 \downarrow^1 /_3 + \uparrow^1 /_2 + \uparrow^1 /_6$																			

**Table J-7: Pagination Diagrams (Sheet 23 of 41)**

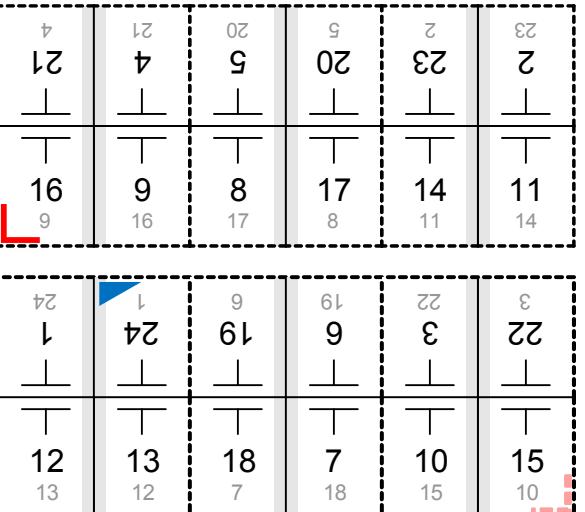
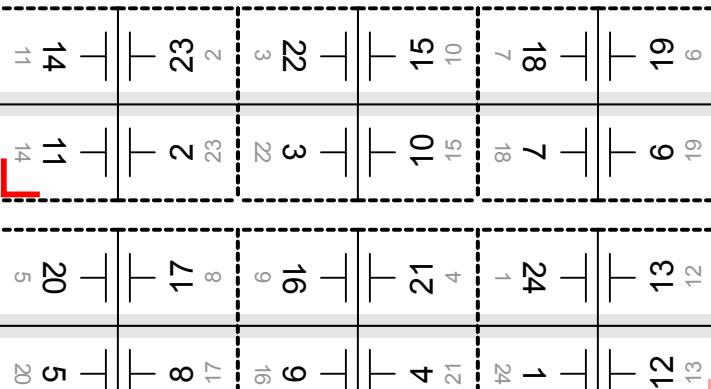
XJDF Fold Catalog	Grid Size	Front Side (Lay Side)
Folding Sequence		Back Side (Non-lay Side)
F24-2	6x2	 <p><math>\uparrow^1/3 \uparrow^1/3 + \uparrow^1/2 + \uparrow^1/6</math></p>
F24-3	6x2	 <p><math>\uparrow^1/3 \downarrow^1/3 \uparrow^1/6 + \uparrow^1/2</math></p>

Table J-7: Pagination Diagrams (Sheet 24 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)												Back Side (Non-lay Side)																							
		Folding Sequence																																			
F24-4	6x2																																				
		$\uparrow^{1/3} \downarrow^{1/3} \downarrow^{1/6} + \uparrow^{1/2}$												$\uparrow^{1/3} \downarrow^{1/3} \downarrow^{1/6} + \uparrow^{1/2}$																							
F24-5	6x2																																				
		$\uparrow^{1/3} \uparrow^{1/3} \downarrow^{1/6} + \uparrow^{1/2}$												$\uparrow^{1/3} \uparrow^{1/3} \downarrow^{1/6} + \uparrow^{1/2}$																							
F24-6	6x2																																				
		$\uparrow^{1/6} \downarrow^{1/6} \uparrow^{1/6}$ $\downarrow^{1/6} \uparrow^{1/6} + \uparrow^{1/2}$												$\uparrow^{1/6} \downarrow^{1/6} \uparrow^{1/6}$ $\downarrow^{1/6} \uparrow^{1/6} + \uparrow^{1/2}$																							

**Table J-7: Pagination Diagrams (Sheet 25 of 41)**

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)
Folding Sequence		Back Side (Non-lay Side)
F24-7	6x2	
F24-8	3x4	

Table J-7: Pagination Diagrams (Sheet 26 of 41)

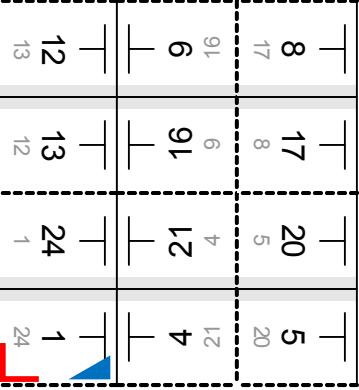
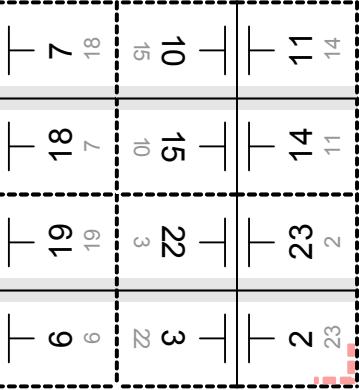
XJDF Fold Catalog	Grid Size	Front Side (Lay Side)	
		Folding Sequence	Back Side (Non-lay Side)
F24-9	3x4		 <p>A diagram of a 3x4 grid sheet labeled F24-9. The front side shows a folding sequence starting from the bottom-left corner (page 1) and moving clockwise through pages 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, and 24. A red arrow points to the bottom edge of the grid.</p>
		$\uparrow^{2/3} \uparrow^{1/3} + \uparrow^{1/2} \downarrow^{1/4}$	 <p>A diagram of the back side of the same 3x4 grid sheet F24-9. It shows a different folding sequence starting from the bottom-left corner (page 1) and moving clockwise through pages 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, and 24. Red squares are located at the bottom-right corner of the grid.</p>

Table J-7: Pagination Diagrams (Sheet 27 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)												Back Side (Non-lay Side)												
		Folding Sequence																								
F24-10	3x4																									

The diagram illustrates two different folding sequences for a 3x4 grid:

- Top Grid:** Shows a red L-shaped fold sequence. The grid is divided into four columns and three rows. The fold path starts at the bottom-left corner (page 1), moves right to page 2, then up to page 3, then right to page 4, then up to page 5, then right to page 6, then up to page 7, then right to page 8, then up to page 9, then right to page 10, then up to page 11, then right to page 12, then up to page 13, then right to page 14, then up to page 15, then right to page 16, then up to page 17, then right to page 18, then up to page 19, then right to page 20, then up to page 21, then right to page 22, then up to page 23, then right to page 24.
- Bottom Grid:** Shows a blue T-shaped fold sequence. The grid is divided into four columns and three rows. The fold path starts at the bottom-left corner (page 1), moves right to page 2, then up to page 3, then right to page 4, then up to page 5, then right to page 6, then up to page 7, then right to page 8, then up to page 9, then right to page 10, then up to page 11, then right to page 12, then up to page 13, then right to page 14, then up to page 15, then right to page 16, then up to page 17, then right to page 18, then up to page 19, then right to page 20, then up to page 21, then right to page 22, then up to page 23, then right to page 24.

**Table J-7: Pagination Diagrams (Sheet 28 of 41)**

Table J-7: Pagination Diagrams (Sheet 29 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)												Back Side (Non-lay Side)												
		Folding Sequence																								
F32-2	8x2																									
		$\uparrow^1/2 \downarrow^1/4 + \uparrow^1/2 + \uparrow^1/8$																								
F32-3	8x2																									
		$\uparrow^1/2 \downarrow^1/4 + \uparrow^1/2 + \downarrow^1/8$																								

Table J-7: Pagination Diagrams (Sheet 30 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)	
		Folding Sequence	Back Side (Non-lay Side)
F32-4	4x4		<p>The diagram illustrates the folding sequence for a 4x4 grid (F32-4). The front side (lay side) is a 4x4 grid numbered 1 to 32. The back side (non-lay side) is also a 4x4 grid numbered 1 to 32. A red L-shaped fold line is shown on the front side, and a blue triangle is shown on the back side.</p>
		$\uparrow^1/2 + \uparrow^1/2 +$ $\uparrow^1/4 + \uparrow^1/4$	

Table J-7: Pagination Diagrams (Sheet 31 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)	
		Folding Sequence	Back Side (Non-lay Side)
F32-5	4x4		
		$\uparrow^{1/2} + \uparrow^{1/2} +$ $\downarrow^{1/4} + \downarrow^{1/4}$	

Table J-7: Pagination Diagrams (Sheet 32 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)												Back Side (Non-lay Side)												
		Folding Sequence																								
F32-6	4x4																									

The diagram illustrates the page sequence for the Front Side (Lay Side) and Back Side (Non-lay Side) of a document folded into a 32-page booklet.

**Front Side (Lay Side):**

- Top Row:** Pages 14, 19, 3, 30, 2, 15, 18.
- Second Row:** Pages 14, 19, 3, 30, 2, 15, 18.
- Third Row:** Pages 22, 6, 27, 7, 26, 11, 2.
- Fourth Row:** Pages 11, 27, 6, 26, 11, 2, 31.
- Fifth Row:** Pages 9, 27, 6, 26, 11, 2, 31.
- Sixth Row:** Pages 2, 31, 26, 7, 2, 31, 2.
- Bottom Row:** Pages 1, 32, 1, 32, 1, 32.

**Back Side (Non-lay Side):**

- Top Row:** Pages 31, 2, 18, 15, 10, 23, 10, 23.
- Second Row:** Pages 2, 31, 26, 7, 2, 31, 2.
- Third Row:** Pages 7, 26, 2, 31, 26, 7, 2.
- Fourth Row:** Pages 11, 27, 6, 26, 11, 2, 31.
- Fifth Row:** Pages 2, 31, 26, 7, 2, 31, 2.
- Sixth Row:** Pages 1, 32, 1, 32, 1, 32.
- Bottom Row:** Pages 16, 17, 1, 32, 1, 32.

**Folding Sequence:**

Upward fold (1/2) + Upward fold (1/2) +  
Upward fold (1/4) + Downward fold (1/4)

Table J-7: Pagination Diagrams (Sheet 33 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)								
		Folding Sequence				Back Side (Non-lay Side)				
F32-7	4x4									
		$\uparrow^{1/4} \downarrow^{1/4} \uparrow^{1/4} +$								
		$\uparrow^{1/2} \downarrow^{1/4}$								

Table J-7: Pagination Diagrams (Sheet 34 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)							
		Folding Sequence				Back Side (Non-lay Side)			
F32-8	4x4								

$\uparrow^1/2 \downarrow^{1/4} +$   
 $\uparrow^1/2 \downarrow^{1/4}$

**Table J-7: Pagination Diagrams (Sheet 35 of 41)**

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)
	Folding Sequence	Back Side (Non-lay Side)
<b>F32-9</b>	<b>4x4</b>	<p><math>\uparrow^1/2 + \uparrow^1/2 \downarrow^1/4 + \uparrow^1/4</math></p>
<b>F36-1</b>	<b>9x2</b>	<p><math>\uparrow^1/3 \downarrow^1/3 \uparrow^1/9</math> <math>\downarrow^1/9 + \uparrow^1/2</math></p>

**Table J-7: Pagination Diagrams (Sheet 36 of 41)**

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)											
Folding Sequence						Back Side (Non-lay Side)							
F36-2	6x3												
						14	23	15	22	16	21	19	18
						23	14	15	22	16	21	19	18
						14	23	15	22	16	21	19	18
						11	10	11	10	11	10	11	10
						29	26	27	26	27	26	27	26
						11	10	11	10	11	10	11	10
						35	34	33	34	33	34	33	34
						35	34	33	34	33	34	33	34
						6	31	6	31	6	31	6	31
						31	34	3	34	3	34	3	34
						2	34	3	34	3	34	3	34
						11	10	9	10	9	10	9	10
						27	26	27	26	27	26	27	26
						26	27	27	26	27	26	27	26
						11	10	11	10	11	10	11	10
						29	28	29	28	29	28	29	28
						8	29	28	29	28	29	28	29
						26	25	26	25	26	25	26	25
						17	20	17	20	17	20	17	20
						17	20	16	19	16	19	13	24
						20	21	21	24	21	24	13	24
						21	20	16	19	16	19	13	24
						16	17	17	18	16	17	13	24
						17	16	16	17	16	17	13	24
						20	21	21	24	21	24	13	24
						21	20	16	19	16	19	13	24
						16	17	17	18	16	17	13	24
						17	16	16	17	16	17	13	24
						20	21	21	24	21	24	13	24
						21	20	16	19	16	19	13	24
						16	17	17	18	16	17	13	24
						17	16	16	17	16	17	13	24
						20	21	21	24	21	24	13	24
						21	20	16	19	16	19	13	24
						16	17	17	18	16	17	13	24
						17	16	16	17	16	17	13	24
						20	21	21	24	21	24	13	24
						21	20	16	19	16	19	13	24
						16	17	17	18	16	17	13	24
						17	16	16	17	16	17	13	24
						20	21	21	24	21	24	13	24
						21	20	16	19	16	19	13	24
						16	17	17	18	16	17	13	24
						17	16	16	17	16	17	13	24
						20	21	21	24	21	24	13	24
						21	20	16	19	16	19	13	24
						16	17	17	18	16	17	13	24
						17	16	16	17	16	17	13	24
						20	21	21	24	21	24	13	24
						21	20	16	19	16	19	13	24
						16	17	17	18	16	17	13	24
						17	16	16	17	16	17	13	24
						20	21	21	24	21	24	13	24
						21	20	16	19	16	19	13	24
						16	17	17	18	16	17	13	24
						17	16	16	17	16	17	13	24
						20	21	21	24	21	24	13	24
						21	20	16	19	16	19	13	24
						16	17	17	18	16	17	13	24
						17	16	16	17	16	17	13	24
						20	21	21	24	21	24	13	24
						21	20	16	19	16	19	13	24
						16	17	17	18	16	17	13	24
						17	16	16	17	16	17	13	24
						20	21	21	24	21	24	13	24
						21	20	16	19	16	19	13	24
						16	17	17	18	16	17	13	24
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						20	21	21	24	21	24	13	24
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						17	16	16	17	16	17	13	24
						20	21	21	24	21	24	13	24
						21	20	16	19	16	19	13	24
						16	17	17	18	16	17	13	24
						17	16	16	17	16	17	13	24
						20	21	21	24	21	24	13	24
						21	20	16	19	16	19	13	24
						16	17	17	18	16	17	13	24
						17	16	16	17	16	17	13	24
						20	21	21	24	21	24	13	24
						21	20	16	19	16	19	13	24
						16	17	17	18	16	17	13	24

**Table J-7: Pagination Diagrams (Sheet 37 of 41)**

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)																																																																																																																																																																																																																
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Table J-7: Pagination Diagrams (Sheet 38 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)											
		Folding Sequence						Back Side (Non-lay Side)					
F48-1	6x4												

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Table J-7: Pagination Diagrams (Sheet 39 of 41)

XJDF Fold Catalog	Grid Size	Front Side (Lay Side)	
		Folding Sequence	Back Side (Non-lay Side)
F48-2	4x6		<p>↑<sup>1</sup>/<sub>4</sub> ↓<sup>1</sup>/<sub>4</sub> ↑<sup>1</sup>/<sub>4</sub> + ↑<sup>1</sup>/<sub>3</sub> ↓<sup>1</sup>/<sub>3</sub> ↑<sup>1</sup>/<sub>6</sub></p>

**Table J-7: Pagination Diagrams (Sheet 40 of 41)**

**Table J-7: Pagination Diagrams (Sheet 41 of 41)**

# Appendix K Resolving RunList/@Directory and FileSpec/@URL URI References

[New in JDF 1.2](#)

This appendix describes the detailed semantics of resolving **RunList/@Directory** and any associated **FileSpec/@URL** URI references in [any of the RunList refelements](#).

## K.1 Semantics of the RunList/@Directory Attribute

The **@Directory** Attribute defines a directory where the files that are associated with this **RunList** SHOULD be copied to or from. If **@Directory** is specified, it SHALL be an Absolute URI [RFC3986] that implicitly also specifies a Base URI that is used to resolve any relative URI Attribute in the **RunList** structure. As such, **@Directory** SHALL start with a URL scheme, such as "*file*" or "*ftp*", MAY contain an authority, such as "*//any.com*" and SHOULD contain an absolute path that ends with a "/" to indicate a directory.<sup>1</sup> For example: "*file://any.com/pub/doc-archives/*" or "*file:///pub/doc-archives/*".

If **@Directory** is not specified, the Absolute URI that specifies the directory in which the **JDF XJDF** file resides is used as the Base URI to resolve each relative **@URI** Attribute in the **RunList**.

If the **FileSpec/Container/FileSpec** Resource is supplied indicating that the **FileSpec** is contained in another file, the Base URI is the Absolute URI of where the **JDF** Consumer extracted the container file (whether or not **@Directory** is specified). See Section 8.61, "FileSpec" on page 652.

After determining the Base URI depending on the presence or absence of **RunList/@Directory** and **FileSpec/Container/FileSpec** Resource as described above, each **@URL** Attribute in a **RunList** refelement (e.g., **LayoutElementRunList/FileSpec/@URL** or **InsertSheet/Layout/Media/QualityControlResult/FileSpec/@URL**) is used in combination with the Base URI to form the Resolved URI as follows according to one of the following mutually exclusive patterns.<sup>2</sup>

- 1 **RunList @URL** starts with a scheme (token ending with ":" (e.g., "*file:*" or "*cid:*")):<sup>3</sup>
  - Resolved URI = the entire **RunList** URL (and the Base URI is ignored).
- 2 **RunList @URL** starts with an authority/host (starts with "//" (e.g., "*//www.cip4.org*")):
  - Resolved URI = the Base URI scheme, followed by the **RunList** URL authority/host followed by its absolute path (which MAY be empty).

1. According to [RFC3986] section 5.2 "Resolve Relative References to Absolute Form", the characters following the right-most "/" if any, are removed from the Base URI, in order to resolve a Relative URI with the Base URI. So be sure to end the **@Directory** value with a "/" to make it clear that **@Directory** is a reference to a directory and not a file, and to ensure that the last path segment won't get removed in resolving the URI reference.
2. The Resolved URI is formed assuming that URI query and fragments are *not* used in **JDF XJDF**.
3. In order to improve interoperability and to simplify implementation, **JDF XJDF** follows the strict-parsing rules of [RFC3986] so that even if the **FileSpec/@URL** Attribute starts with the same scheme as the Base URI, the entire URL values is always interpreted as an Absolute URI and always replaces the Base URI to form the Resolved URI. This strict rule is especially important for interoperability. Consider the case where the JDF Producer drops the JDF into a hot folder but does NOT specify **RunList/@Directory** so that the JDF Consumer has to generate the Base URI for the hot folder in order to resolve the **FileSpec/@RunList**, but the Producer is supplying a **FileSpec/@URL** that is relative to the hot folder. If the JDF Producer supplies the scheme in the **FileSpec/@URL**, then the JDF Producer would have to supply the same scheme as the JDF Consumer generates for the Base URI for hot folder, in order for the Relative URI semantics to apply. However, under non-strict parsing, if the JDF Producer guesses wrong (say one is "*file:*" and the other is "*ftp:*"), the JDF Consumer would interpret **FileSpec/@URI** as an Absolute URI.

- 3 **RunList @URL** starts with an absolute path (starts with “/” (e.g., “/pub/document-archives”)):
  - Resolved URI = Base URI scheme and its authority (if any) followed by the **RunList** URL absolute path.
- 4 **RunList @URL** starts with a relative path (starts with something other than “/” (e.g., “foo.pdf”, “./folder/foo.pdf”, “../foo.pdf”, etc.)):
  - Resolved URI = Base URI scheme, its authority (if any), and its absolute path (if any) up to and including the right-most “/”, followed by the **RunList @URL** relative path with “.”, “..” and “./” segments removed.

The above algorithm is only a summary. See [RFC3986] for the detailed algorithm. See [FileURL] for examples.

## Appendix L References

Throughout this specification references to other documents are indicated by short symbolic names inside square brackets, (e.g., [ICC.1]). Implementers need to read and conform to such referenced documents when implementing a part of this specification with such a reference. The reader is directed to this Document References section to find the full title, date, source and availability of all such references.

**Table L-1: References (Sheet 1 of 14)**

Term	Definition
[Adb-TN5044]	<p><i>Adobe Technical note 5044</i></p> <p>Date: 24 May 1996  Produced by: Adobe Systems Inc.  Available at: <a href="http://partners.adobe.com/public/developer/en/ps/sdk/5044.ColorSep_Conv.pdf">http://partners.adobe.com/public/developer/en/ps/sdk/5044.ColorSep_Conv.pdf</a></p>
[AdsML]	<p><i>AdsML 1.0 Specification &amp; Schema</i></p> <p>Date: 17 May 2004  Produced by: AdsML Technical Working Group  Available at: <a href="http://www.adsm.org">http://www.adsm.org</a></p>
[CCIR601-2]	<p><i>CCIR Recommendation 601-2</i></p> <p><i>Encoding Parameters of Digital Television for Studios, 1990, Volume XI — Part 1, Broadcasting Service (Television), pp. 95-104.</i></p> <p>Date: 1990  Produced by: International Telecommunication Union  Available at: International Telecommunication Union, General Secretariat — Sales Section, Place des Nations, CH-1211 Geneva 20 (Switzerland)</p>
[CGATS.12/1]	<p><i>CGATS.12/1</i></p> <p><i>Graphic technology — Prepress digital data exchange — Use of PDF for composite data — Part 1: Complete exchange (PDF/X-1).</i></p> <p>Date: 14 October 1999  Produced by: Committee for Graphic Arts Technologies Standards (NPES serves as the American National Standards Institute (ANSI) secretariat to CGATS.)  Available at: The publication is available in hardcopy only and may be ordered via a form at <a href="http://www.npes.org/standards/Standards-Technical-OrderForm.pdf">http://www.npes.org/standards/Standards-Technical-OrderForm.pdf</a>.</p>
[CGATS.20-2002]	<p><i>CGATS.20-2002</i></p> <p><i>Graphic technology - Variable data printing exchange using PPML and PDF (PPML/VDX).</i></p> <p>Date: 2002  Produced by: Committee for Graphic Arts Technologies Standards (NPES serves as the American National Standards Institute (ANSI) secretariat to CGATS.)  Available at: The publication is available in hardcopy only and may be ordered via a form at <a href="http://www.npes.org/standards/Standards-Technical-OrderForm.pdf">http://www.npes.org/standards/Standards-Technical-OrderForm.pdf</a>.</p>
[CIE 15:2004]	<p><i>CIE 15:2004</i></p> <p><i>Colorimetry, 3rd Edition.</i></p> <p>Date: 2004  Produced by: Commission Internationale de l'Eclairage International (CIE)  Available at: <a href="http://www.cie.co.at">http://www.cie.co.at</a></p>
[ColorPS]	<p><i>Color Separation Conventions for PostScript Language Programs</i></p> <p><i>Technical Note #5044</i></p> <p>Date: 24 May 1996  Produced by: Adobe Systems Inc.  Available at: <a href="http://partners.adobe.com/asn/developer/pdfs/tn/5044.ColorSep_Conv.pdf">http://partners.adobe.com/asn/developer/pdfs/tn/5044.ColorSep_Conv.pdf</a></p>

**Table L-1: References (Sheet 2 of 14)**

Term	Definition
[DCS2.0]	<i>Document Color Separation (DCS), version 2.0</i> Date: Revised May 1995 Produced by: Adobe Software Inc. Available at: <a href="http://www.npes.org/standards/Tools/DCS20Spec.pdf">http://www.npes.org/standards/Tools/DCS20Spec.pdf</a> .
[distparm]	<i>Tech note 5151</i> <i>Acrobat Distiller Parameters</i> Date: August 2002 Produced by: Adobe Systems, Inc. Available at: <a href="http://partners.adobe.com/misc/search.html">http://partners.adobe.com/misc/search.html</a>
[ECMA]	<i>ECMA Code of Folding Carton Styles</i> Date: - Produced by: European Carton Makers Association Available at: <a href="http://www.ecma.org/download/orderformpublications.pdf">http://www.ecma.org/download/orderformpublications.pdf</a>
[FEFCO]	<i>FEFCO European Federation of Corrugated Board Manufacturers</i> Date: - Produced by: European Federation of Corrugated Board Manufacturers Available at: <a href="http://www.fefco.org">http://www.fefco.org</a>
[FileURL]	<i>CIP4 Application Note — Use of the File URL in JDF</i> Date: August 2003 Produced by: CIP4 Organization Available at: <a href="http://www.cip4.org">http://www.cip4.org</a>
[FIRST]	<i>Flexographic Image Reproduction Specifications &amp; Tolerances (FIRST)</i> <i>Second Edition</i> Date: November 1999 Produced by: Flexography Technical Association Available at: <a href="http://www.fta-ffta.org">http://www.fta-ffta.org</a> .
[GRACoL]	<i>General Requirements for Applications in Commercial offset Lithography (GRACoL)</i> <i>Version 6.0</i> Date: June 2002 Produced by: IDEAlliance (formerly Graphic Communications Association) Available at: <a href="http://www.gracol.com">http://www.gracol.com</a> .
[iana-mt]	<i>IANA Registry of MIME Media Types</i> Available at: <a href="http://www.iana.org/assignments/media-types">http://www.iana.org/assignments/media-types</a>
[iana-os]	<i>IANA Registry of Operating System Names</i> Available at: <a href="http://www.iana.org/assignments/operating-system-names">http://www.iana.org/assignments/operating-system-names</a>
[ICC.1]	<i>Specification ICC.1:2004-10</i> <i>File Format for Color Profiles, Version 4.2.0.0</i> Date: 2004 Produced by: International Color Consortium (ICC) Available at: <a href="http://www.color.org/icc_specs2.xalter">http://www.color.org/icc_specs2.xalter</a>
[IEEE754]	<i>IEEE 754-1985</i> <i>Standard for Binary Floating-Point Arithmetic</i> Date: 1985 Produced by: IEEE Available at: <a href="http://grouper.ieee.org/groups/754/">http://grouper.ieee.org/groups/754/</a>

**Table L-1: References (Sheet 3 of 14)**

Term	Definition
[IEEE1284]	<p><i>IEEE 1284-2000</i>  <i>IEEE Standard Signaling Method for a Bidirectional Parallel Peripheral Interface for Personal Computers</i></p> <p>Date: 2000  Produced by: IEEE  Available at: <a href="http://standards.ieee.org/catalog/olis/busarch.html">http://standards.ieee.org/catalog/olis/busarch.html</a></p>
[IEEE-ISTO 5100.1-2001]	<p><i>IEEE-ISTO 5100.1-2001</i>  <i>IPP/1.1: finishings attribute values extension</i></p> <p>Date: February 5, 2001  Produced by: IEEE-ISTO  Available at: <a href="ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.1.pdf">ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.1.pdf</a>, .doc, .rtf</p>
[IEEE-ISTO 5100.2-2001]	<p><i>IEEE-ISTO 5100.2-2001</i>  <i>IPP/1.0 &amp; 1.1: "Output-bin" attribute extensions</i></p> <p>Date: February 7, 2001  Produced by: IEEE-ISTO  Available at: <a href="ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.2.pdf">ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.2.pdf</a>, .doc, .rtf</p>
[IEEE-ISTO 5100.3-2001]	<p><i>IEEE-ISTO 5100.3-2001</i>  <i>Production Printing Attributes - Set1</i></p> <p>Date: February 17, 2001  Produced by: IEEE-ISTO  Available at: <a href="ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.3.pdf">ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.3.pdf</a>, .doc, .rtf</p>
[IEEE-ISTO 5100.4-2001]	<p><i>IEEE-ISTO 5100.4-2001</i>  <i>Override Attributes for Documents and Pages</i></p> <p>Date: February 7, 2001  Produced by: IEEE-ISTO  Available at: <a href="ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.4.pdf">ftp://ftp.pwg.org/pub/pwg/standards/pwg5100.4.pdf</a>, .doc, .rtf</p>
[ifra]	<p><i>IfraTrack Specification</i>  <i>Ifra Special Report 6.21.2, Version 2.0</i></p> <p>Date: June 1998  Produced by: Ifra  Available at: <a href="http://www.ifra.com/">http://www.ifra.com/</a></p>
[ISO5-3:1995]	<p><i>ISO 5-3:1995</i>  <i>Photography -- Density measurements -- Part 3: Spectral conditions.</i></p> <p>Date: 1995  Produced by: ISO  Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOstore/store.html">http://www.iso.ch/iso/en/prods-services/ISOstore/store.html</a></p>
[ISO5-4:1995]	<p><i>ISO 5-4:1995</i>  <i>Photography -- Density measurements -- Part 4: Geometric conditions for reflection density.</i></p> <p>Date: 1995  Produced by: ISO  Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOstore/store.html">http://www.iso.ch/iso/en/prods-services/ISOstore/store.html</a></p>
[ISO216:1975]	<p><i>ISO 216:1975</i>  <i>Writing paper and certain classes of printed matter -- Trimmed sizes -- A and B series.</i></p> <p>Date: 1975  Produced by: ISO  Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOstore/store.html">http://www.iso.ch/iso/en/prods-services/ISOstore/store.html</a></p>

**Table L-1: References (Sheet 4 of 14)**

Term	Definition
[ISO269:1985]	<p><i>ISO 269:1985</i>  <i>Correspondence envelopes -- Designation and sizes</i>  Date: 1985  Produced by: ISO  Available at:<a href="http://www.iso.ch/iso/en/prods-services/ISOSTore/store.html">http://www.iso.ch/iso/en/prods-services/ISOSTore/store.html</a></p>
[ISO2470:1999]	<p><i>ISO 2470:1999</i>  <i>Paper, board and pulps -- Measurement of diffuse blue reflectance factor (ISO brightness).</i>  Date: 1999  Produced by: ISO  Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOSTore/store.html">http://www.iso.ch/iso/en/prods-services/ISOSTore/store.html</a></p>
[ISO2471:1998]	<p><i>ISO 2471:1998</i>  <i>Paper and board—Determination of opacity (paper backing)—Diffuse reflectance method.</i>  Date: 1998  Produced by: ISO  Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOSTore/store.html">http://www.iso.ch/iso/en/prods-services/ISOSTore/store.html</a></p>
[ISO2846-1:1997]	<p><i>ISO 2846-1:1997</i>  <i>Graphic technology - Colour and transparency of ink sets for four-colour-printing - Part 1: Sheet-fed and heat-set web offset lithographic printing.</i>  Date: 1997  Produced by: ISO  Available at:<a href="http://www.iso.ch/iso/en/prods-services/ISOSTore/store.html">http://www.iso.ch/iso/en/prods-services/ISOSTore/store.html</a></p>
[ISO3166-1:1997]	<p><i>ISO 3166-1:1997</i>  <i>Codes for the representation of names of countries and their subdivisions -- Part 1: Country codes.</i>  Date: 1997  Produced by: ISO  Available at:<a href="http://www.iso.ch/iso/en/prods-services/ISOSTore/store.html">http://www.iso.ch/iso/en/prods-services/ISOSTore/store.html</a></p>
[ISO4217:2001]	<p><i>ISO 4217:2001</i>  <i>Codes for the representation of currencies and funds</i>  Date: 2001  Produced by: ISO  Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOSTore/store.html">http://www.iso.ch/iso/en/prods-services/ISOSTore/store.html</a></p>
[ISO8254-1:1999]	<p><i>ISO 8254-1:1999</i>  <i>Paper and board -- Measurement of specular gloss -- Part 1: 75 degree gloss with a converging beam, TAPPI method</i>  Date: 1999  Produced by: ISO  Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOSTore/store.html">http://www.iso.ch/iso/en/prods-services/ISOSTore/store.html</a></p>
[ISO8601:2004]	<p><i>ISO 8601:2004</i>  <i>Data elements and interchange formats - Information interchange - Representation of dates and times.</i>  Date: 2004  Produced by: ISO  Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOSTore/store.html">http://www.iso.ch/iso/en/prods-services/ISOSTore/store.html</a></p>

**Table L-1: References (Sheet 5 of 14)**

Term	Definition
[ISO12639:2004]	<p><i>ISO 12639:2004</i>  <i>Graphic technology - Prepress digital data exchange — Tag image file format for image technology (TIFF/IT)</i></p> <p>Date: 2004  Produced by: ISO  Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOstore/store.html">http://www.iso.ch/iso/en/prods-services/ISOstore/store.html</a></p>
[ISO12647-2:2004]	<p><i>ISO 12647-2:2004</i>  <i>Graphic technology - Process control for the production of half-tone colour separations, proof and production prints - Part 2: Offset lithographic processes.</i></p> <p>Date: 2004  Produced by: ISO  Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOstore/store.html">http://www.iso.ch/iso/en/prods-services/ISOstore/store.html</a></p>
[ISO12647-2:2013]	<p><i>ISO 12647-2:2013</i>  <i>Graphic technology - Process control for the production of half-tone colour separations, proof and production prints - Part 2: Offset lithographic processes.</i></p> <p>Date: 2013  Produced by: ISO  Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOstore/store.html">http://www.iso.ch/iso/en/prods-services/ISOstore/store.html</a></p>
[ISO13655:1996]	<p><i>ISO 13655:1996</i>  <i>Graphic technology -- Spectral measurement and colorimetric computation for graphic arts images.</i></p> <p>Date: 1996  Produced by: ISO  Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOstore/store.html">http://www.iso.ch/iso/en/prods-services/ISOstore/store.html</a></p>
[ISO14977:1996]	<p><i>ISO 14977:1996(E)</i>  <i>Information technology -- Syntactic metalanguage -- Extended BNF</i></p> <p>Date: 1996  Produced by: ISO  Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOstore/store.html">http://www.iso.ch/iso/en/prods-services/ISOstore/store.html</a></p>
[ISO15076-1:2005]	<p><i>ISO 15076-1:2005</i>  <i>Image technology colour management -- Architecture, profile format and data structure -- Part 1: Based on ICC.1:2004-10. See [ICC.1].</i></p> <p>Date: 2005  Produced by: ISO  Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOstore/store.html">http://www.iso.ch/iso/en/prods-services/ISOstore/store.html</a></p>
[ISO15930-1:2001]	<p><i>ISO 15930-1:2001</i>  <i>Graphic technology — Prepress digital data exchange — Use of PDF — Part 1: Complete exchange using CMYK data (PDF/X-1 and PDF/X-1a).</i></p> <p>Date: 2001  Produced by: ISO  Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOstore/store.html">http://www.iso.ch/iso/en/prods-services/ISOstore/store.html</a></p>
[ISO15930-4:2003]	<p><i>ISO 15930-4:2003</i>  <i>Graphic technology — Prepress digital data exchange — Use of PDF — Part 1: Complete exchange using CMYK data (PDF/X-1 and PDF/X-1a).</i></p> <p>Date: 2003  Produced by: ISO  Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOstore/store.html">http://www.iso.ch/iso/en/prods-services/ISOstore/store.html</a></p>

**Table L-1: References (Sheet 6 of 14)**

Term	Definition
[ISO15930-5:2003]	<p><i>ISO 15930-2:2003</i></p> <p><i>Graphic technology — Prepress digital data exchange — Use of PDF — Part 2: Partial exchange of printing data (PDF/X-2).</i></p> <p>Date: 2003 Produced by: ISO Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOstore/store.html">http://www.iso.ch/iso/en/prods-services/ISOstore/store.html</a></p>
[ISO15930-3:2002]	<p><i>ISO 15930-3:2002</i></p> <p><i>Graphic technology — Prepress digital data exchange — Use of PDF — Part 3: Complete exchange suitable for colour-managed workflows (PDF/X-3).</i></p> <p>Date: 2002 Produced by: ISO Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOstore/store.html">http://www.iso.ch/iso/en/prods-services/ISOstore/store.html</a></p>
[ISO15930-6:2003]	<p><i>ISO 15930-6:2003</i></p> <p><i>Graphic technology — Prepress digital data exchange — Use of PDF — Part 3: Complete exchange suitable for colour-managed workflows (PDF/X-3).</i></p> <p>Date: 2003 Produced by: ISO Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOstore/store.html">http://www.iso.ch/iso/en/prods-services/ISOstore/store.html</a></p>
[ISO15930-7:2010]	<p><i>ISO 15930-7:2010</i></p> <p><i>Graphic technology — Prepress digital data exchange — Use of PDF — Complete exchange suitable for colour-managed workflows (PDF/X-4).</i></p> <p>Date: 2010 Produced by: ISO Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOstore/store.html">http://www.iso.ch/iso/en/prods-services/ISOstore/store.html</a></p>
[ISO15930-8:2010]	<p><i>ISO 15930-8:2010</i></p> <p><i>Graphic technology — Prepress digital data exchange — Use of PDF — Complete exchange suitable for colour-managed workflows (PDF/X-5).</i></p> <p>Date: 2010 Produced by: ISO Available at: <a href="http://www.iso.ch/iso/en/prods-services/ISOstore/store.html">http://www.iso.ch/iso/en/prods-services/ISOstore/store.html</a></p>
[JIS P 0138:1998]	<p><i>JIS P 0138:1998</i></p> <p>Writing paper and certain classes of printed matter -- Trimmed sizes -- A and B series.</p> <p>Date: 1998 Produced by: JIS Available at: <a href="http://www.webstore.jsa.or.jp/webstore">http://www.webstore.jsa.or.jp/webstore</a> or google title</p>
[japancolor]	<p><i>Japan Color 2001</i></p> <p>Date: 2001 Produced by: Japan Printing Machinery Manufacturers Association, Office of JNC for TC130 Available at: Call (81) 03-3434-4661</p>
[JDF15]	<p><i>Job Definition Format 1.5</i></p> <p>Date: 2013 Produced by: International Cooperation for Integration of Processes in Prepress, Press and Postpress (CIP4) Available at: <a href="http://www.cip4.org">http://www.cip4.org</a></p>

**Table L-1: References (Sheet 7 of 14)**

Term	Definition
[K&R]	<i>C Programming Language</i> , by Brian W. Kernighan and Dennis M. Ritchie <i>Second Edition</i> Date: March 22, 1988 Produced by: Prentice Hall Available at: (Book only. Look for ISBN 0131103628.)
[macbinary]	<i>Macintosh Binary Transfer Format ("MacBinary III") Standard Proposal.</i> Date: December 1996 Produced by: Macintosh Internet Developer Association Available at: <a href="http://www.lazerware.com/formats/">http://www.lazerware.com/formats/</a>
[opentypefont]	<i>OpenType specification v.1.4</i> Date: 11 October 2002 Produced by: Microsoft Corporation Available at: <a href="http://www.microsoft.com/typography/specs/">http://www.microsoft.com/typography/specs/</a>
[PDF1.6]	<i>PDF reference : Adobe portable document format version 1.6 / Adobe Systems Incorporated.</i> <i>Version 1.6</i> Date: November 2004 Produced by: Addison-Wesley Available at: <a href="http://partners.adobe.com/public/developer/pdf/index_reference.html">http://partners.adobe.com/public/developer/pdf/index_reference.html</a>
[PJTF]	<i>The Portable Job Ticket Format</i> <i>Version 1.1</i> Date: 2 April 1999 Produced by: Adobe Systems Inc. Available at: <a href="http://partners.adobe.com/asn/developer/pdfs/tn/5620.pjtf.pdf">http://partners.adobe.com/asn/developer/pdfs/tn/5620.pjtf.pdf</a>
[PPD]	<i>Adobe PostScript Printer Description File Format Specification</i> <i>Version 4.3</i> Date: 9 February 1996 Produced by: Adobe Systems Inc. Available at: <a href="http://www.cip4.org/documents/technical_info/cip3v3_0.pdf">http://www.cip4.org/documents/technical_info/cip3v3_0.pdf</a>
[PPF]	<i>Print Production Format</i> <i>Version 3.0</i> Date: 2 June 1998 Produced by: The International Cooperation for Integration of Prepress, Press and Postpress Available at: <a href="http://www.cip4.org/documents/technical_info/cip3v3_0.pdf">http://www.cip4.org/documents/technical_info/cip3v3_0.pdf</a>
[PPML]	<i>PPML</i> <i>Personal Print Markup Language (PPML)</i> <i>Version 2.1</i> Produced by: Print On Demand Initiative (PODi) Available at: <a href="http://www.podi.org">http://www.podi.org</a>
[PrintTalk]	<i>PrintTalk Implementation</i> <i>Version 1.1</i> Produced by: PrintTalk Consortium Available at: <a href="http://www.printtalk.org/">http://www.printtalk.org/</a>

**Table L-1: References (Sheet 8 of 14)**

Term	Definition
[PS]	<p><i>PostScript Language Reference (Redbook) Third Edition</i></p> <p>Date: —  Produced by: Adobe Systems, Inc.  Available at: <a href="http://partners.adobe.com/asn/developer/pdfs/tm/PLRM.pdf">http://partners.adobe.com/asn/developer/pdfs/tm/PLRM.pdf</a></p>
[PWG]	<p><i>The Printer Working Group</i></p> <p>Date: —  Produced by: IEEE-ISTO  Available at: <a href="http://www.pwg.org">http://www.pwg.org</a></p>
[PWGFINMIB]	<p><i>Printer Finishing MIB</i>  (draft-ietf-printmib-finishing-16.txt — work in progress.)</p> <p>Date: February 2003  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: IETF Internet-Drafts have a six month life-time. They are available at: <a href="https://datatracker.ietf.org/public/pidtracker.cgi">https://datatracker.ietf.org/public/pidtracker.cgi</a></p>
[Quark]	See <a href="http://www.quark.com">http://www.quark.com</a> .
[RFC1738]	<p><i>RFC 1738</i>  <i>Uniform Resource Locators (URL)</i></p> <p>Date: 1994  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC1741]	<p><i>RFC 1741</i>  <i>MIME Content Type for BinHex Encoded Files, by Faltstrom, P., Crocker, D. and Fair, E.</i></p> <p>Date: December 1994  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC1759]	<p><i>RFC 1759</i>  <i>Printer MIB, Version 2.0 by Smith, R., Wright, F., Hastings, T., Zilles, S. and Gyllenskog, J.</i></p> <p>Date: June 2003  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC1766]	<p><i>RFC 1766</i>  <i>Tags for the Identification of Languages, by H. Alvestrand.</i></p> <p>Date: March 1995  Produced by: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC1950]	<p><i>RFC 1950</i>  <i>ZLIB Compressed Data Format Specification version 3.3, by P. Deutsch.</i></p> <p>Date: May 1996  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>

**Table L-1: References (Sheet 9 of 14)**

Term	Definition
[RFC1951]	<p><i>RFC 1951</i>  <i>DEFLATE Compressed Data Format Specification version 1.3</i>, by Deutsch, P.</p> <p>Date: May 1996  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC1952]	<p><i>RFC 1952</i>  <i>GZIP file format specification version 4.3</i>, by Deutsch, P.</p> <p>Date: May 1996  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC1977]	<p><i>RFC 1977</i>  <i>PPP BSD Compression Protocol</i>, by Schryver, V.</p> <p>Date: August 1996  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC2045]	<p><i>RFC 2045</i>  <i>Multipurpose Internet Mail Extensions (MIME) Part One: Format of Internet Message Bodies</i>, by Freed, N. and Borenstein, N. (Updated by RFC2184, RFC2231)</p> <p>Date: November 1996  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC2046]	<p><i>RFC 2046</i>  <i>Multipurpose Internet Mail Extensions (MIME) Part Two: Media Types</i>, by Freed, N. and Borenstein, N. (Updated by RFC2646)</p> <p>Date: November 1996  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC2183]	<p><i>RFC 2183</i>  <i>Communicating Presentation Information in Internet Messages: The Content-Disposition Header Field</i></p> <p>Date: August 1997  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC2231]	<p><i>RFC 2231</i>  <i>MIME Parameter Value and Encoded Word Extensions: Character Sets, Languages, and Continuations</i></p> <p>Date: November 1997  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>

**Table L-1: References (Sheet 10 of 14)**

Term	Definition
[RFC2368]	<p><i>RFC 2368</i>  <i>The mailto URL scheme</i> by P. Hoffman, L. Masinter and J. Zawinski.</p> <p>Date: July 1998  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC2387]	<p><i>RFC 2387</i>  <i>The MIME Multipart/Related Content-type</i>, by Levinson, E.</p> <p>Date: August 1998  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC2392]	<p><i>RFC 2392</i>  <i>Content-ID and Message-ID Uniform Resource Locators</i>, by Levinson, E.</p> <p>Date: August 1998  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC2616]	<p><i>RFC 2616</i>  <i>Hypertext Transfer Protocol — HTTP/1.1</i></p> <p>Date: June 1999  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC2822]	<p><i>RFC 2822</i>  <i>Internet Message Format</i></p> <p>Date: April 2001  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC2911]	<p><i>RFC 2911</i>  <i>Internet Printing Protocol/1.1: Model and Semantics</i>, by T. Hastings, R. Herriot, R. deBry, S. Isaacson and P. Powell.</p> <p>Date: September 2000  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC3302]	<p><i>RFC 3302</i>  <i>Tag Image File Format (TIFF) — image/tiff MIME Sub-type Registration</i>, by Parsons, G., Rafferty, J.</p> <p>Date: September 2002  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>

**Table L-1: References (Sheet 11 of 14)**

Term	Definition
[RFC3381]	<p><i>RFC 3381</i></p> <p><i>Internet Printing Protocol (IPP): Job Progress Attributes</i> by T. Hastings, H. Lewis and R. Bergman.</p> <p>Date: September 2002  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC3382]	<p><i>RFC 3382</i></p> <p><i>Internet Printing Protocol (IPP): The 'collection' attribute syntax</i> by R. deBry, R. Herriot, T. Hastings, K. Ocke and P. Zehler.</p> <p>Date: September 2002  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC3548]	<p><i>RFC 3548</i></p> <p><i>The Base16, Base32, and Base64 Data Encodings</i>, by S. Josefsson</p> <p>Date: July 2003  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC3966]	<p><i>RFC 3966</i></p> <p><i>The tel URI for Telephone Numbers</i> by H. Schulzrinne</p> <p>Date: December 2004  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC3986]	<p><i>FC 3986</i></p> <p><i>Uniform Resource Identifier (URI): Generic Syntax</i> by T. Berners-Lee, R. Fielding and L. Masinter</p> <p>Date: January 2005  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC3987]	<p><i>RFC 3987</i></p> <p><i>Internationalized Resource Identifiers (IRIs)</i>, by M. Duerst and M. Suignard</p> <p>Date: January 2005  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[RFC5246]	<p><i>RFC 5246</i></p> <p><i>The Transport Layer Security (TLS) Protocol Version 1.2</i>, by T. Dierks and E. Rescorla</p> <p>Date: August 2008  Produced by: Internet Engineering Task Force (IETF), Network Working Group  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>

**Table L-1: References (Sheet 12 of 14)**

Term	Definition
[RFC6101]	<p><i>RFC 6101</i> (Category: Historic)  <i>The Secure Sockets Layer (SSL) Protocol Version 3.0</i>, by A. Freier, P. Karlton and P. Kocher</p> <p>Date: August 2011  Produced by: Internet Engineering Task Force (IETF)  Available at: All IETF (Internet Engineering Task Force) RFCs (Request for Comments) are available at RFC Database search: <a href="http://www.rfc-editor.org/rfcsearch.html">http://www.rfc-editor.org/rfcsearch.html</a>.</p>
[SNAP]	<p><i>Specifications for Newsprint Advertising Production</i> (SNAP)</p> <p>Date: 2000  Produced by: Printing Industries of America, Inc. (SNAP Committee)  Available at: <a href="http://www.gain.net/store/item.cfm?productid=488">http://www.gain.net/store/item.cfm?productid=488</a></p>
[SSL3]	<p><i>SSL Specification</i></p> <p>Freesoft, SSL Specification 3.0  Date: not stated  Produced by: unknown  Available at: <a href="http://www.freesoft.org/CIE/Topics/ssl-draft/3-SPEC.HTM">http://www.freesoft.org/CIE/Topics/ssl-draft/3-SPEC.HTM</a>  Refer to [RFC6101]</p>
[TAPPI T480]	<p>TAPPI T480  <i>Specular Gloss of Paper and Paperboard at 75 Degrees, Test Method T 519 om-99</i></p> <p>Date: not stated  Produced by: TAPPI.  Available at:<a href="http://www.tappi.org">http://www.tappi.org</a></p>
[TAPPI T519]	<p>TAPPI T519  <i>Diffuse Opacity of Paper (d/0 paper backing), Test Method T 519 om-02</i></p> <p>Date: not stated  Produced by: TAPPI.  Available at:<a href="http://www.tappi.org">http://www.tappi.org</a></p>
[TAPPI T527]	<p>TAPPI T527  <i>Color of Paper and Paperboard (d/0, C/2), Test Method T 527 om-02</i></p> <p>Date: not stated  Produced by: TAPPI.  Available at:<a href="http://www.tappi.org">http://www.tappi.org</a></p>
[TAPPI T560]	<p>TAPPI T560  <i>CIE Whiteness and Tint of Paper and Paperboard (Using d/0°, Diffuse Illumination and Normal Viewing), Test Method T 560 wd-03</i></p> <p>Date: not stated  Produced by: TAPPI.  Available at:<a href="http://www.tappi.org">http://www.tappi.org</a></p>
[TIFF6]	<p><i>TIFF Revision 6.0</i></p> <p>Date: June 1992  Produced by: Adobe Systems, Inc.  Available at: <a href="http://partners.adobe.com/asn/tech/tiff/specification.jsp">http://partners.adobe.com/asn/tech/tiff/specification.jsp</a></p>
[TIFFPS]	<p><i>Adobe Photoshop TIFF Technical Notes</i></p> <p>Date: March 2002  Produced by: Adobe Systems, Inc.  Available at: <a href="http://partners.adobe.com/asn/tech/tiff/specification.jsp">http://partners.adobe.com/asn/tech/tiff/specification.jsp</a></p>

**Table L-1: References (Sheet 13 of 14)**

Term	Definition
[truetypefont]	<i>TrueType font file and TrueType Open specification</i> Date: August 1995 Produced by: Microsoft Corporation Available at: <a href="http://www.microsoft.com/typography/specs/">http://www.microsoft.com/typography/specs/</a>
[type1font]	<i>Adobe Type 1 Font Format</i> <i>Adobe Systems, Inc.</i> Date: 1990 Produced by: Addison-Wesley Publishing Company, Inc. Available at: <a href="http://partners.adobe.com/asn/developer/pdfs/tn/T1_SPEC.PDF">http://partners.adobe.com/asn/developer/pdfs/tn/T1_SPEC.PDF</a>
[Unicode5.0]	<i>The Unicode Standard, Version 5.0,</i> Date: November 3, 2006 Produced by: The Unicode Consortium Available at: <a href="http://www.unicode.org/book/aboutbook.html">http://www.unicode.org/book/aboutbook.html</a>
[uuencode]	<i>Unix Uuencode, The Single UNIX ® Specification, Version 2</i> (Converts binary into the local character set that is suitable to pass through email systems.) Date: 1997 Produced by: The Open Group Available at: <a href="http://www.opengroup.org/onlinepubs/007908799/xcu/uuencode.html">http://www.opengroup.org/onlinepubs/007908799/xcu/uuencode.html</a>
[UPNP]	<i>Printer Device and Printer Basic Service</i> <i>Version 1.0</i> Date: 2002 Produced by: Universal Plug N Play Forum Available at: <a href="http://www.upnp.org/standardizeddcps/printer.asp">http://www.upnp.org/standardizeddcps/printer.asp</a>
[URI]	<i>URIs, URLs, and URNs: Clarifications and Recommendations 1.0</i> <i>Version (W3C Recommendation of 21 September 2001)</i> Date: 21 September 2001 Produced by: World Wide Web Consortium (W3C) Available at: <a href="http://www.w3.org/TR/2001/NOTE-uri-clarification-20010921/">http://www.w3.org/TR/2001/NOTE-uri-clarification-20010921/</a>
[WINZip]	<i>APPNOTE.TXT — .ZIP File Format Specification</i> <i>Version 5.2</i> Date: 16 July 2003 Produced by: PKWARE Inc. Available at: <a href="http://www.pkware.com/products/enterprise/white_papers/appnote.html">http://www.pkware.com/products/enterprise/white_papers/appnote.html</a>
[XML]	<i>Extensible Markup Language (XML) 1.0 (Fifth Edition)</i> <i>Version (W3C Recommendation of 8 December 2009)</i> Date: 8 December 2009 Produced by: World Wide Web Consortium (W3C) Available at: <a href="http://www.w3.org/TR/2008/REC-xml-20081126/">http://www.w3.org/TR/2008/REC-xml-20081126/</a>
[XMLNS]	<i>Namespaces in XML 1.0 (Third Edition)</i> <i>Version (W3C Recommendation of 8 December 2009)</i> Date: 8 December 2009 Produced by: World Wide Web Consortium (W3C) Available at: <a href="http://www.w3.org/TR/2009/REC-xml-names-20091208/">http://www.w3.org/TR/2009/REC-xml-names-20091208/</a>

**Table L-1: References (Sheet 14 of 14)**

Term	Definition
[XMLSchema]	<p><i>XML Schema Part 0+1+2: Primer, Structures and Datatypes Version (W3C Recommendation of 28 Oct 2004)</i></p> <p>Date: 28 October 2004  Produced by: World Wide Web Consortium (W3C) XML Schema working group  Available at: <a href="http://www.w3.org/TR/2004/REC-xmlschema-0-20041028/">http://www.w3.org/TR/2004/REC-xmlschema-0-20041028/</a>, <a href="http://www.w3.org/TR/2004/REC-xmlschema-1-20041028/">http://www.w3.org/TR/2004/REC-xmlschema-1-20041028/</a> and <a href="http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/">http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/</a>.</p>
[XPath]	<p><i>XML Path Language (XPath) 2.0 (Second Edition) Version W3C Recommendation 14 December 2010</i></p> <p>Date: 14 December 2010  Produced by: World Wide Web Consortium (W3C)  Available at: <a href="http://www.w3.org/TR/2010/REC-xpath20-20101214/">http://www.w3.org/TR/2010/REC-xpath20-20101214/</a>.</p>
[X.509]	<p><i>Public-Key Infrastructure (X.509) (pkix) Version 1.1</i></p> <p>Date: 14 February 2008  Produced by: IETF.  Available at: <a href="http://www.ietf.org/html.charters/pkix-charter.html">http://www.ietf.org/html.charters/pkix-charter.html</a>.</p>

## Appendix M JDF XJDF/CIP4 Hole Pattern Catalog

The following table defines the specifics of the predefined holes in **HoleMakingParams** and **HoleMakingParams**.

Notes:

- 1 All patterns are centered on the Sheet along the process edge.
- 2 Process Edge is always defined relative to a portrait orientation of the medium, regardless of the orientation of the printed image or processing path.
- 3 Thumbcuts are available in various standard shapes (labeled “No.  $N$ ” where  $N$  is minimally ranging from 2..7). “No. 3” seems to be the most widely used.
- 4 Single thumbcuts appear always in the center of the process edge.
- 5 Oval shape holes actually look sometimes more like rectangular holes with rounded corners.

### Sources:

- 1 [PWGFINMIB]

### Naming Scheme:

**Table M-1: Naming Scheme for Hole Patterns**

Name	Description
<b>General</b>	<m i>: m = metric (millimeter is used), i = imperial (inch, where 1 inch = 25.4 mm)
<b>Ring Binding</b>	R<#holes><m i>-<variant> Example: R2m-DIN = RingBind, 2 hole, metric, DIN
<b>Plastic Comb</b>	P<pitch><m i>-<shape>-<#thumbcuts>t Example: P16:9m-round-0t = Plastic Comb, 9/16" pitch (16:9), round, no thumbcut
<b>Wire Comb</b>	W<pitch><m i>-<shape>-<#thumbcuts>t Example: W2:1i-square-1t = Wire Comb, 1/2" pitch (2:1), square, one thumbcut
<b>Coil/Spiral</b>	C<pitch><m i>-<shape>-<#thumbcuts>t Example: C9.5m-round-0t = Coil, 9.5 mm, round, no thumbcut
<b>Special</b>	S<#holes> Example: S1-generic

Table M-2: Hole Details for R2 Series (Sheet 1 of 2)

XJDF Hole Pattern Catalog ID	Description	# Holes	Hole Shape	Hole Extent	Pattern Geometry	Pattern Axis Offset from Process Edge	XJDF Default Pattern Axis Offset from Process Edge in pt (!)	Default Process Edge	Usage Notes	Source Standard
<b>RING BINDING (R...)</b>										
2 Holes (R2...)										
R2-generic	Generic request of a 2-hole pattern	2	●	5 - 13 mm 0.2-0.51"	N/A	4.5 – 13 mm 0.18 - 0.51"	34.02 ( $\cong$ 12 mm)	Left	See note (7).	N/A
R2m-DIN	DIN 2-hole  MIB: 6 = twoHoleDIN and 10 = twoHoleMetric	2	●	5.5 $\pm$ 0.1 mm	80 $\pm$ 0.1 mm	7 or 11 $\pm$ 0.3 mm 7 mm for blocks of $\leq$ 15 mm thick	31.18 ( $\cong$ 11 mm)	Left	A4 and A5	DIN 5005:1991 DIN 821:1973
R2m-ISO	ISO 2-hole  MIB: 6 = twoHoleDIN and 10 = twoHoleMetric	2	●	6 $\pm$ 0.5 mm	80 $\pm$ 0.5 mm	12 $\pm$ 1 mm  Australian Standard AS P5-1969: 10 $\pm$ 1 mm	34.02 ( $\cong$ 12 mm)	Left	Also used in Japan	ISO 838:1974 (E)
R2m-MIB	Printer Finishing MIB twoHoleDIN and twoHoleMetric	2	●	5-8 mm	80 $\pm$ 0.5 mm	4.5 – 13 mm	31.18 ( $\cong$ 11 mm)	Left		Printer Finishing MIB
R2i-US-a	US 2-hole, Variant A  MIB: 4 = twoHoleUSTop and 12 = twoHoleUS-Side	2	●	0.2 - 0.32"	2.75"	0.18 - 0.51"	29.25 ( $\cong$ 13/32")	Left for letter Top for ledger		Printer Finishing MIB

Table M-2: Hole Details for R2 Series (Sheet 2 of 2)

XJDF Hole Pattern Catalog ID	Description	# Holes	Hole Shape	Hole Extent	Pattern Geometry	Pattern Axis Offset from Process Edge	XJDF Default Pattern Axis Offset from Process Edge in pt (!)	Default Process Edge	Usage Notes	Source Standard
R2i-US-b	US 2-hole, Variant B	2	●	0.2-0.5" default: 5/16" typical: 1/4", 9/32", 11/32", 3/8", 13/32", 1/2"	6"	0.25" + ½ diameter  range: 6/16" - 1/2"	29.25 ( $\cong 13/32"$ )	Left		

Table M-3: Hole Details for R3 and R4 Series (Sheet 1 of 2)

XJDF Hole Pattern Catalog ID	Description	# Holes	Hole Shape	Hole Extent	Pattern Geometry	Pattern Axis Offset from Process Edge	XJDF Default Pattern Axis Offset from Process Edge in pt (!)	Default Process Edge	Usage Notes	Source Standard
RING BINDING (R...)										
3 Holes (R3...)										
R3-generic	Generic request of a 3-hole pattern.	3	●	5 - 13 mm 0.2-0.51"	N/A	4.5 – 13 mm 0.18 - 0.51"	29.25 ( $\cong 13/32"$ )	Left	See note (7).	N/A
R3i-US	US 3-hole  MIB: 5 = three-HoleUS	3	●	std: 5/16" rng: 0.2-0.5" typ: 1/4", 9/32", 11/32", 3/8", 13/32", 1/2"	4.25"	0.25" + ½ diameter  range: 6/16" - 1/2"	29.25 ( $\cong 13/32"$ )	Left		Printer Finishing MIB
4 Holes (R4...)										
R4-generic	Generic request of a 4-hole pattern.	4	●	5 - 13 mm 0.2-0.51"	N/A	4.5 – 13 mm 0.18 - 0.51"	31.18 ( $\cong 11$ mm)	Left	See note (7).	N/A

Table M-3: Hole Details for R3 and R4 Series (Sheet 2 of 2)

XJDF Hole Pattern Catalog ID	Description	# Holes	Hole Shape	Hole Extent	Pattern Geometry	Pattern Axis Offset from Process Edge	XJDF Default Pattern Axis Offset from Process Edge in pt (!)	Default Process Edge	Usage Notes	Source Standard
R4m-DIN-A4	DIN 4-hole for A4	4	●	5.5 ± 0.1 mm	80 ± 0.1 mm	7 or 11 ± 0.3 mm 7 mm for blocks of 15 mm or less	31.18 ( $\cong$ 11 mm)	Left	A4	DIN 5005:1991 DIN 821:1973
R4m-DIN-A5	DIN 4-hole for A5	4	●	5.5 ± 0.1 mm	45-65-45 mm	7 or 11 ± 0.3 mm 7 mm for blocks of 15 mm or less	31.18 ( $\cong$ 11 mm)	Left	A5	DIN 5005:1991
R4m-swedish	Swedish 4-hole  MIB: 11 = swedish4Hole	4	●	5 - 8 mm	21-70-21 mm	4.5 - 13 mm	31.18 ( $\cong$ 11 mm)	Left for A4 Top for A3	A4, A3	Printer Finishing MIB
R4i-US	US 4-hole	4	●	0.2 - 0.5" std: 5/16" typ: 1/4", 9/32", 11/32", 3/8", 13/32", 1/2"	1.375-4.25-1.375"	0.25" + $\frac{1}{2}$ diameter  range: 6/16" - 1/2"	29.25 ( $\cong$ 0.25" + $\frac{1}{2}$ x 5/16" = 13/32")	Left		

Table M-4: Hole Details for R5 and R6 Series (Sheet 1 of 3)

XJDF Hole Pattern Catalog ID	Description	# Holes	Hole Shape	Hole Extent	Pattern Geometry	Pattern Axis Offset from Process Edge	XJDF Default Pattern Axis Offset from Process Edge in pt (!)	Default Process Edge	Usage Notes	Source Standard
RING BINDING (R...)										
5 Holes (R5...)										
R5-generic	Generic request of a 5-hole pattern.	5	●	5 - 13 mm 0.2-0.51"	N/A	4.5 - 13 mm 0.18 - 0.51"	29.25 ( $\cong$ 13/32")	Left	See note (7).	N/A

Table M-4: Hole Details for R5 and R6 Series (Sheet 2 of 3)

XJDF Hole Pattern Catalog ID	Description	# Holes	Hole Shape	Hole Extent	Pattern Geometry	Pattern Axis Offset from Process Edge	XJDF Default Pattern Axis Offset from Process Edge in pt (!)	Default Process Edge	Usage Notes	Source Standard
R5i-US-a	US 5-hole, Variant A  MIB: 13 = five-HoleUS	5	●	0.2 - 0.32"	2-2.25-2.25-2"	0.18 - 0.51"	29.25 ( $\cong 13/32"$ )	Left for letter Top for ledger		Printer Finishing MIB
R5i-US-b	US 5-hole, Variant B	5	●	0.2 - 0.5" std: 5/16" typ: 1/4", 9/32", 11/32", 3/8", 13/32", 1/2"	0.75-3.5-3.5-0.75"	0.25" + $\frac{1}{2}$ diameter 0.375 - 0.5"	29.25 ( $\cong 0.25" + \frac{1}{2} \times 5/16" = 13/32"$ )	Left		
R5i-US-c	Combination of R2i-US-a and R3i-US	5	●	0.2 - 0.5" std: 5/16" typ: 1/4", 9/32", 11/32", 3/8", 13/32", 1/2"	1.25-3-3-1.25"	0.25" + $\frac{1}{2}$ diameter 0.375 - 0.5"	29.25 ( $\cong 0.25" + \frac{1}{2} \times 5/16" = 13/32"$ )	Left		
6 Holes (R6...)										
R6-generic	Generic request of a 6-hole pattern.	6	●	5 - 13 mm 0.2-0.51"	N/A	4.5 – 13 mm 0.18 - 0.51"	31.18 ( $\cong 11$ mm)	Left for A4/A5 Top for A3	See note (7).	N/A
R6m-4h2s	Norwegian 4-hole (round) mixed with 2 slots (rectangular)  MIB: 16 = norweg6Hole	6	H: S: ● ■	Holes: 5 - 8 mm Slots: 10 x 5.5 mm	4 holes/2 slots Pattern: H-H-S-S-H-H 64-18.5-75-18.5-64 mm	4.5 - 13 mm	31.18 ( $\cong 11$ mm)	Left for A4 Top for A3		Printer Finishing MIB

**Table M-4: Hole Details for R5 and R6 Series (Sheet 3 of 3)**

XJDF Hole Pattern Catalog ID	Description	# Holes	Hole Shape	Hole Extent	Pattern Geometry	Pattern Axis Offset from Process Edge	XJDF Default Pattern Axis Offset from Process Edge in pt (!)	Default Process Edge	Usage Notes	Source Standard
R6m-DIN-A5	DIN 6-hole for A5	6	●	5.5 ± 0.1 mm	37.5-7.5-65-7.5-37.5 mm	7 or 11 ± 0.3 mm 7 mm for blocks of <= 15 mm thick	31.18 ( $\cong$ 11 mm)	Left	Only used with A5	DIN 5005:1991

**Table M-5: Hole Details for R7 and R11 Series (Sheet 1 of 2)**

XJDF Hole Pattern Catalog ID	Description	# Holes	Hole Shape	Hole Extent	Pattern Geometry	Pattern Axis Offset from Process Edge	XJDF Default Pattern Axis Offset from Process Edge in pt (!)	Default Process Edge	Usage Notes	Source Standard
<b>RING BINDING (R....)</b>										
7 Holes (R7...)										
R7-generic	Generic request of a 7-hole pattern.	7	●	5 - 13 mm 0.2-0.51"	N/A	4.5 – 13 mm 0.18 - 0.51"	29.25 ( $\cong$ 13/32")	Left for letter Top for ledger	See note (7).	N/A
R7i-US-a	US 7-hole, Variant A  MIB: 14 = seven-HoleUS	7	●	0.2 - 0.32"	1-1-2.25-2.25-1-1"	0.18 - 0.51"	29.25 ( $\cong$ 13/32")	Left for letter Top for ledger		Printer Finishing MIB
R7i-US-b	US 7-hole, Bell/AT&T Systems. Combination of R3i-US, R4i-US, R5i-US-b	7	●	0.2 - 0.5" std: 5/16" typ: 1/4", 9/32", 11/32", 3/8", 13/32", 1/2"	0.75-1.375-2.125-2.125-1.375-0.75"	0.25" + $\frac{1}{2}$ diameter 0.375 - 0.5"	29.25 ( $\cong$ 0.25" + $\frac{1}{2}$ x 5/16" = 13/32")	Left for letter Top for ledger		

Table M-5: Hole Details for R7 and R11 Series (Sheet 2 of 2)

XJDF Hole Pattern Catalog ID	Description	# Holes	Hole Shape	Hole Extent	Pattern Geometry	Pattern Axis Offset from Process Edge	XJDF Default Pattern Axis Offset from Process Edge in pt (!)	Default Process Edge	Usage Notes	Source Standard
R7i-US-c	US 7-hole, Variant C	7		0.2 - 0.5" std: 5/16" typ: 1/4", 9/32", 11/32", 3/8", 13/32", 1/2"	1.25-0.875-2.125-2.125-0.875-1.25"	0.25" + ½ diameter 0.375 - 0.5"	29.25 ( $\cong 13/32"$ )	Left for letter Top for ledger		
11 Holes (R11...)										
R11m-7h4s	7-hole (round) mixed with 4 slots (rectangular)  MIB: 15 = mixed7H4S	11	H: S:	Holes: 5 - 8 mm Slots: 12 x 6 mm	7 holes/2slots Pattern: H-S-H-H-S-H-S-H-H-S-H 15-25-23-20-37-37-20-23-25-15 mm	4.5 - 13 mm	31.18 ( $\cong 11$ mm)	Left for A4 Top for A3		Printer Finishing MIB

Table M-6: Hole Details for P, W, C and S Series (Sheet 1 of 3)

XJDF Hole Pattern Catalog ID	Description	# Holes	Hole Shape	Hole Extent	Pattern Geometry	Pattern Axis Offset from Process Edge	XJDF Default Pattern Axis Offset from Process Edge in pt (!)	Default Process Edge	Usage Notes	Source Standard
PLASTIC COMB BINDING (P...)										
P16_9i-rect-0t	US spacing, no thumbcut  MIB: 9 = nineteen-HoleUS	A4: 21 Letter: 19		5/16" x 1/8" (8 x 3.2 mm)	9/16"	3/16"	13.54 ( $\cong 0.188"$ )	Left		Printer Finishing MIB

**Table M-6: Hole Details for P, W, C and S Series (Sheet 2 of 3)**

**Table M-6: Hole Details for P, W, C and S Series (Sheet 3 of 3)**

<b>XJDF Hole Pattern Catalog ID</b>	<b>Description</b>	<b># Holes</b>	<b>Hole Shape</b>	<b>Hole Extent</b>	<b>Pattern Geometry</b>	<b>Pattern Axis Offset from Process Edge</b>	<b>XJDF Default Pattern Axis Offset from Process Edge in pt (!)</b>	<b>Default Process Edge</b>	<b>Usage Notes</b>	<b>Source Standard</b>
S-generic	Generic request of a hole pattern with an arbitrary or unknown number of holes (e.g., an inline shotgun).	1 or more	●	5 - 13 mm 0.2-0.51"	N/A	N/A	N/A	Any		N/A
S1-generic	Generic request of a hole pattern with 1 hole.	1	●	5 - 13 mm 0.2-0.51"	N/A	N/A	N/A	Any		N/A



# Appendix N FileSpec Attributes and Container Subelement

[New in JDF 1.2](#)

The purpose of this appendix is to give a series of use cases with examples for the use of the Attributes of **FileSpec**: **@MimeType**, **@URL**, **@Compression** and the **FileSpec/Container @ContainerRef** Subelement. These use cases include container packaging files, such as tar, zip and Multipart/Related files and container compression and encoding files, each of which require one or more **Container @ContainerRef** Subelements to link one **FileSpec** with its container **FileSpec**.

## N.1 Examples of Attribute Values of FileSpec

Table N-1 shows a number of use cases and the corresponding values for the **@MimeType**, **@URL** and **@Compression** Attributes. Each **Container @ContainerRef** Element points to the **FileSpec** shown on the next row in the table. The use cases are arranged in order of increasing complexity.

Note: All of the **@URL** examples in this appendix for **FileSpec** Resources that are not contained in other files are Absolute URIs, so that the complication of resolving **FileSpec/@URI** with **RunList/@Directory** is not considered. Of course, the **@URL** examples for **FileSpec** Resources that are contained in other files SHALL all be Relative URIs (relative to the Base URI that is defined to be the Absolute URI of where the **JDF XJDF** Consumer extracted the container file) as the **JDF XJDF** spec requires (see the **@URL** description at Section 8.61, “FileSpec” on page 652).

**Table N-1: Use Cases showing MimeType, URL and Compression Attribute Values (Sheet 1 of 2)**

Description of Use Case	Mime Type	URL	Compression
1.) Single a.pdf PDF file, no compression	application/pdf	ftp://www.any.com/share/a.pdf	
2.) Single a.pdf PDF file, with Gzip compression	application/pdf	a.pdf	Gzip
Container FileSpec	Gzip	ftp://www.any.com/a.gz	
3.) Single a.pdf PDF file, no compression, but Base64 encoded	application/pdf	a.pdf	Base64
Container FileSpec	Base64	ftp://www.any.com/a.mme	
4.) Single PDF file, no compression, but BinHex encoded into a BinHex file	application/pdf	a.pdf	BinHex
Container FileSpec	application/mac-binhex40	ftp://www.any.com/a.hqx	
5.) Single a.pdf PDF file with ZLIB compression in b.zip ZIP file (containing one or more files)	application/pdf	a.pdf	ZLIB
Container FileSpec	application/zip	ftp://www.any.com/b.zip	
6.) Single a.pdf PDF file compressed by Deflate in a b.zip with one or more files, and the b.zip packaging file itself is Base64 encoded as b.mme. To read, unencode, then uncompress. To write, compress, then encode.	application/pdf	a.pdf	Deflate
Container FileSpec	application/zip	b.zip	Base64

**Table N-1: Use Cases showing MimeType, URL and Compression Attribute Values (Sheet 2 of 2)**

Description of Use Case	Mime Type	URL	Compression
Container FileSpec	Base64	ftp://www.any.com/b.mme	
7.) Single myFiles/myPicture.jpg file in myNestedZip.zip file with one or many files, but the myNestedZip.zip is itself zipped into c.zip.	image/jpeg	myFiles/myPicture.jpg	Deflate
Container FileSpec	application/zip	myNestedZip.zip	Deflate
Container FileSpec	application/zip	ftp://www.any.com/c.zip	
8.) Single a.pdf PDF file which is ZLIB compressed, in a c.zip with one or many files which is contained in a tar file and compressed with ZLIB into a.tar.gz file.	application/pdf	a.pdf	ZLIB
Container FileSpec	application/zip	c.zip	
Container FileSpec	Tar <sup>a</sup>	d.tar	ZLIB
Container FileSpec	GZip	ftp://www.any.com/d.tar.gz	

a. The UNIX Tar file packaging format is not registered with IANA as a MIME media type, so CIP4 has assigned the “Tar” file type to it for use in the **FileSpec/@MimeType** Attribute.

## N.2 Corresponding XML examples

The above use case examples are represented in XML as follows:

### Example N-1: FileSpec #1

Single a.pdf PDF file, No Compression:

**TBD 2.x Example.**

```
<FileSpec Class="Parameter" ID="F1" Status="Available"
         MimeType="application/pdf" URL="ftp://www.any.com/share/a.pdf"/>
```

### Example N-2: FileSpec #2

Single a.pdf PDF file, with Gzip compression:

**TBD 2.x Example.**

```
<FileSpec Class="Parameter" ID="F1" Status="Available"
         Compression="Gzip" MimeType="application/pdf" URL="a.pdf">
         <Container>
           <FileSpec MimeType="Gzip" URL="ftp://www.any.com/a.gz">
         </Container>
</FileSpec>
```

### Example N-3: FileSpec #3

Single a.pdf PDF file, no compression, but Base64 encoded:

**TBD 2.x Example.**

```
<FileSpec Class="Parameter" ID="F1" Status="Available"
         Compression="Base64" MimeType="application/pdf" URL="a.pdf">
         <Container>
           <FileSpec MimeType="Base64" URL="ftp://www.any.com/a.mme">
         </Container>
```

```
</FileSpec>
```

### Example N-4: FileSpec #4

Single PDF file, no compression, but BinHex encoded:

TBD 2.x Example.

```
<FileSpec Class="Parameter" ID="F1" Status="Available"
    Compression="BinHex" MimeType="application/pdf" URL="a.pdf">
<Container>
    <FileSpec MimeType="application/mac-binhex40"
        URL="ftp://www.any.com/a.hqx"/>
</Container>
</FileSpec>
```

### Example N-5: FileSpec #5

Single a.pdf PDF file, in b.zip ZIP file containing one or more files:

TBD 2.x Example.

```
<FileSpec Class="Parameter" ID="F1" Status="Available"
    Compression="ZLIB" MimeType="application/pdf" URL="a.pdf">
<Container>
    <FileSpec MimeType="application/zip" URL="ftp://www.any.com/b.zip"/>
</Container>
</FileSpec>
```

### Example N-6: FileSpec #6

Single a.pdf PDF file, in a b.zip with one or more files, and the b.zip packaging file itself is Base64 encoded as b.mme. To read, decode, then decompress. To write, compress, then encode.

TBD 2.x Example.

```
<FileSpec Class="Parameter" ID="F1" Status="Available"
    Compression="Deflate" MimeType="application/pdf" URL="a.pdf">
<Container>
    <FileSpec Compression="Base64" MimeType="application/zip" URL="b.zip">
        <Container>
            <FileSpec MimeType="Base64" URL="ftp://www.any.com/b.mme"/>
        </Container>
    </FileSpec>
</Container>
</FileSpec>
```

### Example N-7: FileSpec #7

Single myFiles/myPicture.jpg file in myNestedZip.zip file with one or many files, but the myNestedZip.zip is itself zipped into c.zip

TBD 2.x Example.

```
<FileSpec Class="Parameter" ID="F1" Status="Available"
    Compression="Deflate" MimeType="image/jpeg" URL="myFiles/myPicture.jpg">
<Container>
    <FileSpec Compression="Deflate" MimeType="application/zip"
        URL="myNestedZip.zip">
        <Container>
            <FileSpec MimeType="application/zip"
                URL="ftp://www.any.com/c.zip"/>
        </Container>
    </FileSpec>
</Container>
```

```

        </FileSpec>
    </Container>
</FileSpec>
```

### Example N-8: FileSpec #8

Single a.pdf PDF file, which is ZLIB compressed in a c.zip with one or many files which is contained in a tar file and compressed with ZLIB into a.tar.gz file.:

**TBD 2.x Example.**

```

<FileSpec Class="Parameter" ID="F1" Status="Available"
    Compression="ZLIB" MimeType="application/pdf" URL="a.pdf">
<Container>
    <FileSpec MimeType="application/zip" URL="c.zip">
        <Container>
            <FileSpec Compression="ZLIB" MimeType="Tar" URL="d.tar">
                <Container>
                    <FileSpec MimeType="GZip"
                        URL="ftp://www.any.com/d.tar.gz"/>
                </Container>
            </FileSpec>
        </Container>
    </FileSpec>
</Container>
</FileSpec>
</FileSpec>
</Container>
</FileSpec>
</FileSpec>
</Container>
</FileSpec>
```

## N.3 Additional examples showing Partitioning of FileSpec

This section has additional examples of container files and various schemes of Partitioning.

### Example N-9: FileSpec #9

Package b.zip contains multiple pdf files a.pdf, b.pdf etc.

**TBD 2.x Example.**

```

<FileSpec Class="Parameter" Status="Available" ID="ID_002"
    MimeType="application/zip"
    URL="ftp://www.any.com/b.zip"/>
<FileSpec Class="Parameter" Status="Available" ID="A_FILE"
    Compression="Deflate" MimeType="application/pdf"
    URL="a.pdf">
<Container>
    <FileSpecRef rRef="ID_002"/>
</Container>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="B_FILE"
    Compression="Deflate" MimeType="application/pdf"
    URL="b.pdf">
<Container>
    <FileSpecRef rRef="ID_002"/>
</Container>
</FileSpec>
```

### Example N-10: FileSpec #10

Package b.zip contains two pdf files a.pdf, b.pdf and a tiff, c.tiff used by a Partitioned Resource

**TBD 2.x Example.**

```

<FileSpec Class="Parameter" Status="Available" ID="ID_003"
```

```

MimeType="application/zip" URL="ftp://www.any.com/b.zip"/>
<FileSpec Class="Parameter" Status="Available" ID="ALL_FILES"
    Compression="Deflate" MimeType="application/pdf"
    PartIDKeys="PartVersion">
<Container>
    <FileSpecRef rRef="ID_003"/>
</Container>
<FileSpec PartVersion="English" URL="a.pdf"/>
<FileSpec PartVersion="French" URL="b.pdf"/>
<FileSpec MimeType="application/tif" PartVersion="German" URL="c.tif"/>
</FileSpec>

```

### Example N-11: FileSpec #11

Single a.pdf PDF file, in b.zip which is contained in c.tar file:

TBD 2.x Example.

```

<FileSpec Class="Parameter" Status="Available" ID="ID_004_TAR" MimeType="Tar"
    URL="ftp://www.any.com/c.tar"/>
<FileSpec Class="Parameter" Status="Available" ID="ID_004_ZIP"
    MimeType="application/zip" URL="b.zip">
    <Container>
        <FileSpecRef rRef="ID_004_TAR"/>
    </Container>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="C_FILE"
    Compression="Deflate" MimeType="application/pdf" URL="a.pdf">
    <Container>
        <FileSpecRef rRef="ID_004_ZIP"/>
    </Container>
</FileSpec>

```

### Example N-12: FileSpec #11.1 — No Partitioning

Multiple files in several zip's contained in a tar file, various examples with and without Partitioning,

So the file layout looks like:

```

e.tar
  c.zip
    a.pdf
    b.pdf
  d.zip
    a.pdf
    b.pdf

```

TBD 2.x Example.

```

<FileSpec Class="Parameter" Status="Available" ID="ID_005_TAR"
    MimeType="Tar" URL="ftp://www.any.com/e.tar"/>
<FileSpec Class="Parameter" Status="Available" ID="ID_005_ZIP_C"
    MimeType="application/zip" URL="c.zip">
    <Container>
        <FileSpecRef rRef="ID_005_TAR"/>
    </Container>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="ID_005_ZIP_D"
    MimeType="application/zip" URL="d.zip">
    <Container>
        <FileSpecRef rRef="ID_005_TAR"/>
    </Container>

```

```

</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="A_ENGLISH_FILE"
    Compression="Deflate" MimeType="application/pdf"
    URL="a.pdf">
<Container>
    <FileSpecRef rRef="ID_005_ZIP_C"/>
</Container>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="B_ENGLISH_FILE"
    Compression="Deflate" MimeType="application/pdf"
    URL="b.pdf">
<Container>
    <FileSpecRef rRef="ID_005_ZIP_C"/>
</Container>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="A_GERMAN_FILE"
    Compression="Deflate" MimeType="application/pdf"
    URL="a.pdf">
<Container>
    <FileSpecRef rRef="ID_005_ZIP_D"/>
</Container>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="B_GERMAN_FILE"
    Compression="Deflate" MimeType="application/pdf"
    URL="b.pdf">
<Container>
    <FileSpecRef rRef="ID_005_ZIP_D"/>
</Container>
</FileSpec>

```

### Example N-13: FileSpec #11.2 — Intermediate container Partitioned

TBD 2.x Example.

```

<FileSpec Class="Parameter" Status="Available" ID="ID_005_TAR" MimeType="Tar"
    URL="ftp://www.any.com/e.tar"/>
<FileSpec Class="Parameter" Status="Available" ID="ID_005_ZIPS"
    MimeType="application/zip" PartIDKeys="PartVersion">
    <Container>
        <FileSpecRef rRef="ID_005_TAR"/>
    </Container>
    <FileSpec PartVersion="English" URL="c.zip"/>
    <FileSpec PartVersion="German" URL="d.zip"/>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="A_ENGLISH_FILE"
    Compression="Deflate" MimeType="application/pdf"
    URL="a.pdf">
    <Container>
        <FileSpecRef rRef="ID_005_ZIPS">
            <Part PartVersion="English"/>
        </FileSpecRef>
    </Container>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="B_ENGLISH_FILE"
    Compression="Deflate" MimeType="application/pdf"
    URL="b.pdf">
    <Container>
        <FileSpecRef rRef="ID_005_ZIPS">
            <Part PartVersion="English"/>
        </FileSpecRef>
    </Container>

```

```

</Container>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="A_GERMAN_FILE"
    Compression="Deflate" MimeType="application/pdf"
    URL="a.pdf">
<Container>
    <FileSpecRef rRef="ID_005_ZIPS">
        <Part PartVersion="German"/>
    </FileSpecRef>
</Container>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="B_GERMAN_FILE"
    Compression="Deflate" MimeType="application/pdf"
    URL="b.pdf">
<Container>
    <FileSpecRef rRef="ID_005_ZIPS">
        <Part PartVersion="German"/>
    </FileSpecRef>
</Container>
</FileSpec>

```

### Example N-14: FileSpec #11.3 — the pdf is Partitioned

TBD 2.x Example.

```

<FileSpec Class="Parameter" Status="Available" ID="ID_005_TAR"
    MimeType="Tar" URL="ftp://www.any.com/e.tar"/>
<FileSpec Class="Parameter" Status="Available" ID="ID_005_ZIP_C"
    MimeType="application/zip" URL="c.zip">
<Container>
    <FileSpecRef rRef="ID_005_TAR"/>
</Container>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="ID_005_ZIP_D"
    MimeType="application/zip" URL="d.zip">
<Container>
    <FileSpecRef rRef="ID_005_TAR"/>
</Container>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="ALL_FILES"
    Compression="Deflate" PartIDKeys="PartVersion DocIndex">
    <!-- English Files -->
    <FileSpec PartVersion="English">
        <Container>
            <FileSpecRef rRef="ID_005_ZIP_C"/>
        </Container>
        <!-- English File A -->
        <FileSpec DocIndex="1" MimeType="application/pdf" URL="a.pdf"/>
        <!-- English File B -->
        <FileSpec DocIndex="2" MimeType="application/pdf" URL="b.pdf"/>
    </FileSpec>
    <!-- German Files -->
    <FileSpec PartVersion="German">
        <Container>
            <FileSpecRef rRef="ID_005_ZIP_D"/>
        </Container>
        <!-- German File A -->
        <FileSpec DocIndex="1" MimeType="application/pdf" URL="a.pdf"/>
        <!-- German File B -->
    </FileSpec>

```

```

<FileSpec DocIndex="2" MimeType="application/pdf" URL="b.pdf"/>
</FileSpec>
</FileSpec>

```

### Example N-15: FileSpec #11.3a — the pdf is Partitioned, Different File Layout

As above but the file layout is not reflected in the container structure, the files are intermingled

TBD 2.x Example.

```

<FileSpec Class="Parameter" Status="Available" ID="ID_005_TAR"
          MimeType="Tar" URL="ftp://www.any.com/e.tar"/>
<FileSpec Class="Parameter" Status="Available" ID="ID_005_ZIP_C"
          MimeType="application/zip" URL="c.zip">
    <Container>
        <FileSpecRef rRef="ID_005_TAR"/>
    </Container>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="ID_005_ZIP_D"
          MimeType="application/zip" URL="d.zip">
    <Container>
        <FileSpecRef rRef="ID_005_TAR"/>
    </Container>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="ALL_FILES"
          Compression="Deflate" MimeType="application/pdf"
          PartIDKeys="PartVersion DocIndex">
    <!-- English Files -->
    <FileSpec PartVersion="English">
        <!-- English File A -->
        <FileSpec DocIndex="1" URL="a.pdf">
            <Container>
                <FileSpecRef rRef="ID_005_ZIP_C"/>
            </Container>
        </FileSpec>
        <!-- English File B -->
        <FileSpec DocIndex="2" URL="a.pdf">
            <Container>
                <FileSpecRef rRef="ID_005_ZIP_D"/>
            </Container>
        </FileSpec>
    </FileSpec>
    <!-- German Files -->
    <FileSpec PartVersion="German">
        <!-- German File A -->
        <FileSpec DocIndex="1" URL="b.pdf">
            <Container>
                <FileSpecRef rRef="ID_005_ZIP_C"/>
            </Container>
        </FileSpec>
        <!-- German File B -->
        <FileSpec DocIndex="2" URL="b.pdf">
            <Container>
                <FileSpecRef rRef="ID_005_ZIP_D"/>
            </Container>
        </FileSpec>
    </FileSpec>
</FileSpec>

```

## Example N-16: FileSpec #11.4 — Both Partitioned

TBD 2.x Example.

```

<FileSpec Class="Parameter" Status="Available" ID="ID_005_TAR" MimeType="Tar"
          URL="ftp://www.any.com/e.tar"/>
<FileSpec ID="ID_005_ZIPS" MimeType="application/zip"
          PartIDKeys="PartVersion">
  <Container>
    <FileSpecRef rRef="ID_005_TAR"/>
  </Container>
  <FileSpec PartVersion="English" URL="c.zip"/>
  <FileSpec PartVersion="German" URL="d.zip"/>
</FileSpec>
<FileSpec Compression="Deflate" ID="ALL_FILES"
            PartIDKeys="PartVersion DocIndex">
  <!-- English Files -->
  <FileSpec PartVersion="English">
    <Container>
      <FileSpecRef rRef="ID_005_ZIPS">
        <Part PartVersion="English"/>
      </FileSpecRef>
    </Container>
    <!-- English File A -->
    <FileSpec DocIndex="1" MimeType="application/pdf" URL="a.pdf"/>
    <!-- English File B -->
    <FileSpec DocIndex="2" MimeType="application/pdf" URL="b.pdf"/>
  </FileSpec>
  <!-- German Files -->
  <FileSpec PartVersion="German">
    <Container>
      <FileSpecRef rRef="ID_005_ZIPS">
        <Part PartVersion="German"/>
      </FileSpecRef>
    </Container>
    <!-- German File A -->
    <FileSpec DocIndex="1" MimeType="application/pdf" URL="a.pdf"/>
    <!-- German File B -->
    <FileSpec DocIndex="2" MimeType="application/pdf" URL="b.pdf"/>
  </FileSpec>
</FileSpec>

```

## Example N-17: FileSpec #12

Multiple PDF and TIFF files in several zip's contained in a tar file. Use all PDF files in c.zip, using the **FileSpec/@FileFormat** mechanism and just Pictures/TIFS/a.pdf in d.zip. File layout looks like:

```

e.tar
  c.zip
    a.pdf
    a.tif
    b.pdf
    b.tif
  d.zip
    PDFS/a.pdf
    PDFS/b.pdf
    Pictures/TIFS/a.pdf
    Pictures/TIFS/b.pdf

```

**TBD 2.x Example.**

```

<FileSpec Class="Parameter" Status="Available" ID="ID_005_TAR" MimeType="Tar"
          URL="ftp://www.any.com/e.tar"/>
<FileSpec Class="Parameter" Status="Available" ID="ID_005_ZIP_C"
          MimeType="application/zip" URL="c.zip">
    <Container>
        <FileSpecRef rRef="ID_005_TAR"/>
    </Container>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="ID_005_ZIP_D"
          MimeType="application/zip" URL="d.zip">
    <Container>
        <FileSpecRef rRef="ID_005_TAR"/>
    </Container>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="PDF_FILES"
          Compression="Deflate" FileFormat="%s.pdf" FileTemplate="all"
          MimeType="application/pdf">
    <Container>
        <FileSpecRef rRef="ID_005_ZIP_C"/>
    </Container>
</FileSpec>
<FileSpec Class="Parameter" Status="Available" ID="Pictures"
          Compression="Deflate" URL="Pictures/TIFS/a.pdf">
    <Container>
        <FileSpecRef rRef="ID_005_ZIP_D"/>
    </Container>
</FileSpec>

```

## N.4 Example of an Intent Job Ticket with a doubly nested ZIP packaging file

Here is a complete example of an intent Job ticket using **ArtDeliveryIntent DeliveryParams** with a doubly nested packaging file. The example shows a myPictures.jpg file that is contained in myNestedZip.zip file which is contained in myZip.zip file:

### Example N-18: Intent Job Ticket

**TBD 2.x Example.**

```

<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="FileSpecProposal01" JobID="bookJob"
      JobPartID="bookJob-1" Status="Waiting" Type="Product" Version="1.4">
    <ResourcePool>
        <ArtDeliveryIntent Class="Intent" ID="FileSpecProposal02" Status="Draft">
            <ArtDelivery ArtDeliveryType="DigitalMedia">
                <RunListRef rRef="FileSpecProposal05"/>
            </ArtDelivery>
        </ArtDeliveryIntent>
        <RunList ID="FileSpecProposal05" Class="Parameter" Status="Available">
            <LayoutElement>
                <FileSpec Compression="Deflate" MimeType="image/jpeg"
                           URL="myFiles/myPicture.jpg">
                    <Container>
                        <FileSpecRef rRef="ID_002"/>
                    </Container>
                </FileSpec>
            </LayoutElement>
        </RunList>
    
```

```

<Component Amount="100" Class="Quantity" ComponentType="FinalProduct"
    DescriptiveName="FileSpec Test" ID="FileSpecProposal03"
    Status="Unavailable"/>
<FileSpec Class="Parameter" Status="Available" ID="ID_001"
    MimeType="application/zip" URL="http://www.CIP4.org/myZip.zip"/>
<FileSpec Class="Parameter" Status="Available" Compression="Deflate"
    ID="ID_002" MimeType="application/zip" URL="myNestedZip.zip">
    <Container>
        <FileSpecRef rRef="ID_001"/>
    </Container>
</FileSpec>
</ResourcePool>
<ResourceLinkPool>
    <ComponentLink Amount="100" Usage="Output" rRef="FileSpecProposal03"/>
    <ArtDeliveryIntentLink Usage="Input" rRef="FileSpecProposal02"/>
</ResourceLinkPool>
</JDF>

```

## N.5 AppOS and OSVersion Attributes

New in JDF 1.2

This section lists examples values for the following Attributes of the **FileSpec** Resource: **@AppOS** and **@OSVersion**. The listing is intended to be exhaustive for the most likely operating systems that are routinely used in **JDF XJDF** applications. However, other operating systems and combinations MAY be used as well. When operating systems have new versions, they can be used and SHOULD follow the patterns established in this the following table.

Table N-2: AppOS and OSVersion Examples

AppOS	OSVersion	Description
Linux	2.2	Linux operation system
Mac	10.2.4	Macintosh operation system
Solaris	4.0	Sun Solaris operation system
UNIX	BSD	Berkeley UNIX
UNIX	V	System V UNIX
UNIX	V.1	System V UNIX
UNIX	V.2	System V UNIX
UNIX	V.3	System V UNIX
UNIX	PC	UNIX for the PC
Windows	95	Windows 95
Windows	98	Windows 98
Windows	NT	Windows NT
Windows	NT-5	Windows 2000
Windows	NT-5.1	XP [not yet registered by Microsoft with IANA]



# Appendix O Examples

Note that these examples were generated using prototype tools and are intended to be used for general overview only. The emphasis is **not** on the individual bytes (e.g., capitalization or exact keywords). Normative examples will be provided at <http://www.CIP4.org> when available.

**Note:** pay special attention to **JDF XJDF** tags that are **orange** and/or **JDF XJDF** attribute names that are **magenta**.

## O.1 Brief Example

### O.1.1 Before and After Processing

#### Example O-1: Before Processing

This is a simple example of a **JDF** an **XJDF** that describes color conversion for one file.

TBD 2.x Example.

```
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="ColorTest" JobID="ColorJob"
      JobPartID="ID34" Status="Waiting" Type="ColorSpaceConversion"
      Version="1.4">
  <ResourcePool>
    <RunList Class="Parameter" ID="Link0003" Pages="0 ~ -1"
             Status="Available">
      <LayoutElement>
        <FileSpec URL="File:///in/colortest.pdf"/>
      </LayoutElement>
    </RunList>
    <ColorSpaceConversionParams Class="Parameter" ID="Link0004"
                                 Status="Available">
      <FileSpec ResourceUsage="FinalTargetDevice"
                URL="File:///SMProcessCMYK.icc"/>
      <ColorSpaceConversionOp Operation="Convert"
                               RenderingIntent="Perceptual" SourceCS="RGB"
                               SourceObjects="ImagePhotographic ImageScreenShot SmoothShades">
        <FileSpec ResourceUsage="SourceProfile" URL="File:///image.icc"/>
      </ColorSpaceConversionOp>
      <ColorSpaceConversionOp Operation="Convert"
                               RenderingIntent="Perceptual" SourceCS="RGB"
                               SourceObjects="Text LineArt">
        <FileSpec ResourceUsage="SourceProfile" URL="File:///text.icc"/>
      </ColorSpaceConversionOp>
    </ColorSpaceConversionParams>
    <ColorPool Class="Parameter" ID="Link0005" Status="Available">
      <Color CMYK="1 0 0 0" Name="Cyan"/>
      <Color CMYK="0 1 0 0" Name="Magenta"/>
      <Color CMYK="0 0 1 0" Name="Yellow"/>
      <Color CMYK="0 0 0 1" Name="Black"/>
      <Color CMYK="0.8 0.8 0 0" Name="Blue"/>
    </ColorPool>
    <ColorantControl Class="Parameter" ID="Link0006"
                     ProcessColorModel="DeviceCMYK"
                     Status="Available">
      <ColorPoolRef rRef="Link0005"/>
    </ColorantControl>
    <RunList Class="Parameter" ID="Link0007" Pages="0 ~ -1"
             Status="Unavailable">
      <LayoutElement>
        <FileSpec URL="File:///out/colortest.pdf"/>
      </LayoutElement>
    </RunList>
  </ResourcePool>
</JDF>
```

```

        </LayoutElement>
    </RunList>
</ResourcePool>
<ResourceLinkPool>
    <RunListLink Usage="Input" rRef="Link0003"/>
    <ColorSpaceConversionParamsLink Usage="Input" rRef="Link0004"/>
    <ColorantControlLink Usage="Input" rRef="Link0006"/>
    <RunListLink Usage="Output" rRef="Link0007"/>
</ResourceLinkPool>
<AuditPool>
    <Created AgentName="Rainer's JDFWriter 0.2000"
        TimeStamp="2005-06-01T10:26:11+01:00"/>
</AuditPool>
</JDF>

```

### Example O-2: After Processing

This is a simple example of a **JDF** an **XJDF** that describes color conversion for one file after the color conversion process has been executed.

**TBD 2.x Example:**

```

<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="ColorTest" JobID="ColorJob"
    Status="Completed" Type="ColorSpaceConversion"
    JobPartID="ID234" Version="1.4">
    <ResourcePool>
        <RunList Class="Parameter" ID="Link0003" Pages="0 ~ -1"
            Status="Available">
            <LayoutElement>
                <FileSpec URL="File:///in/colortest.pdf"/>
            </LayoutElement>
        </RunList>
        <ColorSpaceConversionParams Class="Parameter" ID="Link0004" Status="Available">
            <FileSpec ResourceUsage="FinalTargetDevice"
                URL="File:///SMProcessCMYK.icc"/>
            <ColorSpaceConversionOp Operation="Convert"
                RenderingIntent="Perceptual" SourceCS="RGB"
                SourceObjects="ImagePhotographic ImageScreenShot SmoothShades">
                <FileSpec ResourceUsage="SourceProfile" URL="File:///image.icc"/>
            </ColorSpaceConversionOp>
            <ColorSpaceConversionOp Operation="Convert"
                RenderingIntent="Perceptual" SourceCS="RGB"
                SourceObjects="Text LineArt">
                <FileSpec ResourceUsage="SourceProfile" URL="File:///text.icc"/>
            </ColorSpaceConversionOp>
        </ColorSpaceConversionParams>
        <ColorPool Class="Parameter" ID="Link0005" Status="Available">
            <Color CMYK="1 0 0 0" Name="Cyan"/>
            <Color CMYK="0 1 0 0" Name="Magenta"/>
            <Color CMYK="0 0 1 0" Name="Yellow"/>
            <Color CMYK="0 0 0 1" Name="Black"/>
            <Color CMYK="0.8 0.8 0 0" Name="Blue"/>
        </ColorPool>
        <ColorantControl Class="Parameter" ID="Link0006"
            ProcessColorModel="DeviceCMYK"
            Status="Available">
            <ColorPoolRef rRef="Link0005"/>
        </ColorantControl>
        <RunList Class="Parameter" ID="Link0007" Pages="0 ~ -1">
    </ResourcePool>

```

```

        Status="Available">
      <LayoutElement>
        <FileSpec URL="File:///out/colortest.pdf"/>
      </LayoutElement>
    </RunList>
  </ResourcePool>
<ResourceLinkPool>
  <RunListLink Usage="Input" rRef="Link0003"/>
  <ColorSpaceConversionParamsLink Usage="Input" rRef="Link0004"/>
  <ColorantControlLink Usage="Input" rRef="Link0006"/>
  <RunListLink Usage="Output" rRef="Link0007"/>
</ResourceLinkPool>
<AuditPool>
  <Created AgentName="Rainer's JDFWriter 0.2000"
   TimeStamp="2005-06-01T10:26:11+01:00"/>
  <Modified AgentName="EatJDF Complete: task=*>
   TimeStamp="2005-06-01T10:26:57+01:00"/>
  <PhaseTime End="2005-06-01T10:26:57+01:00"
    Start="2005-06-01T10:26:57+01:00"
    Status="Setup"
   TimeStamp="2005-06-01T10:26:57+01:00"/>
  <PhaseTime End="2005-06-01T10:26:57+01:00"
    Start="2005-06-01T10:26:57+01:00"
    Status="InProgress"
   TimeStamp="2005-06-01T10:26:57+01:00"/>
  <PhaseTime End="2005-06-01T10:26:57+01:00"
    Start="2005-06-01T10:26:57+01:00"
    Status="Cleanup"
   TimeStamp="2005-06-01T10:26:57+01:00"/>
  <ProcessRun End="2005-06-01T10:26:57+01:00"
    EndStatus="Completed"
    Start="2005-06-01T10:26:57+01:00"
   TimeStamp="2005-06-01T10:26:57+01:00"/>
</AuditPool>
</JDF>
```

## O.2 Product JDF XJDF

### Example O-3: Product JDF XJDF

The following example describe a pair of college textbooks, one teachers edition and one students edition as Product Intent. Most Intent Resources are intentionally left empty.

TBD 2.x Example.

```

<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1" ID="bookTest" JobID="bookJob"
  Status="Waiting" JobPartID="ID455" Type="Product" Version="1.4">
  <ResourcePool>
    <Component Amount="100" Class="Quantity" DescriptiveName="Teacher's Book"
      ID="Link0003" Status="Unavailable" ComponentType="Sheet"/>
    <Component Amount="2000" Class="Quantity" DescriptiveName="Cover" ID="Link0005"
      Status="Unavailable" ComponentType="Sheet">
      <!--This cover is reused by both-->
    </Component>
    <LayoutIntent Class="Intent" ID="Link0006" Status="Available">
      <Dimensions DataType="XYPairSpan" Preferred="612 792"
        Range="576 756 ~ 648 828"/>
    </LayoutIntent>
```

```

<LayoutIntent Class="Intent" ID="Link0008" Status="Available">
    <Dimensions DataType="XYPairSpan" Preferred="612 792"
        Range="576 756 ~ 648 828"/>
    <Pages DataType="IntegerSpan" Preferred="240"/>
</LayoutIntent>
<Component Amount="1000" Class="Quantity" DescriptiveName="Student's Book"
    ID="Link0011" Status="Unavailable" ComponentType="Sheet">
    <!--Students Book Intent-->
</Component>
<LayoutIntent Class="Intent" ID="Link0014" Status="Available">
    <Dimensions DataType="XYPairSpan" Preferred="612 792"
        Range="576 756 ~ 648 828"/>
    <Pages DataType="IntegerSpan" Preferred="198"/>
</LayoutIntent>
</ResourcePool>
<AuditPool>
    <Created AgentName="Rainer's JDFWriter 0.2000"
       TimeStamp="2000-11-01T12:46:56+01:00"/>
</AuditPool>
<ResourceLinkPool>
    <ComponentLink Amount="1000" Usage="Output" rRef="Link0011"/>
</ResourceLinkPool>
<JDF DescriptiveName="Teacher's Edition" ID="Link0002" JobPartID="0"
    Status="Waiting" Type="Product">
    <ResourcePool>
        <Component Amount="100" Class="Quantity" DescriptiveName="Insert"
            ID="Link0009" Status="Unavailable" ComponentType="Sheet"/>
    </ResourcePool>
    <ResourceLinkPool>
        <ComponentLink Amount="100" Usage="Output" rRef="Link0003"/>
        <ComponentLink Amount="100" Usage="Input" rRef="Link0009"/>
        <ComponentLink Amount="100" Usage="Input" rRef="Link0005"/>
    </ResourceLinkPool>
    <JDF DescriptiveName="Teacher's Insert" ID="Link0007" JobPartID="2"
        Status="Waiting" Type="Product">
        <ResourceLinkPool>
            <LayoutIntentLink Usage="Input" rRef="Link0008"/>
            <ComponentLink Amount="100" Usage="Output" rRef="Link0009"/>
        </ResourceLinkPool>
    </JDF>
</JDF>
<JDF DescriptiveName="Cover" ID="Link0004" JobPartID="1" Status="Waiting"
    Type="Product">
    <ResourceLinkPool>
        <ComponentLink Amount="2000" Usage="Output" rRef="Link0005"/>
        <LayoutIntentLink Usage="Input" rRef="Link0006"/>
    </ResourceLinkPool>
</JDF>
<JDF DescriptiveName="Student's Edition" ID="Link0010" JobPartID="3"
    Status="Waiting" Type="Product">
    <ResourcePool>
        <Component Amount="1000" Class="Quantity" DescriptiveName="Insert"
            ID="Link0013" Status="Unavailable" ComponentType="Sheet"/>
    </ResourcePool>
    <ResourceLinkPool>
        <ComponentLink Amount="1000" Usage="Output" rRef="Link0011"/>
        <ComponentLink Amount="1000" Usage="Input" rRef="Link0013"/>
        <ComponentLink Amount="1000" Usage="Input" rRef="Link0005"/>
    </ResourceLinkPool>

```

```

</ResourceLinkPool>
<JDF DescriptiveName="Student's Insert" ID="Link0012" JobPartID="4"
      Status="Waiting" Type="Product">
  <ResourceLinkPool>
    <ComponentLink Amount="1000" Usage="Output" rRef="Link0013"/>
    <LayoutIntentLink Usage="Input" rRef="Link0014"/>
  </ResourceLinkPool>
</JDF>
</JDF>
</JDF>

```

## O.3 Spawning and Merging

The following set of examples show a JDF an XJDF Job in the relevant stages of spawning and merging. One example defines a simple brochure with a cover and an insert. The Node in green emphasis, which defines the cover, is spawned, modified, and subsequently merged. Elements in red emphasis represent metadata that apply to spawning and merging.

### Example O-4: 2-Component JDF XJDF before Spawning

The following JDF XJDF file describes a two-component brochure. The Resources are not fleshed out.

**Note:** pay special attention to JDF XJDF tags that are orange and/or JDF XJDF attribute names that are magenta.

#### TBD 2.x Example

```

<JDF ID="SpawnTest" Type="Product" xmlns="http://www.CIP4.org/JDFSchema_1_1"
      Status="Waiting" Version="1.4" JobPartID="Part1">
  <AuditPool>
    <Created AgentName="CIP4 JDFWriter 1.0.1 beta"
             TimeStamp="2002-04-05T15:27:58+02:00"/>
  </AuditPool>
  <ResourcePool>
    <Component ID="r0043" Class="Quantity" Amount="10000"
               Status="Unavailable" ComponentType="Sheet" />
    <BindingIntent ID="r0044" Class="Intent" Status="Available">
      <BindingType Range="SaddleStitch" DataType="EnumerationSpan"/>
    </BindingIntent>
    <ProductionIntent ID="r0045" Class="Intent" Status="Available">
      <PrintProcess Range="Gravure" DataType="EnumerationSpan"/>
    </ProductionIntent>
    <Component ID="r0047" Class="Quantity" Status="Unavailable"
               ComponentType="Sheet" />
    <Component ID="r0051" Class="Quantity" Status="Unavailable"
               ComponentType="Sheet" />
  </ResourcePool>
  <ResourceLinkPool>
    <ComponentLink rRef="r0043" Usage="Output"/>
    <BindingIntentLink rRef="r0044" Usage="Input"/>
    <ProductionIntentLink rRef="r0045" Usage="Input"/>
    <ComponentLink rRef="r0047" Usage="Input"/>
    <ComponentLink rRef="r0051" Usage="Input"/>
  </ResourceLinkPool>
  <JDF ID="n0046" Type="Product" Status="Waiting" JobPartID="Part2"
        DescriptiveName="Cover">
    <ResourceLinkPool>
      <ComponentLink rRef="r0047" Usage="Output"/>
      <LayoutIntentLink rRef="r0048" Usage="Input"/>
    </ResourceLinkPool>
  </JDF>
</JDF>

```

```

        <ColorIntentLink rRef="r0049" Usage="Input"/>
    </ResourceLinkPool>
    <ResourcePool>
        <LayoutIntent ID="r0048" Class="Intent" Status="Available"/>
        <ColorIntent ID="r0049" Class="Intent" Status="Available"/>
    </ResourcePool>
</JDF>
<JDF ID="n0050" Type="Product" Status="Waiting" JobPartID="Part3"
      DescriptiveName="Insert">
    <ResourceLinkPool>
        <ComponentLink rRef="r0051" Usage="Output"/>
        <LayoutIntentLink rRef="r0052" Usage="Input"/>
        <ColorIntentLink rRef="r0053" Usage="Input"/>
    </ResourceLinkPool>
    <ResourcePool>
        <LayoutIntent ID="r0052" Class="Intent" Status="Available"/>
        <ColorIntent ID="r0053" Class="Intent" Status="Available"/>
    </ResourcePool>
</JDF>
</JDF>

```

### Example O-5: 2-Component JDF Parent after Spawning the Cover Node

The following JDF is the parent JDF after spawning. The **Component** that describes the cover is marked as "SpawnerRW", since it was copied into the spawned Node and can be modified. A Spawner Audit was inserted into the Cover Nodes parent's AuditPool, and the Spawner Node itself has a @Status of "Spawner".

TBD 2.x Example.

```

<JDF ID="SpawnTest" Type="Product" xmlns="http://www.CIP4.org/JDFSchema_1_1"
      Status="Waiting" Version="1.4" JobPartID="Part1">
    <AuditPool>
        <Created AgentName="CIP4 JDFWriter 1.0.1 beta"
                 TimeStamp="2002-04-05T15:27:58+02:00"/>
        <Spawned URL="File:///spawn.jdf" jRef="n0046"
                 TimeStamp="2002-04-05T15:34:43+02:00"
                  NewSpawnID="Sp0057" rRefsRWCopied="r0047"/>
    </AuditPool>
    <ResourcePool>
        <Component ID="r0043" Class="Quantity" Amount="10000"
                  Status="Unavailable" ComponentType="Sheet" />
        <BindingIntent ID="r0044" Class="Intent" Status="Available">
            <BindingType Range="SaddleStitch" DataType="EnumerationSpan"/>
        </BindingIntent>
        <ProductionIntent ID="r0045" Class="Intent" Status="Available">
            <PrintProcess Range="Gravure" DataType="NameSpan"/>
        </ProductionIntent>
        <Component ID="r0047" Class="Quantity" Status="Unavailable"
                  ComponentType="Sheet" SpawnIDs="Sp0057" SpawnStatus="SpawnerRW" />
        <Component ID="r0051" Class="Quantity" Status="Unavailable"
                  ComponentType="Sheet" />
    </ResourcePool>
    <ResourceLinkPool>
        <ComponentLink rRef="r0043" Usage="Output"/>
        <BindingIntentLink rRef="r0044" Usage="Input"/>
        <ProductionIntentLink rRef="r0045" Usage="Input"/>
        <ComponentLink rRef="r0047" Usage="Input"/>
        <ComponentLink rRef="r0051" Usage="Input"/>
    </ResourceLinkPool>

```

```

<JDF ID="n0046" Type="Product" Status="Spawned" JobPartID="Part2"
      DescriptiveName="Cover">
  <ResourceLinkPool>
    <ComponentLink rRef="r0047" Usage="Output"/>
    <LayoutIntentLink rRef="r0048" Usage="Input"/>
    <ColorIntentLink rRef="r0049" Usage="Input"/>
  </ResourceLinkPool>
  <ResourcePool>
    <LayoutIntent ID="r0048" Class="Intent" Status="Available"
                  SpawnIDs="Sp0057" SpawnStatus="SpawnedRO"/>
    <ColorIntent ID="r0049" Class="Intent" Status="Available"
                  SpawnIDs="Sp0057" SpawnStatus="SpawnedRO"/>
  </ResourcePool>
</JDF>
<JDF ID="n0050" Type="Product" Status="Waiting" JobPartID="Part3"
      DescriptiveName="Insert">
  <ResourceLinkPool>
    <ComponentLink rRef="r0051" Usage="Output"/>
    <LayoutIntentLink rRef="r0052" Usage="Input"/>
    <ColorIntentLink rRef="r0053" Usage="Input"/>
  </ResourceLinkPool>
  <ResourcePool>
    <LayoutIntent ID="r0052" Class="Intent" Status="Available"/>
    <ColorIntent ID="r0053" Class="Intent" Status="Available"/>
  </ResourcePool>
</JDF>
</JDF>

```

### Example O-6: 2-Component JDF Spawning Node

The **Component** that represents the cover was copied into the spawned Node, since it is the Output Resource. It is not locked, since it was spawned in RW mode. The existence of an **AncestorPool** denotes the Node as spawned and defines the parent Node

TBD 2.x Example.

```

<JDF ID="n0046" Type="Product" xmlns="http://www.CIP4.org/JDFSchema_1_1"
      Status="Waiting" SpawnID="Sp0057" Version="1.4" JobPartID="Part2"
      DescriptiveName="Cover">
  <AuditPool>
    <Created AgentName="CIP4 JDFWriter 1.0.1 beta"
             TimeStamp="2002-04-05T15:34:43+02:00"/>
  </AuditPool>
  <ResourceLinkPool>
    <ComponentLink rRef="r0047" Usage="Output"/>
    <LayoutIntentLink rRef="r0048" Usage="Input"/>
    <ColorIntentLink rRef="r0049" Usage="Input"/>
  </ResourceLinkPool>
  <ResourcePool>
    <LayoutIntent ID="r0048" Class="Intent" Status="Available"/>
    <ColorIntent ID="r0049" Class="Intent" Status="Available"/>
    <Component ID="r0047" Class="Quantity" Status="Available"
               ComponentType="Sheet" SpawnIDs="Sp0057"/>
  </ResourcePool>
  <AncestorPool>
    <Ancestor NodeID="SpawnTest" FileName="testjdf4.jdf"/>
  </AncestorPool>
</JDF>

```

### Example O-7: 2-Component JDF XJDF after Merging

In this example, it is assumed that the cover output component was created by some processor that processed the spawned Node. This resulted in the **Component** becoming available. The **Component** was also removed from the copy of the spawned Node, since it would otherwise exist twice.

#### TBD 2.x Example:

```
<JDF ID="SpawnTest" Type="Product" xmlns="http://www.CIP4.org/JDFSchema_1_1"
      Status="Waiting" Version="1.4" JobPartID="Part1">
  <AuditPool>
    <Created AgentName="CIP4 JDFWriter 1.0.1 beta"
              TimeStamp="2002-04-05T15:27:58+02:00"/>
    <Spawned URL="File:///spawn.jdf" jRef="n0046"
              TimeStamp="2002-04-05T15:34:43+02:00"
              NewSpawnID="Sp0057" rRefsRWCopied="r0047"/>
    <Merged URL="File:///spawn.jdf" jRef="n0046" MergeID="Sp0057"
              TimeStamp="2002-04-05T15:40:20+02:00" rRefsOverwritten="r0047"/>
  </AuditPool>
  <ResourcePool>
    <Component ID="r0043" Class="Quantity" Amount="10000"
               ComponentType="Sheet" Status="Unavailable"/>
    <BindingIntent ID="r0044" Class="Intent" Status="Available">
      <BindingType Actual="SoftCover" DataType="EnumerationSpan"/>
    </BindingIntent>
    <ProductionIntent ID="r0045" Class="Intent" Status="Available">
      <PrintProcess Range="Gravure" DataType="EnumerationSpan"/>
    </ProductionIntent>
    <Component ID="r0047" Class="Quantity" ComponentType="Sheet"
               Status="Available"/>
    <Component ID="r0051" Class="Quantity" ComponentType="Sheet"
               Status="Unavailable"/>
  </ResourcePool>
  <ResourceLinkPool>
    <ComponentLink rRef="r0043" Usage="Output"/>
    <BindingIntentLink rRef="r0044" Usage="Input"/>
    <ProductionIntentLink rRef="r0045" Usage="Input"/>
    <ComponentLink rRef="r0047" Usage="Input"/>
    <ComponentLink rRef="r0051" Usage="Input"/>
  </ResourceLinkPool>
  <JDF ID="n0046" Type="Product" xmlns="http://www.CIP4.org/JDFSchema_1_1"
        Status="Waiting" Version="1.4" JobPartID="Part2"
        DescriptiveName="Cover">
    <AuditPool>
      <Created AgentName="CIP4 JDFWriter 1.0.1 beta"
                  TimeStamp="2002-04-05T15:34:43+02:00"/>
    </AuditPool>
    <ResourceLinkPool>
      <ComponentLink rRef="r0047" Usage="Output"/>
      <LayoutIntentLink rRef="r0048" Usage="Input"/>
      <ColorIntentLink rRef="r0049" Usage="Input"/>
    </ResourceLinkPool>
    <ResourcePool>
      <LayoutIntent ID="r0048" Class="Intent" Status="Available"/>
      <ColorIntent ID="r0049" Class="Intent" Status="Available"/>
    </ResourcePool>
  </JDF>
  <JDF ID="n0050" Type="Product" Status="Waiting" JobPartID="Part3"
        DescriptiveName="Insert">
```

```

<ResourceLinkPool>
    <ComponentLink rRef="r0051" Usage="Output"/>
    <LayoutIntentLink rRef="r0052" Usage="Input"/>
    <ColorIntentLink rRef="r0053" Usage="Input"/>
</ResourceLinkPool>
<ResourcePool>
    <LayoutIntent ID="r0052" Class="Intent" Status="Available"/>
    <ColorIntent ID="r0053" Class="Intent" Status="Available"/>
</ResourcePool>
</JDF>
</JDF>

```

### Example O-8: Partitioned ImageSetting Node before Spawning

The following example shows a simple *ImageSetting* Node that is Partitioned by *@Separation*. The Resources are not filled with data. The Input Resources are "Available".

TBD 2.x Example.

```

<JDF ID="n20020701190951" Type="ImageSetting"
      xmlns="http://www.CIP4.org/JDFSchema_1_1"
      Status="Waiting" JobPartID="ID777" Version="1.4">
    <ResourcePool>
        <ImageSetterParams ID="r0052" Class="Parameter" Locked="false"
                           Status="Available"/>
        <Media ID="r0053" Class="Consumable" Locked="false" Status="Available"/>
        <ExposedMedia ID="r0054" Class="Handling" Locked="false" Status="Unavailable"
                      PartIDKeys="Separation">
            <MediaRef rRef="r0053"/>
            <ExposedMedia Separation="Cyan"/>
            <ExposedMedia Separation="Magenta"/>
            <ExposedMedia Separation="Yellow"/>
            <ExposedMedia Separation="Black"/>
        </ExposedMedia>
        <RunList ID="r0055" Class="Parameter" Locked="false" Status="Available"/>
    </ResourcePool>
    <ResourceLinkPool>
        <ImageSetterParamsLink rRef="r0052" Usage="Input"/>
        <MediaLink rRef="r0053" Usage="Input"/>
        <ExposedMediaLink rRef="r0054" Usage="Output"/>
        <RunListLink rRef="r0055" Usage="Input"/>
    </ResourceLinkPool>
</JDF>

```

### Example O-9: Spawed Cyan Partition of the ImageSetting Node

The following example shows the spawned Cyan Partition of the *ImageSetting* Node from the previous example.

```

<JDF ID="n20020701190951" Type="ImageSetting"
      xmlns="http://www.CIP4.org/JDFSchema_1_1" Status="Waiting" SpawnID="Sp0059"
      JobPartID="ID467" Version="1.4">
    <AuditPool/>
    <ResourcePool>
        <ImageSetterParams ID="r0052" Class="Parameter" Locked="true"
                           Status="Available"/>
        <Media ID="r0053" Class="Consumable" Locked="true" Status="Available"
              PartIDKeys="Separation">
            <Media Separation="Cyan"/>
        </Media>
        <ExposedMedia ID="r0054" Class="Handling" Locked="true"

```

```

        Status="Unavailable" PartIDKeys="Separation">
    <ExposedMedia Separation="Cyan">
        <MediaRef rRef="r0053">
            <Part Separation="Cyan"/>
        </MediaRef>
    </ExposedMedia>
</ExposedMedia>
<RunList ID="r0055" Class="Parameter" Locked="true" Status="Available"/>
</ResourcePool>
<ResourceLinkPool>
    <ImageSetterParamsLink rRef="r0052" Usage="Input"/>
    <MediaLink rRef="r0053" Usage="Input">
        <Part Separation="Cyan"/>
    </MediaLink>
    <ExposedMediaLink rRef="r0054" Usage="Output">
        <Part Separation="Cyan"/>
    </ExposedMediaLink>
    <RunListLink rRef="r0055" Usage="Input"/>
</ResourceLinkPool>
<AncestorPool>
    <Part Separation="Cyan"/>
    <Ancestor Type="ImageSetting" xmlns="http://www.CIP4.org/JDFSchema_1_1"
        NodeID="n20020701190951" Status="Waiting" Version="1.4"
        FileName="testjdf5.jdf"/>
</AncestorPool>
</JDF>

```

### Example O-10: Root Partitioned ImageSetting Node after Spawning

TBD 2.x Example.

```

<JDF ID="n20020701190951" Type="ImageSetting"
    xmlns="http://www.CIP4.org/JDFSchema_1_1"
    Status="Pool" JobPartID="ID778" Version="1.4">
    <AuditPool>
        <Spawned URL="File:///spawnIS.jdf" jRef="n20020701190951" Status="Waiting"
            TimeStamp="2002-07-01T19:18:03+02:00" NewSpawnID="Sp0059">
            <Part Separation="Cyan"/>
        </Spawned>
    </AuditPool>
    <ResourcePool>
        <NodeInfo Class="Parameter" ID="r050722154232_0045" NodeStatus="Waiting"
            PartIDKeys="Separation" Status="Available">
            <NodeInfo NodeStatus="Spawned" Separation="Cyan"/>
        </NodeInfo>
        <ImageSetterParams ID="r0052" Class="Parameter" Locked="false"
            Status="Available" SpawnIDs="Sp0059" SpawnStatus="SpawnedRO" />
        <Media ID="r0053" Class="Consumable" Locked="false" Status="Available"
            SpawnIDs="Sp0059"/>
        <ExposedMedia ID="r0054" Class="Handling" Locked="false"
            Status="Unavailable" SpawnIDs="Sp0059" PartIDKeys="Separation">
            <MediaRef rRef="r0053"/>
            <ExposedMedia Locked="true" Separation="Cyan" SpawnStatus="SpawnedRW" />
            <ExposedMedia Separation="Magenta"/>
            <ExposedMedia Separation="Yellow"/>
            <ExposedMedia Separation="Black"/>
        </ExposedMedia>
    </ResourcePool>

```

```

</ExposedMedia>
<RunList ID="r0055" Class="Parameter" Locked="false" Status="Available"
    SpawnIDs="Sp0059" SpawnStatus="SpawnedRO" />
</ResourcePool>
<ResourceLinkPool>
    <ImageSetterParamsLink Usage="Input" rRef="r0052" />
    <MediaLink Usage="Input" rRef="r0053" />
    <ExposedMediaLink Usage="Output" rRef="r0054" />
    <RunListLink Usage="Input" rRef="r0055" />
    <NodeInfoLink Usage="Input" rRef="r050722154232_0045"/>
</ResourceLinkPool>
</JDF>

```

## Example O-11: Merged ImageSetting Node

The Node has now been executed and merged.

TBD 2.x Example.

```

<JDF ID="n20020701190951" Type="ImageSetting"
    xmlns="http://www.CIP4.org/JDFSchema_1_1" Status="Pool" JobPartID="ID234"
    Version="1.4">
    <AuditPool>
        <Spawned URL="File:///spawnIS.jdf" jRef="n20020701190951"
            Status="Waiting"
           TimeStamp="2002-07-01T20:25:03+02:00" NewSpawnID="Sp0059">
            <Part Separation="Cyan"/>
        </Spawned>
        <Merged URL="File:///spawnIS2.jdf" jRef="n20020701190951"
            MergeID="Sp0059"
           TimeStamp="2002-07-01T20:27:51+02:00">
            <Part Separation="Cyan"/>
        </Merged>
    </AuditPool>
    <ResourcePool>
        <ImageSetterParams ID="r0052" Class="Parameter" Status="Available"/>
        <Media ID="r0053" Class="Consumable" Status="Available"/>
        <ExposedMedia ID="r0054" Class="Handling" Status="Unavailable"
            PartIDKeys="Separation">
            <MediaRef rRef="r0053"/>
            <ExposedMedia Status="Available" Separation="Cyan"/>
            <ExposedMedia Separation="Magenta"/>
            <ExposedMedia Separation="Yellow"/>
            <ExposedMedia Separation="Black"/>
        </ExposedMedia>
        <RunList ID="r0055" Class="Parameter" Status="Available"/>
        <NodeInfo Class="Parameter" ID="r050722154232_0045" NodeStatus="Waiting"
            PartIDKeys="Separation" Status="Available">
            <NodeInfo NodeStatus="Completed" Separation="Cyan"/>
        </NodeInfo>
    </ResourcePool>
    <ResourceLinkPool>
        <ImageSetterParamsLink rRef="r0052" Usage="Input"/>
        <MediaLink rRef="r0053" Usage="Input"/>
        <ExposedMediaLink rRef="r0054" Usage="Output"/>
        <RunListLink rRef="r0055" Usage="Input"/>
        <NodeInfoLink Usage="Input" rRef="r050722154232_0045"/>
    </ResourceLinkPool>
</JDF>

```

## O.4 RunList

### Example O-12: RunList

The following example shows the various separation types, all mixed into one big **RunList**. Both in-line and **ResourceRef @IDREF** versions of **LayoutElementRunList** are used.

```
TBD 2.x Example.
<RunList Class="Parameter" ID="Link0003" NPage="10"
    PartIDKeys="Run Separation"
    Status="Available">
    <Comment>Preseparated Runs in multiple files
        All LayoutElements are inline resources
    </Comment>
    <RunList FirstPage="0" NPage="1" Run="1">
        <RunList Separation="Cyan">
            <LayoutElement>
                <FileSpec URL="File:///Cyan.pdf"/>
            </LayoutElement>
        </RunList>
        <RunList Separation="Magenta">
            <LayoutElement>
                <FileSpec URL="File:///Magenta.pdf"/>
            </LayoutElement>
        </RunList>
        <RunList Separation="Yellow">
            <LayoutElement>
                <FileSpec URL="File:///Yellow.pdf"/>
            </LayoutElement>
        </RunList>
        <RunList Separation="Black">
            <LayoutElement>
                <FileSpec URL="File:///Black.pdf"/>
            </LayoutElement>
        </RunList>
        <RunList Separation="SpotGreen">
            <LayoutElement>
                <FileSpec URL="File:///Green.pdf"/>
            </LayoutElement>
        </RunList>
    </RunList>
    <RunList NPage="2" Run="2" SkipPage="4">
        <Comment>
            Preseparated Runs in one file CMYKGCMYKG
            LayoutElements are inter-resource links
        </Comment>
        <RunList FirstPage="0" Separation="Cyan">
            <LayoutElementRef rRef="Link0004"/>
        </RunList>
        <RunList FirstPage="1" Separation="Magenta">
            <LayoutElementRef rRef="Link0004"/>
        </RunList>
        <RunList FirstPage="2" Separation="Yellow">
            <LayoutElementRef rRef="Link0004"/>
        </RunList>
        <RunList FirstPage="3" Separation="Black">
```

```

        <LayoutElementRef rRef="Link0004"/>
    </RunList>
    <RunList FirstPage="4" Separation="SpotGreen">
        <LayoutElementRef rRef="Link0004"/>
    </RunList>
</RunList>
<RunList NPage="1" Run="3" SkipPage="3">
    <Comment>
        No Magenta, the missing sep does not exist as a page
    </Comment>
    <RunList FirstPage="10" Separation="Cyan">
        <LayoutElementRef rRef="Link0004"/>
    </RunList>
    <RunList FirstPage="11" Separation="Yellow">
        <LayoutElementRef rRef="Link0004"/>
    </RunList>
    <RunList FirstPage="12" Separation="Black">
        <LayoutElementRef rRef="Link0004"/>
    </RunList>
    <RunList FirstPage="13" Separation="Green">
        <LayoutElementRef rRef="Link0004"/>
    </RunList>
</RunList>
<RunList NPage="2" Run="4" SkipPage="4">
    <Comment>
        Continuation of Preseparated Runs in one file CMYKCMYKG -
        the missing sep of the previous page does not exist as a page
    </Comment>
    <RunList FirstPage="14" Separation="Cyan">
        <LayoutElementRef rRef="Link0004"/>
    </RunList>
    <RunList FirstPage="15" Separation="Magenta">
        <LayoutElementRef rRef="Link0004"/>
    </RunList>
    <RunList FirstPage="16" Separation="Yellow">
        <LayoutElementRef rRef="Link0004"/>
    </RunList>
    <RunList FirstPage="17" Separation="Black">
        <LayoutElementRef rRef="Link0004"/>
    </RunList>
    <RunList FirstPage="18" Separation="SpotGreen">
        <LayoutElementRef rRef="Link0004"/>
    </RunList>
</RunList>
<RunList NPage="2" Run="5">
    <Comment>
        Preseparated Runs in one file CCMMYYKKGG
    </Comment>
    <RunList FirstPage="0" Separation="Cyan">
        <LayoutElementRef rRef="Link0005"/>
    </RunList>
    <RunList FirstPage="2" Separation="Magenta">
        <LayoutElementRef rRef="Link0005"/>
    </RunList>
    <RunList FirstPage="4" Separation="Yellow">
        <LayoutElementRef rRef="Link0005"/>
    </RunList>
    <RunList FirstPage="6" Separation="Black">

```

```

<LayoutElementRef rRef="Link0005"/>
</RunList>
<RunList FirstPage="8" Separation="SpotGreen">
    <LayoutElementRef rRef="Link0005"/>
</RunList>
</RunList>
<RunList NPage="2" Run="6">
    <Comment>
        Combined Runs in one file
    </Comment>
    <LayoutElement ElementType="Document">
        <FileSpec URL="File:///Combined.pdf"/>
    </LayoutElement>
</RunList>
</RunList>
<LayoutElement Class="Parameter" ID="Link0004" Status="Available">
    <FileSpec URL="File:///PreSepCMYKG.pdf"/>
</LayoutElement>
<LayoutElement Class="Parameter" ID="Link0005" Status="Available">
    <FileSpec URL="File:///PreSepCCMYYYKKGG.pdf"/>
</LayoutElement>

```

## O.5 Messages

### O.5.1 Simple KnownMessages

The following simple example shows a KnownMessages Query Message and the Response Message sent by a fairly dumb Controller:

#### Example O-13: KnownMessages Query

TBD 2.x Example.

```

<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="JMFCClient"
     TimeStamp="2000-11-07T13:15:56+01:00" MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
<Query ID="Q0001" Type="KnownMessages" xsi:type="QueryKnownMessages">
    <KnownMsgQuParams ListCommands="true" ListQueries="true"
                       ListSignals="false"/>
</Query>
</JMF>

```

#### Example O-14: KnownMessages Response

TBD 2.x Example.

```

<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="JMFCClient #2"
     TimeStamp="2000-11-07T13:15:56+01:00" MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
<Response ID="R0001" Type="KnownMessages" xsi:type="ResponseKnownMessages"
           refID="Q0001">
    <MessageService Query="true" Type="KnownMessages"/>
    <MessageService Persistent="true" Query="true" Type="Status"/>
    <MessageService Command="true" Type="StopPersistentChannel"/>
</Response>
</JMF>

```

## O.5.2 Simple persistent channel

The following query requests a persistent channel for Status Messages. An update is requested whenever an Attribute changes. Then the following four examples are a set of typical, simple responses that are emitted whenever `@DeviceStatus` changes; three responses are Signal Messages

### Example O-15: Status Query

TBD 2.x Example.

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="JMFCClient"
     TimeStamp="2000-11-07T16:02:09+01:00" MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
<Query ID="Q0011" Type="Status" xsi:type="QueryStatus">
  <Subscription URL="http://123.123.123.123/message/recipient">
    <ObservationTarget ObservationPath="///*/@*"/>
  </Subscription>
  <StatusQuParams JobDetails="Brief"/>
</Query>
</JMF>
```

### Example O-16: Status Response

This is the Response Message that is sent immediately within the same HTTP connection as the Query Message.

TBD 2.x Example.

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="JMFCClient #2"
     TimeStamp="2000-11-07T16:02:19+01:00"
      MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
<Response ID="R0013" Type="Status" xsi:type="ResponseStatus" refID="Q0011">
  <DeviceInfo DeviceStatus="Idle"/>
</Response>
</JMF>
```

### Example O-17: Status Signal #1

This is an intermediate Signal that was emitted when `@DeviceStatus` changed.

TBD 2.x Example.

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="JMFCClient #2"
     TimeStamp="2000-11-07T17:02:19+01:00" MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
<Signal ID="Q0015" Type="Status" xsi:type="SignalStatus" refID="Q0011">
  <DeviceInfo DeviceStatus="Setup"/>
</Signal>
</JMF>
```

### Example O-18: Status Signal #2

This is an intermediate Signal that was emitted when `@DeviceStatus` changed.

TBD 2.x Example.

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="JMFCClient #2"
     TimeStamp="2000-11-07T17:08:19+01:00" MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
<Signal ID="Q0017" Type="Status" xsi:type="SignalStatus" refID="Q0011">
  <DeviceInfo DeviceStatus="Running"/>
</Signal>
</JMF>
```

**Example O-19: Status Signal #3**

This is the last Signal of the persistent channel.

```
TBD 2.x Example.
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" SenderID="JMFCClient #2"
     TimeStamp="2000-11-07T19:02:19+01:00" MaxVersion="1.4" Version="1.4"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" >
  <Signal ID="Q0017" Type="Status" xsi:type="SignalStatus" refID="Q0011"
           LastRepeat="true">
    <DeviceInfo DeviceStatus="Idle"/>
  </Signal>
</JMF>
```

**O.5.3 JMF XJMF Pipe Messages**

The following example details the sequence of **JMF XJMF** pipe messages from a digital printer to a connected finisher. In this example, we send one **PipePush@Operation = "Push"** **JMF XJMF** per printed sheet. the **JDF XJDF** files are skeletons with little detail.

**O.5.3.1 Example Printer JDF XJDF**

**JDF XJDF** for dynamic pipes at the printer:

```
<JDF ID="n_000004" JobID="J1" JobPartID="n_000002.1" MaxVersion="1.4"
      Status="Waiting" Type="Combined" Types="DigitalPrinting" Version="1.4"
      xmlns="http://www.CIP4.org/JDFSchema_1_1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="Combined">
  <AuditPool>
    <Created AgentName="CIP4 JDF Writer Java" AgentVersion="1.4a BLD 74"
              ID="a_000005" TimeStamp="2013-09-19T15:36:28+02:00"/>
  </AuditPool>
  <ResourcePool>
    <RunList Automation="Dynamic" Class="Parameter" ID="r_000006"
              Status="Available"/>
    <DigitalPrintingParams Class="Parameter" ID="r_000007"
              Status="Available"/>
    <Component Automation="Dynamic" Class="Quantity"
              ComponentType="PartialProduct Sheet" ID="r_000008"
              PartIDKeys="SetIndex DocTags" PipeID="PipeSheet"
              PipeProtocol="JMFPush" Status="Unavailable">
      <Component SetIndex="0~1">
        <Component DocTags="Cover" SurfaceCount="2"/>
        <Component DocTags="Body" SurfaceCount="-1"/>
      </Component>
    </Component>
  </ResourcePool>
  <ResourceLinkPool>
    <RunListLink CombinedProcessIndex="0" Usage="Input" rRef="r_000006"/>
    <DigitalPrintingParamsLink CombinedProcessIndex="0" Usage="Input"
                                rRef="r_000007"/>
    <ComponentLink Amount="1" CombinedProcessIndex="0"
                  Usage="Output" rRef="r_000008">
      <Part SetIndex="0~1"/>
    </ComponentLink>
  </ResourceLinkPool>
</JDF>
```

### O.5.3.2 Example Finisher JDF XJDF

JDF XJDF for dynamic pipes at the finisher:

```
<JDF ID="n_000009" JobID="J1" JobPartID="n_000002.2" MaxVersion="1.4"
      Status="Waiting" Type="Combined" Types="Collecting Stitching"
      Version="1.4" xmlns="http://www.CIP4.org/JDFSchema_1_1"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="Combined">
  <AuditPool>
    <Created AgentName="CIP4 JDF Writer Java" AgentVersion="1.4a BLD 74"
              ID="a_000010" TimeStamp="2013-09-19T15:36:28+02:00"/>
  </AuditPool>
  <ResourceLinkPool>
    <ComponentLink ProcessUsage="Cover" Usage="Input" rRef="r_000008">
      <Part DocTags="Cover" SetIndex="0~1"/>
    </ComponentLink>
    <ComponentLink CombinedProcessIndex="0" Usage="Input" rRef="r_000008">
      <Part DocTags="Body" SetIndex="0~1"/>
    </ComponentLink>
    <StitchingParamsLink CombinedProcessIndex="1" Usage="Input"
                          rRef="r_000011"/>
    <ComponentLink Amount="1" CombinedProcessIndex="1"
                   Usage="Output" rRef="r_000012"/>
  </ResourceLinkPool>
  <ResourcePool>
    <StitchingParams Class="Parameter" ID="r_000011" Status="Available"/>
    <Component Class="Quantity" ComponentType="FinalProduct Block"
              ID="r_000012" Status="Unavailable"/>
    <Component Automation="Dynamic" Class="Quantity"
                ComponentType="PartialProduct Sheet" ID="r_000008"
                PartIDKeys="SetIndex DocTags" PipeID="PipeSheet"
                PipeProtocol="JMFPush" Status="Unavailable">
      <Component SetIndex="0~1">
        <Component DocTags="Cover" SurfaceCount="2"/>
        <Component DocTags="Body" SurfaceCount="-1"/>
      </Component>
    </Component>
  </ResourcePool>
</JDF>
```

### O.5.3.3 Initiation of PipePush sequence

The communication is initiated with a PipePush for the cover sheet of the first set.

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="Printer" TimeStamp="2013-09-18T10:58:26+02:00" Version="1.5"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="JMFRootMessage">
  <Command ID="m.1349935098._000002" Type="PipePush"
            xsi:type="CommandPipePush">
    <PipeParams JobID="J1" PipeID="PipeSheet">
      <AmountPool>
        <PartAmount Amount="1">
          <Part DocTags="Cover" SetIndex="0"/>
        </PartAmount>
        <PartAmount ActualAmount="1">
          <Part DocTags="Cover" SetIndex="0" SheetIndex="0"/>
        </PartAmount>
      </AmountPool>
    </PipeParams>
  </Command>
</JMF>
```

```

        </PipeParams>
    </Command>
</JMF>
```

#### O.5.3.4 Continuation of PipePush sequence

The communication continues with the PipePush@Operation = "Push" messages for the 5 body sheets of the first set, and the cover and body of the following sets.

```

<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="Printer"TimeStamp="2013-09-18T10:58:27+02:00" Version="1.5"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="JMFRootMessage">
<Command ID="m.1349935098._000003" Type="PipePush"
          xsi:type="CommandPipePush">
<PipeParams JobID="J1" PipeID="PipeSheet">
<AmountPool>
    <PartAmount Amount="5">
        <Part DocTags="Body" SetIndex="0"/>
    </PartAmount>
    <PartAmount ActualAmount="1">
        <Part DocTags="Body" SetIndex="0" SheetIndex="0"/>
    </PartAmount>
</AmountPool>
</PipeParams>
</Command>
</JMF>

<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="Printer"TimeStamp="2013-09-18T10:58:27+02:00" Version="1.5"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="JMFRootMessage">
<Command ID="m.1349935098._000004" Type="PipePush"
          xsi:type="CommandPipePush">
<PipeParams JobID="J1" PipeID="PipeSheet">
<AmountPool>
    <PartAmount Amount="5">
        <Part DocTags="Body" SetIndex="0"/>
    </PartAmount>
    <PartAmount ActualAmount="1">
        <Part DocTags="Body" SetIndex="0" SheetIndex="1"/>
    </PartAmount>
</AmountPool>
</PipeParams>
</Command>
</JMF>

<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="Printer"TimeStamp="2013-09-18T10:58:27+02:00" Version="1.5"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="JMFRootMessage">
<Command ID="m.1349935098._000005" Type="PipePush"
          xsi:type="CommandPipePush">
<PipeParams JobID="J1" PipeID="PipeSheet">
<AmountPool>
    <PartAmount Amount="5">
        <Part DocTags="Body" SetIndex="0"/>
    </PartAmount>
    <PartAmount ActualAmount="1">
        <Part DocTags="Body" SetIndex="0" SheetIndex="4"/>
    </PartAmount>
</AmountPool>
</PipeParams>
</Command>
</JMF>
```

```

        </PartAmount>
    </AmountPool>
</PipeParams>
</Command>
</JMF>
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="Printer"TimeStamp="2013-09-18T10:58:27+02:00" Version="1.5"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="JMFRootMessage">
<Command ID="m.1349935098._000006" Type="PipePush"
          xsi:type="CommandPipePush">
<PipeParams JobID="J1" PipeID="PipeSheet">
    <AmountPool>
        <PartAmount Amount="1">
            <Part DocTags="Cover" SetIndex="1"/>
        </PartAmount>
        <PartAmount ActualAmount="1">
            <Part DocTags="Cover" SetIndex="1" SheetIndex="0"/>
        </PartAmount>
    </AmountPool>
</PipeParams>
</Command>
</JMF>
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="Printer"TimeStamp="2013-09-18T10:58:27+02:00" Version="1.5"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="JMFRootMessage">
<Command ID="m.1349935098._000007" Type="PipePush"
          xsi:type="CommandPipePush">
<PipeParams JobID="J1" PipeID="PipeSheet">
    <AmountPool>
        <PartAmount Amount="1">
            <Part DocTags="Body" SetIndex="1"/>
        </PartAmount>
        <PartAmount ActualAmount="1">
            <Part DocTags="Body" SetIndex="1" SheetIndex="0"/>
        </PartAmount>
    </AmountPool>
</PipeParams>
</Command>
</JMF>

<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="Printer"TimeStamp="2013-09-18T10:58:27+02:00" Version="1.5"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="JMFRootMessage">
<Command ID="m.1349935098._000008" Type="PipePush"
          xsi:type="CommandPipePush">
<PipeParams JobID="J1" PipeID="PipeSheet">
    <AmountPool>
        <PartAmount Amount="7">
            <Part DocTags="Body" SetIndex="35"/>
        </PartAmount>
        <PartAmount ActualAmount="1">
            <Part DocTags="Body" SetIndex="35" SheetIndex="4"/>
        </PartAmount>
    </AmountPool>
</PipeParams>
</Command>
</JMF>
```

### O.5.3.5 Paper Jam in finisher - PipePause

Due to a paper jam that destroys sets 34 and 35, a `PipePause@Operation = "Pause"` is sent from finisher to printer. Note that specifying which sheets were destroyed is optional at this point.

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="Finisher"TimeStamp="2013-09-18T10:58:27+02:00"
      Version="1.5" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:type="JMFRootMessage">
  <Command ID="m.609016672._000009" Type="PipePause"
            xsi:type="CommandPipePause">
    <PipeParams JobID="J1" PipeID="PipeSheet">
      <AmountPool>
        <PartAmount>
          <Part Condition="Waste" SetIndex="34 35"/>
        </PartAmount>
      </AmountPool>
    </PipeParams>
  </Command>
</JMF>
```

### O.5.3.6 Paper jam cleanup in finisher - PipePull

After the paper jam has been cleaned and the finisher is ready to receive sheets, it sends a `PipePull@Operation = "Pull"` specifying which sets should be produced.

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="TestSender"TimeStamp="2013-09-18T10:58:27+02:00"
      Version="1.5" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:type="JMFRootMessage">
  <Command ID="m.587730553._000010" SenderID="Finisher" Type="PipePull"
            xsi:type="CommandPipePull">
    <PipeParams JobID="J1" PipeID="PipeSheet">
      <AmountPool>
        <PartAmount>
          <Part SetIndex="34~1"/>
        </PartAmount>
      </AmountPool>
    </PipeParams>
  </Command>
</JMF>
```

### O.5.3.7 Continued PipePush

The printer continues by sending sheets starting at the point requested by the previous `PipePull@Operation = "Pull"`.

```
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="Printer"TimeStamp="2013-09-18T10:58:27+02:00" Version="1.5"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="JMFRootMessage">
  <Command ID="m.1349935098._000011" Type="PipePush"
            xsi:type="CommandPipePush">
    <PipeParams JobID="J1" PipeID="PipeSheet">
      <AmountPool>
        <PartAmount Amount="1">
          <Part DocTags="Cover" SetIndex="34"/>
        </PartAmount>
        <PartAmount ActualAmount="1">
```

```

        <Part DocTags="Cover" SetIndex="34" SheetIndex="0"/>
    </PartAmount>
</AmountPool>
</PipeParams>
</Command>
</JMF>

<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="Printer"TimeStamp="2013-09-18T10:58:27+02:00" Version="1.5"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="JMFRootMessage">
<Command ID="m.1349935098._000012" Type="PipePush"
          xsi:type="CommandPipePush">
<PipeParams JobID="J1" PipeID="PipeSheet">
    <AmountPool>
        <PartAmount Amount="5">
            <Part DocTags="Body" SetIndex="34"/>
        </PartAmount>
        <PartAmount ActualAmount="1">
            <Part DocTags="Body" SetIndex="34" SheetIndex="0"/>
        </PartAmount>
    </AmountPool>
</PipeParams>
</Command>
</JMF>

<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="Printer"TimeStamp="2013-09-18T10:58:27+02:00" Version="1.5"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="JMFRootMessage">
<Command ID="m.1349935098._000013" Type="PipePush"
          xsi:type="CommandPipePush">
<PipeParams JobID="J1" PipeID="PipeSheet">
    <AmountPool>
        <PartAmount Amount="7">
            <Part DocTags="Body" SetIndex="122"/>
        </PartAmount>
        <PartAmount ActualAmount="1">
            <Part DocTags="Body" SetIndex="122" SheetIndex="4"/>
        </PartAmount>
    </AmountPool>
</PipeParams>
</Command>
</JMF>
```

### O.5.3.8 Paper jam in printer - PipePause

We now have a malfunction in the printer, that makes set 122 unusable. Therefore the printer sends a **PipePause@Operation = "Pause"** to the finisher specifying which sheets are waste.

```

<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="Printer"TimeStamp="2013-09-18T10:58:27+02:00" Version="1.5"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="JMFRootMessage">
<Command ID="m.1349935098._000014" Type="PipePause"
          xsi:type="CommandPipePause">
<PipeParams JobID="J1" PipeID="PipeSheet">
    <AmountPool>
        <PartAmount
            <Part Condition="Waste" SetIndex="122"/>
        </PartAmount>
    </AmountPool>
</JMF>
```

```

        </PipeParams>
    </Command>
</JMF>
```

### O.5.3.9 Optional PipePause from the Finisher

The finisher MAY pause the pipe in case a pause from the Producer causes issues in the Finisher

```

<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="Finisher"TimeStamp="2013-10-16T15:04:30+02:00"
      Version="1.5" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:type="JMFRootMessage">
<Command ID="m.609016672._000015" Type="PipePause"
          xsi:type="CommandPipePause">
    <PipeParams JobID="J1" PipeID="PipeSheet">
        <AmountPool>
            <PartAmount>
                <Part Condition="Waste" SetIndex="122"/>
            </PartAmount>
        </AmountPool>
    </PipeParams>
</Command>
</JMF>
```

### O.5.3.10 Optional PipePull from the Finisher

The printer continues by sending sheets starting at the point requested by the previous `PipePull@Operation = "Pull"`.

`PipePullFinisher2Example.jmf`

```

<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="TestSender"TimeStamp="2013-10-16T15:04:30+02:00"
      Version="1.5" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:type="JMFRootMessage">
<Command ID="m.587730553._000016" SenderID="Finisher" Type="PipePull"
          xsi:type="CommandPipePull">
    <PipeParams JobID="J1" PipeID="PipeSheet">
        <AmountPool>
            <PartAmount>
                <Part SetIndex="122~-1"/>
            </PartAmount>
        </AmountPool>
    </PipeParams>
</Command>
</JMF>
```

### O.5.3.11 Paper jam cleanup in printer - PipePush

After cleanup, the printer continues with the first sheet of the destroyed set and sends `PipePush@Operation = "Push"` until it has completed.

```

<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="Printer"TimeStamp="2013-09-18T10:58:27+02:00" Version="1.5"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="JMFRootMessage">
<Command ID="m.1349935098._000015" Type="PipePush"
          xsi:type="CommandPipePush">
    <PipeParams JobID="J1" PipeID="PipeSheet">
        <AmountPool>
            <PartAmount Amount="1">
                <Part DocTags="Cover" SetIndex="122"/>
            </PartAmount>
        </AmountPool>
    </PipeParams>
</Command>
</JMF>
```

```

        </PartAmount>
        <PartAmount ActualAmount="1">
            <Part DocTags="Cover" SetIndex="122" SheetIndex="0"/>
        </PartAmount>
    </AmountPool>
</PipeParams>
</Command>
</JMF>

<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="Printer"TimeStamp="2013-09-18T10:58:27+02:00" Version="1.5"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:type="JMFRootMessage">
<Command ID="m.1349935098._000016" Type="PipePush"
          xsi:type="CommandPipePush">
    <PipeParams JobID="J1" PipeID="PipeSheet">
        <AmountPool>
            <PartAmount Amount="6">
                <Part DocTags="Body" SetIndex="221"/>
            </PartAmount>
            <PartAmount ActualAmount="1">
                <Part DocTags="Body" SetIndex="221" SheetIndex="5"/>
            </PartAmount>
        </AmountPool>
    </PipeParams>
</Command>
</JMF>

```

### O.5.3.12 Job done - PipeClose

The printer is now finished and sends a `PipeClose@Operation = "Close"` with a summary of what it believes to have sent.

```

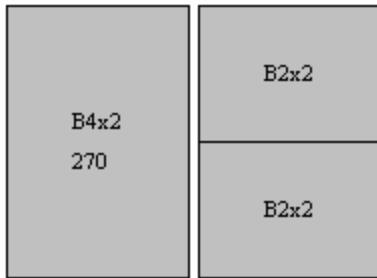
<JMF xmlns="http://www.CIP4.org/JDFSchema_1_1" MaxVersion="1.5"
      SenderID="Printer"TimeStamp="2013-09-18T10:58:27+02:00" Version="1.5"
      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xsi:type="JMFRootMessage">
<Command ID="m.1349935098._000017" Type="PipeClose"
          xsi:type="CommandPipeClose">
    <PipeParams JobID="J1" PipeID="PipeSheet">
        <AmountPool>
            <PartAmount>
                <Part SetIndex="0~221"/>
            </PartAmount>
        </AmountPool>
    </PipeParams>
</Command>
</JMF>

```

## O.6 Stripping

### Example O-20: Using Position

The following example illustrates the more advanced use of the `@Position` object. Note that the two B2x2 Signatures are filled independently.

**TBD 2.x Example.**

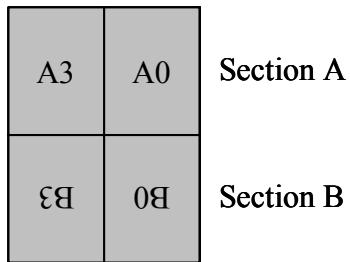
```

<BinderySignature Class="Parameter" ID="B4x2" NumberUp="4 2"
    Status="Available"/>
<BinderySignature Class="Parameter" ID="B2x2" NumberUp="2 2"
    Status="Available"/>
<StrippingParams Class="Parameter" ID="L1"
    PartIDKeys="SheetName BinderySignatureName"
    Status="Available" WorkStyle="WorkAndBack">
    <StrippingParams SheetName="Sheet1">
        <StrippingParams BinderySignatureName="B4x2">
            <BinderySignatureRef rRef="B4x2"/>
            <Position RelativeBox="0 0 0.5 1" Orientation="Rotate270"/>
        </StrippingParams>
        <StrippingParams BinderySignatureName="B2x2-1">
            <BinderySignatureRef rRef="B2x2"/>
            <Position RelativeBox="0.5 0 1 0.5"/>
        </StrippingParams>
        <StrippingParams BinderySignatureName="B2x2-2">
            <BinderySignatureRef rRef="B2x2"/>
            <Position RelativeBox="0.5 0.5 1 1"/>
        </StrippingParams>
    </StrippingParams>
</StrippingParams>

```

**Example O-21: Multiple Bindery Signatures**

The following example illustrates how two identical **BinderySignature** Resources that represent the same sections are placed onto a surface. It also shows how **StripCellParams SignatureCell** elements are overwritten for various sections.

**TBD 2.x Example.**

```

<BinderySignature Class="Parameter" ID="B4x2" NumberUp="4 2"
    Status="Available"/>
<BinderySignature Class="Parameter" ID="B2x2" NumberUp="2 2"
    Status="Available"/>

```

```

<StrippingParams Class="Parameter" ID="L1" PartUsage="Implicit"
    Status="Available"
    PartIDKeys="SheetName BinderySignatureName CellIndex"
    WorkStyle="WorkAndBack">
    <BinderySignatureRef rRef="B4x2"/>
    <StrippingParams JobID="Customer Job 1" SheetName="Sheet1">
        <StrippingParams BinderySignatureName="B4x2">
            <BinderySignatureRef rRef="B4x2"/>
            <StripCellParams BleedFace="42" BleedSpine="0" MillingDepth="21"/>
            <Position RelativeBox="0 0 0.5 1" Orientation="Rotate270"/>
        </StrippingParams>
        <StrippingParams BinderySignatureName="B2x2">
            <BinderySignatureRef rRef="B2x2"/>
            <StripCellParams BleedFace="42" BleedSpine="20"
                MillingDepth="84"/>
            <Position RelativeBox="0.5 0 1 0.5"/>
            <Position RelativeBox="0.5 0.5 1 1"/>
            <StrippingParams CellIndex="3">
                <StripCellParams BleedFace="10" BleedSpine="10"
                    MillingDepth="48"/>
            </StrippingParams>
        </StrippingParams>
    </StrippingParams>
</StrippingParams>

```

### Example O-22: Multisection Bindery Signatures

The following example illustrates the imposition of a Job containing 80 pages using *ComeAndGo*. Five Sheets need to be produced each containing two sections.

		B4	B1	B8	B5
A4	A5	A8	A1		

#### TBD 2.x Example

```

<BinderySignature Class="Parameter" ID="ComeAndGo" NumberUp="4 2"
    Status="Available">
    <SignatureCell BackPages="1 6 5 2" FrontPages="3 4 7 0" Orientation="Up"
        SectionIndex="0"/>
    <SignatureCell BackPages="6 1 2 5" FrontPages="4 3 0 7"
        Orientation="Down" SectionIndex="1"/>
</BinderySignature>
<StrippingParams Class="Parameter" ID="L1" PartIDKeys="SheetName"
    Status="Available" WorkStyle="WorkAndBack">
    <BinderySignatureRef rRef="ComeAndGo"/>
    <StrippingParams SectionList="0 9" SheetName="Sheet1"/>
    <StrippingParams SectionList="1 8" SheetName="Sheet2"/>
    <StrippingParams SectionList="2 7" SheetName="Sheet3"/>
    <StrippingParams SectionList="3 6" SheetName="Sheet4"/>
    <StrippingParams SectionList="4 5" SheetName="Sheet5"/>
</StrippingParams>

```

**Example O-23: Multiple Job Parts in One Imposition**

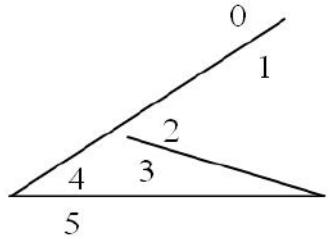
The following example illustrates Partitioning by `@SectionIndex`. We reuse the "`ComeAndGo`" **BinderySignature** from the previous example, but map the **BinderySignature** to sections of different Job Parts.

```

<BinderySignature Class="Parameter" ID="ComeAndGo" NumberUp="4 2"
    Status="Available">
    <SignatureCell BackPages="1 6 5 2" FrontPages="3 4 7 0" Orientation="Up"
        SectionIndex="0"/>
    <SignatureCell BackPages="6 1 2 5" FrontPages="4 3 0 7"
        Orientation="Down" SectionIndex="1"/>
</BinderySignature>
<StrippingParams Class="Parameter" ID="L1" JobID="MyJob"
    PartIDKeys="SheetName SectionIndex" Status="Available"
    WorkStyle="WorkAndBack">
    <BinderySignatureRef rRef="ComeAndGo"/>
    <StrippingParams SheetName="Sheet1">
        <StrippingParams AssemblyIDs="Book1" SectionIndex="0" SectionList="0"/>
        <StrippingParams AssemblyIDs="Book2" SectionIndex="1" SectionList="9"/>
    </StrippingParams>
    <StrippingParams SheetName="Sheet2">
        <StrippingParams AssemblyIDs="Book1" SectionIndex="0" SectionList="1"/>
        <StrippingParams AssemblyIDs="Book2" SectionIndex="1" SectionList="8"/>
    </StrippingParams>
    <StrippingParams SheetName="Sheet3">
        <StrippingParams AssemblyIDs="Book1" SectionIndex="0" SectionList="2"/>
        <StrippingParams AssemblyIDs="Book2" SectionIndex="1" SectionList="7"/>
    </StrippingParams>
    <StrippingParams SheetName="Sheet4">
        <StrippingParams AssemblyIDs="Book1" SectionIndex="0" SectionList="3"/>
        <StrippingParams AssemblyIDs="Book2" SectionIndex="1" SectionList="6"/>
    </StrippingParams>
    <StrippingParams SheetName="Sheet5">
        <StrippingParams AssemblyIDs="Book1" SectionIndex="0" SectionList="4"/>
        <StrippingParams AssemblyIDs="Book2" SectionIndex="1" SectionList="5"/>
    </StrippingParams>
</StrippingParams>
```

**Example O-24: FoldOuts**

The following example illustrates the use of foldouts. The same foldout is placed twice on a press Sheet.



2	5	0
2	5	0

#### TBD 2.x Example.

```

<BinderySignature Class="Parameter" ID="foldout" NumberUp="2 1"
    Status="Available">
    <!--foldout cell-->
    <SignatureCell FrontPages="2" BackPages="3" Orientation="Up"/>
    <!-- back page cell which has fold out attached -->
    <SignatureCell FrontPages="4" BackPages="5" FaceCells="0"
        Orientation="Up"/>
    <!-- front page cell -->
    <SignatureCell FrontPages="0" BackPages="1" Orientation="Up"/>
</BinderySignature>
<StrippingParams Class="Parameter" ID="Cover" Status="Available"
    WorkStyle="WorkAndBack">
    <BinderySignatureRef rRef="foldout"/>
    <Position RelativeBox="0 0 1 0.5"/>
    <Position RelativeBox="0 0.5 1 1"/>
</StrippingParams>
```

#### Example O-25: Multiple Web Layout

The following example illustrates a regular double-Web layout. A double-Web **BinderySignature** is used in two Signatures. This results in four Sheets.

			23	8	15	16
31	0	7	24			

Web1

			21	10	13	18
29	2	5	26			

Web2

**TBD 2.x Example.**

```

<BinderySignature Class="Parameter" ID="B001" NumberUp="4 2"
  PartIDKeys="WebName" Status="Available">
  <BinderySignature WebName="Web1">
    <SignatureCell BackPages="22 9 14 17" FrontPages="31 0 7 24"
      Orientation="Up"/>
    <SignatureCell BackPages="25 6 1 30" FrontPages="16 15 8 23"
      Orientation="Down"/>
  </BinderySignature>
  <BinderySignature WebName="Web2">
    <SignatureCell BackPages="20 11 12 19" FrontPages="29 2 5 26"
      Orientation="Up"/>
    <SignatureCell BackPages="27 4 3 28" FrontPages="18 13 10 21"
      Orientation="Down"/>
  </BinderySignature>
</BinderySignature>
<StrippingParams Class="Parameter" ID="MultiWeb1"
  PartIDKeys="SignatureName SheetName"
  Status="Available" WorkStyle="WorkAndBack">
  <StrippingParams SignatureName="Signature1">
    <StrippingParams SheetName="Sheet1">
      <BinderySignatureRef rRef="B001">
        <Part WebName="Web1"/>
      </BinderySignatureRef>
    </StrippingParams>
    <StrippingParams SheetName="Sheet2">
      <BinderySignatureRef rRef="B001">
        <Part WebName="Web2"/>
      </BinderySignatureRef>
    </StrippingParams>
  </StrippingParams>
  <StrippingParams SignatureName="Signature2">
    <StrippingParams SheetName="Sheet3">
      <BinderySignatureRef rRef="B001">

```

```

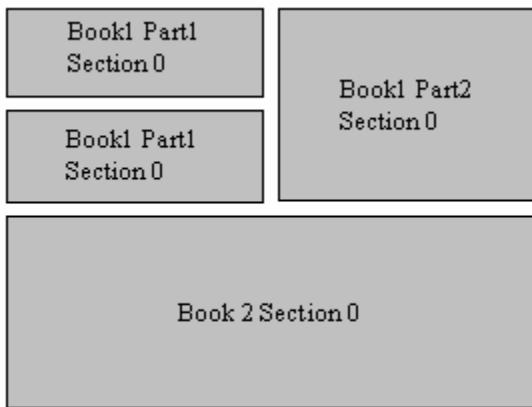
<Part WebName="Web1"/>
</BinderySignatureRef>
</StrippingParams>
<StrippingParams SheetName="Sheet4">
    <BinderySignatureRef rRef="B001">
        <Part WebName="Web2"/>
    </BinderySignatureRef>
</StrippingParams>
</StrippingParams>
</StrippingParams>

```

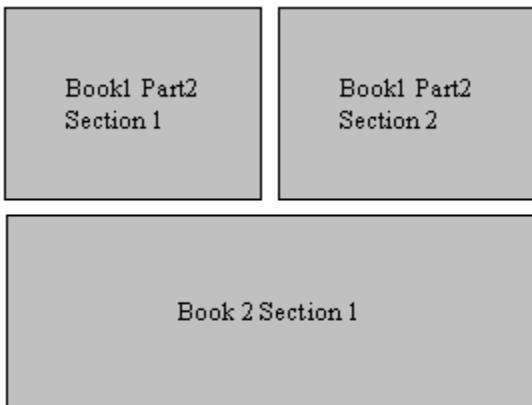
### Example O-26: Stripping Process

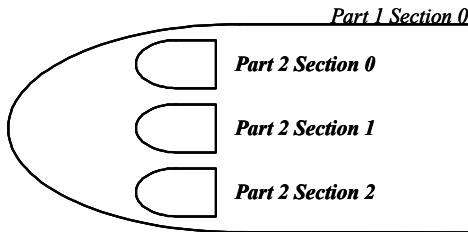
The next sample illustrates the **Stripping** Process and its **StrippingParams** and **Assembly** Resources.

Sheet1:



Sheet2:



**Assembly 1****TBD 2.x Example:**

```
<JDF ID="n001" Type="Stripping" JobPartID="ID378" Status="Ready" Version="1.4">
<ResourcePool>
  <BinderySignature Class="Parameter" FoldCatalog="F4-1" ID="F4-1"
    Status="Available"/>
  <BinderySignature Class="Parameter" FoldCatalog="F16-6" ID="F16-6"
    Status="Available"/>
  <BinderySignature Class="Parameter" FoldCatalog="F8-7" ID="F8-7"
    Status="Available"/>
  <StrippingParams Class="Parameter" ID="L1"
    PartIDKeys="SheetName BinderySignatureName" Status="Available">
    <StrippingParams SheetName="Sheet1">
      <StrippingParams AssemblyIDs="Part1" BinderySignatureName="F4-1"
        JobID="Book1" SectionList="0">
        <BinderySignatureRef rRef="F4-1"/>
        <Position RelativeBox="0 0.5 0.5 0.75"/>
        <Position RelativeBox="0 0.75 0.5 1"/>
      </StrippingParams>
      <StrippingParams AssemblyIDs="Part2" BinderySignatureName="F8-7"
        JobID="Book1" SectionList="0">
        <BinderySignatureRef rRef="F8-7"/>
        <Position RelativeBox="0.5 0.5 1 1"/>
      </StrippingParams>
      <StrippingParams BinderySignatureName="F16-6" JobID="Book2"
        SectionList="0">
        <BinderySignatureRef rRef="F16-6"/>
        <Position RelativeBox="0 0 1 0.5"/>
      </StrippingParams>
    </StrippingParams>
    <StrippingParams SheetName="Sheet2">
      <StrippingParams AssemblyIDs="Part2" BinderySignatureName="F8-7_1"
        JobID="Book1" SectionList="1">
        <BinderySignatureRef rRef="F8-7"/>
        <Position RelativeBox="0 0.5 0.5 1"/>
      </StrippingParams>
      <StrippingParams AssemblyIDs="Part2" BinderySignatureName="F8-7_2"
        JobID="Book1" SectionList="2">
        <BinderySignatureRef rRef="F8-7"/>
        <Position RelativeBox="0.5 0.5 1 1"/>
      </StrippingParams>
      <StrippingParams BinderySignatureName="F16-6" JobID="Book2"
        SectionList="1">
        <BinderySignatureRef rRef="F16-6"/>
    </StrippingParams>
  </ResourcePool>
```

```

        <Position RelativeBox="0 0 1 0.5"/>
    </StrippingParams>
</StrippingParams>
</StrippingParams>
<Assembly Class="Parameter" ID="A1" JobID="Book1" Order="List"
    Status="Available">
    <AssemblySection AssemblyIDs="Part1" Order="Gathering">
        <AssemblySection AssemblyIDs="Part2"/>
        <AssemblySection AssemblyIDs="Part2"/>
        <AssemblySection AssemblyIDs="Part2"/>
    </AssemblySection>
</Assembly>
<Assembly Class="Parameter" ID="A2" JobID="Book2" Order="Collecting"
    Status="Available">
    <Layout Class="Parameter" ID="L2" Status="Unavailable"/>
</ResourcePool>
<ResourceLinkPool>
    <StrippingParamsLink Usage="Input" rRef="L1"/>
    <AssemblyLink Usage="Input" rRef="A1"/>
    <AssemblyLink Usage="Input" rRef="A2"/>
    <LayoutLink Usage="Output" rRef="L2"/>
</ResourceLinkPool>
</JDF>

```

## O.7 DigitalDelivery Examples

### Example O-27: DigitalDelivery: Before the Delivery

Instruct the digital delivery Device to compress the files delivered in gzip compression. The part that changes has an orange tag and magenta attributes.

TBD 2.x Example.

```

<JDF ID="SpawnTest" Type="DigitalDelivery"
    xmlns="http://www.CIP4.org/JDFSchema_1_1"
    Status="Waiting" JobPartID="Part1" Version="1.4" >
<ResourcePool>
    <RunList ID="SourceFilesLink" Class="Parameter" Status="Available">
        <LayoutElement>
            <FileSpec URL="File:///e:/ToSend/xxx.pdf"/>
        </LayoutElement>
    </RunList>
    <RunList ID="TargetFilesLink" Class="Parameter" Status="Unavailable">
        <LayoutElement>
            <FileSpec Compression="Gzip"/>
        </LayoutElement>
    </RunList>
    <DigitalDeliveryParams ID="DDLink" Class="Parameter" Status="Available"/>
</ResourcePool>
<!-- ... -->
<ResourceLinkPool>
    <DigitalDeliveryParamsLink rRef="DDLink" Usage="Input"/>
    <RunListLink rRef="SourceFilesLink" Usage="Input"/>
    <RunListLink rRef="TargetFilesLink" Usage="Output"/>
</ResourceLinkPool>
</JDF>

```

### Example O-28: DigitalDelivery: After the Delivery

Since the input **RunList** Resource is without *@Compression* and the output **RunList** Resource is with *@Compression* — it will instruct the digital delivery Device to compress the files delivered.

**TBD 2.x Example.**

```
<LayoutElement>
    <FileSpec Compression="Gzip"
        URL="File:///FileServer1/ComingJobs/job702555.gz"/>
</LayoutElement>
```

### Example O-29: Delivery and DigitalDelivery Processes

Full example of **ArtDeliveryIntent DeliveryParams** translated to **Delivery** and **DigitalDelivery** Processes  
The following example describes:

- 1 Intent with upload file through www form and instruction to return the intermediate files in digital media together with the final product.
- 2 **DigitalDelivery Delivery** Process sub-jdf describing the upload to ftp server + compression + storage.
- 3 **Delivery** Process sub-jdf describing the return of final product and digital media via FedEx with values for service level and tracking id.

**TBD 2.x Example.**

```
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1"
    DescriptiveName="ArtDeliveryIntent translated to Delivery and
        DigitalDelivery processes" ID="ID000"
    Status="InProgress" Type="Product" JobPartID="ID879" Version="1.4"
    xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<ResourcePool>
    <NodeInfo ID="N01" Class="Parameter" Status="Available"
        JobPriority="100"/>
    <CustomerInfo ID="Cus01" Class="Parameter" Status="Available"
        CustomerJobName="Job title ...">
        <Contact ContactTypes="Customer">
            <Address City="Alta" PostalCode="36930" Region="AV"
                Street="123 Gibrish Street"/>
            <Person FamilyName="Spencer" FirstName="Ron"/>
            <ComChannel ChannelType="Phone" ChannelUsage="DayTime"
                Locator="tel:+44-019-1234-4567"/>
            <ComChannel ChannelType="Fax"
                ChannelUsage="Business DayTime NightTime"
                Locator="tel:+44-019-1234-4567"/>
        </Contact>
    </CustomerInfo>
    <ArtDeliveryIntent Class="Intent" ID="Link002"
        ReturnList="DigitalMedia" Status="Available">
        <ArtHandling DataType="EnumerationSpan"
            Range="Return ReturnWithProduct"/>
        <ReturnMethod DataType="NameSpan" Preferred="FedEx"/>
        <ArtDelivery ArtDeliveryType="DigitalNetwork">
            <Contact ContactTypes="Delivery">
                <ComChannel ChannelType="WWW" ChannelTypeDetails="Form"
                    Locator="http://www.server.com/uploader.aspx"/>
            </Contact>
        <RunList>
            <LayoutElement>
                <FileSpec
                    URL="file:///D:/WINNT/Profiles/23423/Desktop/test.pdf"/>
```

```

        </LayoutElement>
    </RunList>
</ArtDelivery>
</ArtDeliveryIntent>
<Contact Class="Parameter" ContactTypes="Delivery" ID="Shipping001"
    Status="Available">
    <Address City="Alta" PostalCode="36930" Region="AV"
        Street="123 Gibrish Street"/>
    <Person FamilyName="Jones" FirstName="Bill"/>
    <ComChannel ChannelType="Phone" ChannelTypeDetails="Mobile"
        Locator="tel:+44-078-1234-4567"/>
</Contact>
<Component Amount="500" Class="Quantity" ComponentType="FinalProduct"
    ID="ItemFinal" Status="Unavailable"/>
</ResourcePool>
<ResourceLinkPool>
    <ArtDeliveryIntentLink Usage="Input" rRef="Link002"/>
    <ComponentLink Amount="500" Usage="Output" rRef="ItemFinal"/>
    <NodeInfoLink Usage="Input" rRef="N01"/>
    <CustomerInfoLink Usage="Input" rRef="Cus01"/>
</ResourceLinkPool>
<JDF ID="J171373" Status="Completed" Type="DigitalDelivery"
    JobPartID="ID877" >
    <ResourcePool>
        <CustomerInfo ID="Cus02" Class="Parameter" Status="Available"
            CustomerJobName="Job title ..."/>
        <RunList Class="Parameter" ID="FileListLink1" Status="Available">
            <LayoutElement>
                <FileSpec
                    URL="file:///D:/WINNT/Profiles/23423/Desktop/test.pdf"/>
            </LayoutElement>
        </RunList>
        <DigitalDeliveryParams Class="Parameter"
            DigitalDeliveryDirection="Push"
            DigitalDeliveryProtocol="FTP"
            ID="DestinationLink" Method="WebServer"
            Status="Available">
            <Contact ContactTypes="Delivery">
                <ComChannel ChannelType="WWW" ChannelTypeDetails="Form"
                    Locator="http://www.server.com/uploader.aspx"/>
            </Contact>
            <Contact ContactTypes="Sender">
                <ComChannel ChannelType="Email"
                    Locator="mailto:sender@email.com"/>
            </Contact>
        </DigitalDeliveryParams>
        <RunList Class="Parameter" ID="FileListLink2" Status="Available">
            <Disposition MinDuration="P30D"/>
            <LayoutElement>
                <FileSpec Compression="Deflate" URL="test.pdf">
                    <Container>
                        <FileSpec MimeType="application/zip"
                            URL="file://network_share/uploaded%20files/test.zip"/>
                    </Container>
                </FileSpec>
            </LayoutElement>
        </RunList>
    </ResourcePool>

```

```

<ResourceLinkPool>
    <DigitalDeliveryParamsLink Usage="Input" rRef="DestinationLink"/>
    <RunListLink Usage="Input" rRef="FileListLink1"/>
    <CustomerInfoLink Usage="Input" rRef="Cus02"/>
    <RunListLink Usage="Output" rRef="FileListLink2"/>
</ResourceLinkPool>
<AuditPool>
    <PhaseTime DescriptiveName="Upload of Job 171373 to Server"
        End="2003-01-08T12:27:56Z" Start="2003-01-08T12:27:40Z"
        Status="InProgress"
       TimeStamp="2003-01-08T12:27:56Z"/>
    <Created AgentName="Server uploader 1.51" TimeStamp="2003-01-08T12:27:40Z"/>
    <ProcessRun End="2003-01-08T12:27:56Z" EndStatus="Completed"
        Start="2003-01-08T12:27:40Z" TimeStamp="2003-01-08T12:27:56Z"/>
</AuditPool>
</JDF>
<JDF DescriptiveName="The Return of product and digital media with intermediate
    materials"
    ID="X00000" Status="Waiting" Type="Delivery" JobPartID="ID878" >
<ResourceLinkPool>
    <ComponentLink Usage="Output" rRef="Item001"/>
    <DigitalMediaLink Usage="Output" rRef="Item002"/>
    <DeliveryParamsLink Usage="Input" rRef="Delivery001"/>
</ResourceLinkPool>
<ResourcePool>
    <RunList Class="Parameter" ID="FileListLink0" PartIDKeys="Run"
        Status="Available">
        <RunList Run="1">
            <LayoutElement>
                <FileSpec URL=".//ForReturn/Intermediate/test.pdf"/>
            </LayoutElement>
        </RunList>
        <RunList Run="2">
            <LayoutElement>
                <FileSpec URL=".//ForReturn/Final/test.pdf"/>
            </LayoutElement>
        </RunList>
    </RunList>
    <Component Amount="500" Class="Quantity" ComponentType="FinalProduct"
        ID="Item001" ProductID="AG5678" Status="Available" Unit="1"/>
    <DigitalMedia Amount="1" Capacity="700" Class="Handling" ID="Item002"
        MediaLabel="TempResults" MediaType="CD" Status="Available">
        <RunListRef rRef="FileListLink0"/>
    </DigitalMedia>
    <DeliveryParams Class="Parameter" ID="Delivery001" Status="Available">
        <Drop Method="FedEx" ServiceLevel="Ground" TrackingID="1234567890Z">
            <ContactRef rRef="Shipping001"/>
            <DropItem Amount="500" Unit="1">
                <ComponentRef rRef="Item001"/>
            </DropItem>
            <DropItem Amount="1">
                <DigitalMediaRef rRef="Item002"/>
            </DropItem>
        </Drop>
    </DeliveryParams>
</ResourcePool>
</JDF>
</JDF>

```

## Example O-30: Full Example of Digital Delivery through Central Server

The following example describes:

- 1 Upload of files to server by FTP protocol
- 2 Request for 10 days storage on server
- 3 Request to Mac Binary encode the files on server
- 4 Send to multiple destinations: 1 is email address and 1 is registered address in a private directory
- 5 Download of files by HTTP protocol
- 6 Decode from Mac Binary when downloading to target
- 7 Download by 1 destination out of the 2.

TBD 2.x Example.

```
<JDF xmlns="http://www.CIP4.org/JDFSchema_1_1"
      DescriptiveName="Digital Delivery through central server;
                      example with Process Group"
      ID="ID000" Status="InProgress" Type="ProcessGroup" JobPartID="ID200"
      Version="1.4" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<ResourcePool>
  <NodeInfo ID="Node001" Class="Parameter" Status="Available" JobPriority="60"/>
  <Contact Class="Parameter" ContactTypes="Delivery" ID="DestLink"
            PartIDKeys="Location" Status="Available">
    <Contact Location="Dest1">
      <ComChannel ChannelType="Email"
                  Locator="mailto:Reciever1@hotmail.com"/>
    </Contact>
    <Contact Location="Dest2">
      <ComChannel ChannelType="PrivateDirectory"
                  ChannelTypeDetails="ViaAddress"
                  Locator="Best Workgroup@Best Company"/>
    </Contact>
  </Contact>
  <RunList Class="Parameter" ID="TempFileListLink" PartIDKeys="Run"
            Status="Available">
    <Disposition MinDuration="P10D"/>
    <RunList Run="1">
      <LayoutElement>
        <FileSpec Compression="MacBinary"
                    URL="./Atlas/Europe.bmp.bin"/>
      </LayoutElement>
    </RunList>
    <RunList Run="2">
      <LayoutElement>
        <FileSpec Compression="MacBinary"
                    URL="./Atlas/America.jpg.bin"/>
      </LayoutElement>
    </RunList>
  </RunList>
</ResourcePool>
<JDF DescriptiveName="Upload Job to Server" ID="ID001" JobID="J702555"
      Status="Completed" Type="DigitalDelivery" JobPartID="ID201">
<ResourcePool>
  <CustomerInfo ID="Cus001" Class="Parameter" Status="Available"
                CustomerJobName="World atlas maps #2"/>
```

```

<RunList Class="Parameter" Directory="file:///c:/MyDir/JobForSend"
    ID="SourceFileListLink0" PartIDKeys="Run" Status="Available">
    <RunList Run="1">
        <LayoutElement>
            <FileSpec FileSize="240066" URL=".Atlas/Europe.bmp"/>
        </LayoutElement>
    </RunList>
    <RunList Run="2">
        <LayoutElement>
            <FileSpec FileSize="33947" URL=".Atlas/America.jpg"/>
        </LayoutElement>
    </RunList>
</RunList>
<Contact Class="Parameter" ContactTypes="Sender" ID="SendLink"
    Status="Available">
    <ComChannel ChannelType="Email"
        Locator="mailto:sender@Email.com"/>
</Contact>
<DigitalDeliveryParams Class="Parameter"
    DigitalDeliveryDirection="Push"
    DigitalDeliveryProtocol="FTP"
    ID="DestinationLink0" Method="Vio"
    PartIDKeys="Location" Status="Available">
    <Comment Name="Instruction">
        Please take these maps and add them to the rest ...
    </Comment>
    <DigitalDeliveryParams Location="SenderToDest1">
        <ContactRef rRef="SendLink"/>
        <ContactRef rRef="DestLink">
            <Part Location="Dest1"/>
        </ContactRef>
    </DigitalDeliveryParams>
    <DigitalDeliveryParams Location="SenderToDest2">
        <ContactRef rRef="SendLink"/>
        <ContactRef rRef="DestLink">
            <Part Location="Dest2"/>
        </ContactRef>
    </DigitalDeliveryParams>
</DigitalDeliveryParams>
</ResourcePool>
<ResourceLinkPool>
    <DigitalDeliveryParamsLink Usage="Input" rRef="DestinationLink0"/>
    <CustomerInfoLink Usage="Input" rRef="Cus001"/>
    <NodeInfoLink Usage="Input" rRef="Node001"/>
    <RunListLink Usage="Input" rRef="SourceFileListLink0"/>
    <RunListLink Usage="Output" rRef="TempFileListLink"/>
</ResourceLinkPool>
<AuditPool>
    <ProcessRun DescriptiveName="Upload of Job 702555 to Vio Server"
        End="2002-07-21T10:47:11Z" EndStatus="Completed"
        Start="2002-07-21T10:45:52Z"
        TimeStamp="2002-07-21T10:47:11Z"/>
    <Created AgentName="Vio Server 4.3" TimeStamp="2002-07-21T10:45:52Z"/>
</AuditPool>
</JDF>
<JDF DescriptiveName="Download Job from Server to destination" ID="ID002"
    JobID="J702555" Status="Pool" Type="DigitalDelivery"
    JobPartID="ID202">

```

```

<ResourcePool>
    <RunList Class="Parameter" Directory="File:///e:/My%20Download"
        ID="TargetFileListLink1" PartIDKeys="Run" Status="Available">
        <RunList Run="1">
            <LayoutElement>
                <FileSpec FileSize="240066" URL=".Atlas/Europe.bmp"/>
            </LayoutElement>
        </RunList>
        <RunList Run="2">
            <LayoutElement>
                <FileSpec FileSize="33947" URL=".Atlas/America.jpg"/>
            </LayoutElement>
        </RunList>
    </RunList>
    <DigitalDeliveryParams Class="Parameter"
        DigitalDeliveryDirection="Pull"
        DigitalDeliveryProtocol="HTTP"
        ID="DestinationLink1" Method="Vio"
        PartIDKeys="Location" Status="Available">
        <DigitalDeliveryParams Location="ToDest1">
            <ContactRef rRef="DestLink">
                <Part Location="Dest1"/>
            </ContactRef>
        </DigitalDeliveryParams>
        <DigitalDeliveryParams Location="ToDest2">
            <ContactRef rRef="DestLink">
                <Part Location="Dest2"/>
            </ContactRef>
        </DigitalDeliveryParams>
    </DigitalDeliveryParams>
</ResourcePool>
<ResourceLinkPool>
    <DigitalDeliveryParamsLink Usage="Input" rRef="DestinationLink1"/>
    <RunListLink Usage="Input" rRef="TempFileListLink"/>
    <NodeInfoLink Usage="Input" rRef="Node001"/>
    <RunListLink Usage="Output" rRef="TargetFileListLink1"/>
</ResourceLinkPool>
<StatusPool Status="InProgress">
    <PartStatus Status="Completed">
        <Part Location="ToDest2"/>
    </PartStatus>
</StatusPool>
<AuditPool>
    <Created AgentName="Vio Server 4.3"TimeStamp="2002-07-21T10:48:57Z"/>
    <ProcessRun DescriptiveName="HTTP Download of Job by
        Best Workgroup@Best Company"
        End="2002-07-21T10:50:11Z" EndStatus="Completed"
        Start="2002-07-21T10:48:57Z"
        TimeStamp="2002-07-21T10:50:11Z">
        <Part Location="ToDest2"/>
    </ProcessRun>
</AuditPool>
</JDF>
</JDF>

```

## O.8 Automated Imposition

### Example O-31: Algorithm for Processing an Imposition Template

The pseudocode below describes how a Page Pool or Page Pool List might be processed through an Imposition Template. Note that the algorithm described is a fairly lazy algorithm that relies on detecting that no content can be placed on a sheet to detect end of content. In addition, cut and stack and `@BaseOrdReset = "PagePoolList"` are not supported in this example:

**Note:** `numPagesInPagePool` and `lastPagePoolPositiveIndex` will be affected by execution of **Layout/** `PageCondition` Elements.

#### TBD 2.x Example.

```
positiveBaseOrd = negativeBaseOrd = 0 // base index into the PagePool
EvaluateTemplate and determine:
    doingNegativeOrds// If negative ords present in this template, then true
    doingPositiveOrds// If non-negative ords present in this template, then true
    maximumPositiveOrd// Value of the largest non-negative ord in the template
    maximumNegativeOrd// Value of the greatest magnitude negative ord in the template
    numPagesInPagePool// includes evaluation for PagePoolList
    lastPagePoolPositiveIndex// index of last page in the page pool to be placed using
        non-negative ords (the "midpoint" of the PagePool)
do
    numSheetsProcessed = numSheetsExhausted = 0
    for each sheet in the Imposition Template
        numSheetsProcessed++
        numSidesExhausted = numSidesInSheet = 0
        for each Side in the Sheet
            numSidesInSheet++
            if ProcessSide() == sideContentExhausted // see below for pseudocode
                numSidesExhausted++
            if numSidesInSheet == numSidesExhausted
                numSheetsExhausted++
            if doingPositiveOrds
                positiveBaseOrd += maximumPositiveOrd + 1
            if doingNegativeOrds
                negativeBaseOrd += maximumNegativeOrd
    until numSheetsProcessed == numSheetsExhausted
```

Processing a Side's ContentObjects:

```
numOrdsProcessed = numOrdsExhausted = 0
for each ContentObject in the Side
    numOrdsProcessed++
    if ContentObject/@Ord >= 0
        theOrd = positiveBaseOrd + ContentObject/@Ord
    else
        theOrd = numPagesInPagePool + negativeBaseOrd + ContentObject/@Ord;
        // remember negativeBaseOrd starts at 0
    if ((ContentObject/@Ord >= 0) && (theOrd > lastPagePoolPositiveIndex)) ||
        ((ContentObject/@Ord < 0) && (theOrd <= lastPagePoolPositiveIndex))
    numOrdsExhausted++
    if InsertSheet specifies FillSignature
        place any alternate content or leave blank
    else if the ImpositionTemplate specifies a PageCondition that applies
        place any alternate content or leave blank
    else
        place PagePool[theOrd]
if (numOrdsProcessed == numOrdsExhausted)
    return sideContentExhausted
```

```

else
    return sideContentNotExhausted

```

### Example O-32: Format of Variable Data Structured Content

The BNF and example below describe a generic variable data structured content format using XML to represent the structure elements. This format is able to represent the most common attributes of existing variable data languages, and will be used to describe the input data sets for this section's examples:

The following is BNF for eVDPML (example Variable Document Print Markup Language) XML:

Page ::= [Metadata\*] - represents the graphical content of a single page which may contain metadata.

(**Note:** Metadata was added to the Page Element in the meeting discussion)

Metadata - represents arbitrary key/value metadata information

DocPart ::= [Metadata\*] [DocPart+ || Page+]

(**Note:** cannot have both DocPart and Page elements in the same DocPart element.)

Record ::= [Metadata\*] [DocPart+ || Page+]

(**Note:** Both DocPart and Page elements SHALL not be specified in the same Record.)

RecordGroup ::= [Metadata] [RecordGroup+ || Record+]

(**Note:** all Record elements SHALL be specified at the same RecordGroup node hierarchical level)

Below is an example structure using eVDPML syntax (which is NOT JDF XJDF syntax):

**TBD 2.x Example.**

```

<RecordGroup>
  <RecordGroup>
    <Metadata Key="MailRate" Value="Bulk"/>
    <Record>
      <Metadata Key="RecID" Value="0"/>
      <Metadata Key="LastName" Value="Robinson"/>
      <DocPart>
        <DocPart>
          <Page/> <Page/> <Page/> <Page/>
        </DocPart>
        <DocPart>
          <Page/> <Page/> <Page/>
        </DocPart>
      </DocPart>
    </Record>
    <Record>
      <Metadata Key="RecID" Value="1"/>
      <Metadata Key="LastName" Value="Smith"/>
      <Page/> <Page/> <Page/> <Page/>
    </Record>
    <!-- ... -->
  </RecordGroup>
  <RecordGroup>
    <Metadata Key="MailRate" Value="FirstClass"/>
    <Record>
      <Metadata Key="RecID" Value="389"/>
      <Metadata Key="LastName" Value="Prosi"/>
      <Page/> <Page/> <Page/> <Page/>
    </Record>
    <Record>
      <Metadata Key="RecID" Value="390"/>
    </Record>
  </RecordGroup>

```

```

<Metadata Key="LastName" Value="Doe"/>
    <Page/> <Page/> <Page/>
</Record>
<!-- ... -->
</RecordGroup>
</RecordGroup>

```

### Example O-33: Page Pools

All recipients receive a one page cover letter printed on substrate A and a personalized document containing two or more customized two sided pages printed on substrate B and all pages to be corner stapled together.

Demonstrates use of Partitioning for mapping Page Pools of two different documents to independent sets of sheets relying on the structure of the PDL.

The eVDPML is:

```

TBD 2.x Example.
<RecordGroup>
    <Record>
        <Record>
            <Metadata Key="RecID" Value="0"/>
            <DocPart>
                <Metadata Key="Part" Value="CoverLetter"/>
                <Page/>
            </DocPart>
            <DocPart>
                <Metadata Key="Part" Value="Brochure"/>
                <Page/>
                <Page/>
                <Page/>
                <Page/>
            </DocPart>
        </Record>
    <Record>
        <Metadata Key="RecID" Value="1"/>
        <DocPart>
            <Metadata Key="Part" Value="CoverLetter"/>
            <Page/>
        </DocPart>
        <DocPart>
            <Metadata Key="Part" Value="Brochure"/>
            <Page/>
            <Page/>
            <Page/>
            <Page/>
            <Page/>
        </DocPart>
    </Record>
    <!-- ... -->
    <Record>
        <Metadata Key="RecID" Value="n"/>
        <DocPart>
            <Metadata Key="Part" Value="CoverLetter"/>
            <Page/>
        </DocPart>
        <DocPart>
            <Metadata Key="Part" Value="Brochure"/>
            <Page/>
            <Page/>

```

```

        </DocPart>
    </Record>
</RecordGroup>
```

The **JDF XJDF** is:

```

TBD 2.x Example.
<RunList Class="Parameter" ID="Ex3_RunList" Status="Available">
    <LayoutElement>
        <FileSpec URL="MyVDPRecords.vdpml"
            MimeType="application/x-evdpml+xml"/>
    </LayoutElement>
    <MetadataMap DataType="PartIDKeys" Name="RunTags"
        ValueFormat="%s" ValueTemplate="doctype" Context="Document">
        <Expr Name="doctype" Value="CoverLetter">
            <and>
                <NameEvaluation
                    Path="Metadata/@Key" RegExp="Part"/>
                <NameEvaluation
                    Path="Metadata/@Value" RegExp="CoverLetter"/>
            </and>
        </Expr>
        <Expr Name="doctype" Value="Brochure">
            <and>
                <NameEvaluation
                    Path="Metadata/@Key" RegExp="Part"/>
                <NameEvaluation
                    Path="Metadata/@Value" RegExp="Brochure"/>
            </and>
        </Expr>
    </MetadataMap>
</RunList>
<Media Class="Consumable" ID="Medial" Status="Available"/>
<!--
    NOTE: MetadataMap(s) are applied to each document
    node input to the Imposition process independent of each other.
-->
<Layout Class="Parameter" ID="Ex2_Layout" Status="Available"
    PartIDKeys="RunTags SheetName Side" Automated="true"
    LockOrigins="true" BaseOrdReset="PagePool">
    <MediaRef rRef="Medial"/>
    <!-- Used by Imposition process to obtain media dimensions -->
    <Layout RunTags="CoverLetter">
        <Layout SheetName="LetterSheet">
            <Layout Side="Front">
                <ContentObject CTM="1 0 0 1 0 0" Ord="0"/>
                <!-- First page of CoverLetter DocPart -->
            </Layout>
        </Layout>
    </Layout>
    <Layout RunTags="Brochure">
        <Layout SheetName="BrochureSheets">
            <Layout Side="Front">
                <ContentObject CTM="1 0 0 1 0 0" Ord="0"/>
                <!--Front side of Brochure sheet -->
            </Layout>
            <Layout Side="Back">
                <ContentObject CTM="1 0 0 1 0 0" Ord="1"/>
                <!--Back side of Brochure sheet -->
            </Layout>
        </Layout>
    </Layout>
```

```

    </Layout>
    </Layout>
</Layout>
</Layout>

```

### Example O-34: Booklet Using Automated Imposition

All recipients receive a single customized saddle stitched booklet where the two-page cover (front and back outside only) and the four or more body pages are also printed on substrate A using cut and stack production. The finished sheet size of each component of a booklet is 8.5" x 11" and the finished booklet is 5.5" x 8.5". The production of the component will be performed cut and stack on 17" x 11". Two saddle stitch imposed page pairs will be generated per sheet definition.

The eVDPML is:

**TBD 2.x Example.**

```

<RecordGroup>
    <Record>
        <Metadata Key="RecID" Value="0"/>
        <DocPart>
            <Metadata Key="Part" Value="Cover"/>
            <Page/> <Page/>
        </DocPart>
        <DocPart>
            <Metadata Key="Part" Value="Body"/>
            <Page/> <Page/><Page/><Page/> ... <Page/>
        </DocPart>
    </Record>
    <Record>
        <Metadata Key="RecID" Value="1"/>
        <DocPart>
            <Metadata Key="Part" Value="Cover"/>
            <Page/> <Page/>
        </DocPart>
        <DocPart>
            <Metadata Key="Part" Value="Body"/>
            <Page/> <Page/><Page/><Page/> ... <Page/>
        </DocPart>
    </Record>
    <!-- ... -->
    <Record>
        <Metadata Key="RecID" Value="n"/>
        <DocPart>
            <Metadata Key="Part" Value="Cover"/>
            <Page/> <Page/>
        </DocPart>
        <DocPart>
            <Metadata Key="Part" Value="Body"/>
            <Page/> <Page/><Page/><Page/> ... <Page/>
        </DocPart>
    </Record>
</RecordGroup>

```

The **JDF XJDF** is:

**TBD 2.x Example.**

```

<RunList Class="Parameter" ID="Ex11_RunList" Status="Available">
    <LayoutElement>
        <FileSpec URL="MyVDPRecords.vdpml"

```

```

        MimeType="application/x-evdpml+xml" />
    </LayoutElement>
<MetadataMap DataType="PartIDKeys" Name="RunTags" ValueFormat="%s"
    ValueTemplate="ProductPart">
    <Expr Name="ProductPart" Value="BookletCover">
        <and>
            <NameEvaluation Path="Metadata/@Key" RegExp="Part"/>
            <NameEvaluation Path="Metadata/@Value" RegExp="Cover"/>
        </and>
    </Expr>
    <Expr Name="ProductPart" Value="BookletBody">
        <and>
            <NameEvaluation Path="Metadata/@Key" RegExp="Part"/>
            <NameEvaluation Path="Metadata/@Value" RegExp="Body"/>
        </and>
    </Expr>
</MetadataMap>
</RunList>
<Media Class="Consumable" ID="SubstrateA" Status="Available"/>
<Layout Class="Parameter" ID="Ex11_Layout" Status="Available"
    PartIDKeys="RunTags SheetName Side" Automated="true"
    LockOrigins="false" BaseOrdReset="PagePool">
    <LogicalStackParams MaxStackDepth="500" Restrictions="None">
        <Stack LogicalStackOrd="0" LogicalSheetSequence="SheetIndex"/>
        <Stack LogicalStackOrd="-1" LogicalSheetSequence="SheetIndex"/>
    </LogicalStackParams>
    <Layout RunTags="BookletCover">
        <MediaRef rRef="SubstrateA"/>
        <!-- Used by Imposition process to obtain media dimensions -->
        <Layout SheetName="BookletCoverSheet">
            <Layout Side="Front">
                <ContentObject CTM="1 0 0 1 378 630" Ord="0"
                    LogicalStackOrd="0"/> <!-- front outside cover -->
                <ContentObject CTM="1 0 0 1 18 630" Ord="-1"
                    LogicalStackOrd="0"/> <!-- back outside cover -->
                <ContentObject CTM="1 0 0 1 378 18" Ord="0"
                    LogicalStackOrd="1"/> <!-- front outside cover -->
                <ContentObject CTM="1 0 0 1 18 18" Ord="-1"
                    LogicalStackOrd="1"/> <!-- back outside cover -->
                <MarkObject CTM="1 0 0 1 0 0" LogicalStackOrd="0">
                    <MarkActivation Context="CollectSheetIndex"
                        Index="-1"/>
                    <DeviceMark Anchor="BottomLeft" Font="Code128A"
                        FontSize="48"/>
                    <!-- provides formatting for the dynamic barcode -->
                    <JobField JobFormat="%d" JobTemplate="TotalSheetsInCollect"/>
                </MarkObject>
                <MarkObject CTM="1 0 0 1 0 0" LogicalStackOrd="1">
                    <MarkActivation Context="CollectSheetIndex" Index="-1"/>
                    <DeviceMark Anchor="BottomLeft" Font="Code128A"
                        FontSize="48"/>
                    <!-- provides formatting for the dynamic barcode -->
                    <JobField JobFormat="%d" JobTemplate="TotalSheetsInCollect"/>
                </MarkObject>
            </Layout>
        </Layout>
    </Layout>
    <Layout RunTags="BookletBody">

```

```

<MediaRef rRef="SubstrateA"/>
<!-- Used by Imposition process to obtain media dimensions -->
<Layout SheetName="BookletBodySheets">
    <Layout Side="Front">
        <ContentObject CTM="1 0 0 1 378 630" Ord="0"
            LogicalStackOrd ="0"/> <!-- Front right -->
        <ContentObject CTM="1 0 0 1 18 630" Ord="-1"
            LogicalStackOrd ="0"/> <!-- Front left -->
        <ContentObject CTM="1 0 0 1 378 18" Ord="0"
            LogicalStackOrd ="1"/> <!-- Front right -->
        <ContentObject CTM="1 0 0 1 18 18" Ord="-1"
            LogicalStackOrd ="1"/> <!-- Front left -->
    </Layout>
    <Layout Side="Back">
        <ContentObject CTM="1 0 0 1 18 630" Ord="1"
            LogicalStackOrd ="0"/> <!-- Back left -->
        <ContentObject CTM="1 0 0 1 378 630" Ord="-2"
            LogicalStackOrd ="0"/> <!-- Back right -->
        <ContentObject CTM="1 0 0 1 18 18" Ord="1"
            LogicalStackOrd ="1"/> <!-- Back left -->
        <ContentObject CTM="1 0 0 1 378 18" Ord="-2"
            LogicalStackOrd ="1"/> <!-- Back right -->
    </Layout>
</Layout>
</Layout>
</Layout>

```

### Example O-35: Test Example for IN-190 Issue

This is to be removed: It tests the dynamic updating of an example

This example is imported into Word, exported as rtf

```

<!-- Single line -->

<!-- multi
line 5
comment -->
<! Updated to test dynamic change to content>
<RunList Class="Parameter" ID="Link0003" LogicalPage="5" Pages="0 ~ -1"
    PartIDKeys="Run" Status="Available">
    <RunList Run="2">
        <LayoutElement>
            <FileSpec URL="File:///File2.pdf"/>
        </LayoutElement>
    </RunList>
</RunList>

<RunList Class="Parameter" ID="Link0003" LogicalPage="5" Pages="0 ~ -1"
    PartIDKeys="Run" Status="Available">
<RunList Run="2">
    <LayoutElement>
        <FileSpec URL="File:///File2.pdf"/>
    </LayoutElement>
</RunList>

```

</RunList>



# Appendix P    Deprecated Elements, JMF Messages, Processes and Resources

Nothing has been deprecated.

Processes and Resources that have been deprecated in their entirety have been moved to this appendix. The name of the deprecated Process or Resource remains in those chapters along with directions from CIP4 working groups on the preferred method of handling Job data in the latest version of JDF. The original Processes and Resources are provided here only for users and developers of JDF solutions who require this information to solve backwards compatibility issues; however, we strongly encourage that the use of these deprecated Resources and Process be eliminated from your JDF environment to reduce complexity.

Note: Deprecated Attributes and Elements within Process and Resources which themselves have not been entirely deprecated remain in the main body of this standard, and this appendix is not meant to be an exhaustive catalog of all deprecated items within JDF.

## P.1    Deprecated Structures of JDF Nodes and Jobs

### P.1.1    PlaceHolder Resource

Deprecated in JDF 1.5

PlaceHolder Resources, unlike PhysicalResources, do not describe any logical or physical entity. Rather, they define Process linking and help to define Process ordering when the exact nature of interchange Resources is still unknown. In essence, they serve as placeholders that stand in for defined Resources. Using PlaceHolder Resources, a processing skeleton can be constructed that gives a basic shape to a Job. The appropriate Resources can be substituted for PlaceHolder Resources when they become known.

This kind of Resource SHOULD only be used to link Nodes of `@Type = "ProcessGroup"`, since Process leaf Nodes have well defined Resources that SHOULD be used in preference. The only Resource whose `@Class = "PlaceHolder"` is called **PlaceHolderResource**.

Like ImplementationResources, PlaceHolder Resources contain no Attributes besides those contained in the Abstract Resource Element.

### P.1.2    ResourceUpdate

New in JDF 1.1,

Deprecated in JDF 1.3

ResourceUpdate Elements are an Abstract Element class that optionally contains any of the Attributes and Elements valid for the **Resource** that they reside in. The naming convention for ResourceUpdate Elements is to add the suffix "Update" to the Resource name. REQUIRED Attributes and Elements of Resources are optional in the respective ResourceUpdate. In addition, a ResourceUpdate defined within a **Resource** SHALL contain a unique `@UpdateID` of type NMTOKEN. Only Devices that process the Resource as input can reference the `@UpdateID` of a ResourceUpdate. Such references to ResourceUpdate Elements SHALL update the current state of the Device.

When a ResourceUpdate is referenced from a Device (e.g., from a PPML TicketRef element [PPML]), said Device will update ONLY those Elements that are explicitly specified within the ResourceUpdate. No Attributes are inherited from the **Resource** that contains the ResourceUpdate.

ResourceUpdate Elements are useful for Process Input Resources only and SHALL NOT be applied to Intent Resources.

Functionality similar to that of ResourceUpdate is provided by Partitioned Resources and it is RECOMMENDED to reference Partitions instead of ResourceUpdate Elements.

**Table P-1: Contents of the Abstract ResourceUpdate Element**

Name	Data Type	Description
<i>UpdateID</i> <u>New in JDF 1.1</u> <u>Deprecated in JDF 1.3</u>	NMTOKEN	Unique ID that identifies the ResourceUpdate. Note that only one Resource, Resource Partition, or ResourceUpdate with a given value of <i>@UpdateID</i> may occur per JDF document, even though the scope of the ResourceUpdate is local to the Resource that it is defined in.

### P.1.3 StatusPool

Deprecated in JDF 1.3.

In JDF 1.3 and beyond, StatusPool has been replaced by a Partitioned **NodeInfo** Resource.

The StatusPool describes the *@Status* of a JDF Node that processes Partitioned Resources. StatusPool Elements are only valid if the Node's *@Status* = "Pool", otherwise the Node's *@Status* is valid for all parts, regardless of the contents of StatusPool. It MAY contain PartStatus Elements that define the Node's status with respect to specific Partitions. It is an error to define PartStatus Elements that reference identical or overlapping parts within one StatusPool. Partitioned Resources are described in Section 3.15.5, "Description of Partitioned Resources".

**Table P-2: Contents of the StatusPool Element**

Name	Data Type	Description
<i>Status</i> ? <u>New in JDF 1.2</u>	enumeration	Identifies the <i>@Status</i> of the Node when JDF/ <i>@Status</i> = "Pool". Individual PartStatus Elements MAY override this value for the Partitions they represent. <i>@Status</i> applies to all Partitions of the Node except where it is overridden by PartStatus/ <i>@Status</i> . <b>Allowed values are from:</b> JDF/ <i>@Status</i> (except "Pool")
<i>StatusDetails</i> ? <u>New in JDF 1.2</u>	string	Identifies the <i>@StatusDetails</i> of the Node when JDF/ <i>@Status</i> = "Pool". Individual PartStatus Elements MAY override this value for the Partitions they represent. <i>@StatusDetails</i> applies to all Partitions of the Node except where it is overridden by PartStatus/ <i>@StatusDetails</i> . <b>Values include those from:</b> Section C.1, "StatusDetails Supported Strings" on page 1133.
PartStatus *	element	Element that defines the Node's status for a set of parts.

#### P.1.3.1 Element: PartStatus

The following table describes the PartStatus Element.

**Table P-3: Contents of the PartStatus Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Status</i> ?	enumeration	Identifies the status of an individual part of the Node. If not specified, defaults to StatusPool/ <i>@Status</i> . In JDF 1.3 and beyond, <i>@Status</i> has been replaced by <b>NodeInfo</b> / <i>@NodeStatus</i> . <b>Allowed values are from:</b> JDF/ <i>@Status</i> .
<i>StatusDetails</i> ? <u>New in JDF 1.2</u>	string	Description of the status that provides details beyond the enumerative values given by the <i>@Status</i> Attribute. If not specified, defaults to StatusPool/ <i>@StatusDetails</i> . In JDF 1.3 and beyond, <i>@StatusDetails</i> has been replaced by <b>NodeInfo</b> / <i>@NodeStatus</i> . <b>Values include those from:</b> Section C.1, "StatusDetails Supported Strings" on page 1133.

**Table P-3: Contents of the PartStatus Element (Sheet 2 of 2)**

Name	Data Type	Description
Part <a href="#">Modified in JDF 1.2</a>	element	<p>Specifies the selected part that the PartStatus is valid for. This SHALL be a leaf or intermediate Partition of the Node's Output Resource. Thus, if the Node's Output Resource is Partitioned by "Side" and "Separation", the Part may contain either "Side" only or "Side" and "Separation", but not "Separation" only. See Table 3-33, "Part Element" on page 129 for details of the Part Element. For details on Partitioned Resources, see Section 3.15.5, "Description of Partitioned Resources" on page 120.</p> <p><b>Note:</b> the cardinality of Part has been changed from * to none (i.e., exactly one Element) in version 1.1 of the JDF specification</p>

## P.2 Life Cycle of JDF

### P.2.1 Case 5: Spawning and Merging of Independent Jobs

[Deprecated in JDF 1.5](#)

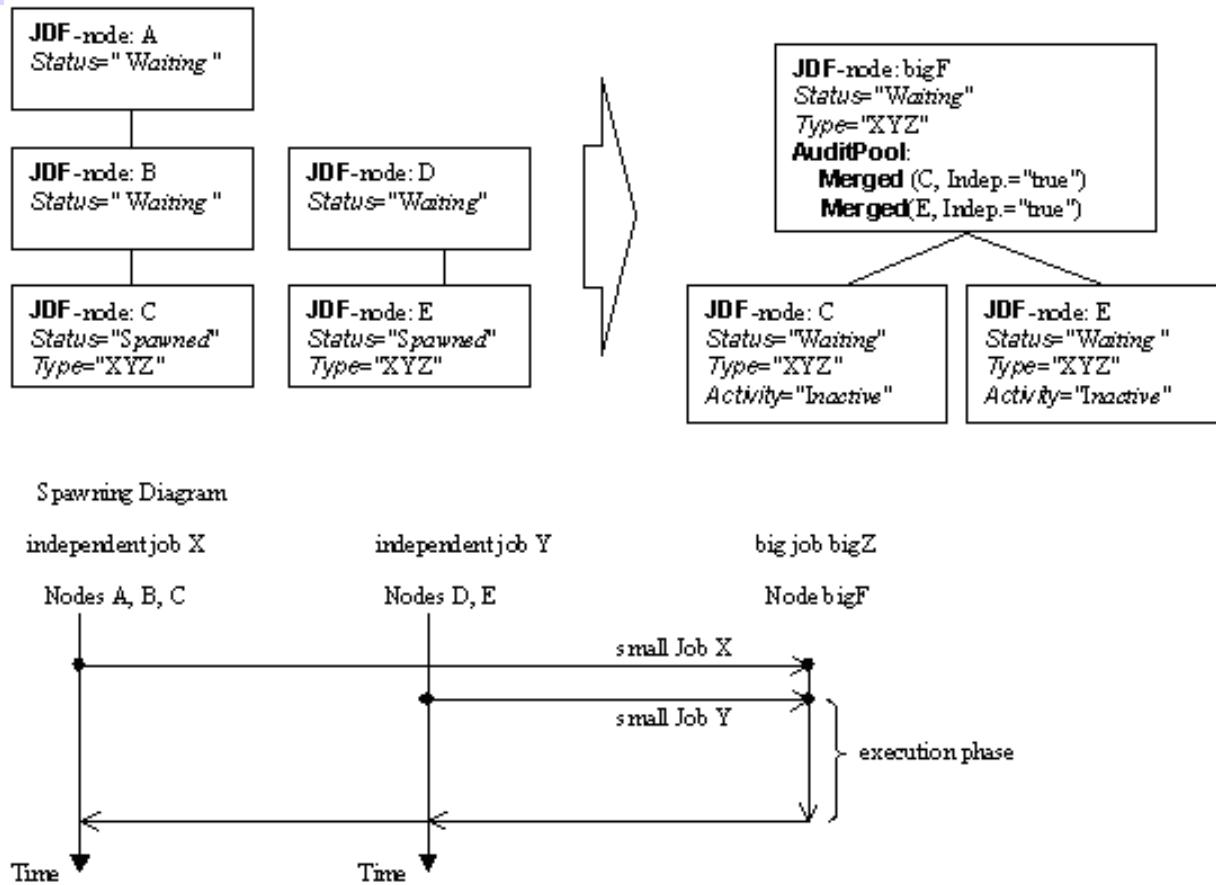
**Compatibility Warning.** Note that Spawning and Merging of Independent Jobs is under development and subject to major changes in a future release of this specification.

It is useful to spawn and merge independent Jobs in situations where the execution of separate, independent Small Jobs is not efficient in a commercial sense. Business cards for individual customers that are printed on one set of Sheets and subsequently cut are an example of this kind of situation. In cases such as these, Small Jobs can be collected in order to form a Big Job that can then be executed as a whole. This allows Job aspects such as production, equipment load, and balancing of ImplementationResources to be performed more efficiently.

Note that production Devices will generally require their Resources to unambiguously define the production details. Thus a JDF Agent SHALL prepare the Resources in a way that the exact positioning of the contents of individual Small Jobs is specified. It is therefore RECOMMENDED to use the procedure that is described in this section for Product Intent Nodes only.

In this example, diagrammed in Figure P-1, Nodes C and E represent Small Jobs of identical type. Node bigF represents a Big Job, which might exist already or which might have been created for the purposes of this spawning-and-merging Process. Once Nodes C and E are gathered beneath Node bigF, as described below, a Big Job can then be executed as a whole for the sake of efficiency. When the Big Job is executed, the Small Jobs are effectively executed simultaneously. Nodes A, B and D are provided to demonstrate that spawned Nodes in this example might be related to other Nodes in various ways.

Figure P-1: Example of the spawning and merging of independent Jobs



## Spawning

Spawning begins as it did in Case 1 or Case 2. Then, the Process to be spawned (Job C in Figure P-1) is copied into a newly created or already existing Big Job (Big Job bigZ in Figure P-1). The Process type of the Root Node of the Big Job SHALL be identical to that of the spawned Processes. The *@Activation* state of the spawned Processes is set to "*Inactive*", and an *AncestorPool* Element is added to the inactive spawned JDF Node to define the ancestry (as was described above). A *Merged* Element containing information about the spawned independent Jobs and when they have been received is added to the Big Job.

In the original Jobs, the *@Status* of the Process is designated as "*Spawned*", and a *Spawned* Element with the OPTIONAL *@jRefDestination* Attribute specified is added to the parent of the original Job. The *@jRefDestination* Attribute contains the ID of the Big Job beneath which the spawned Process has been placed. The changes in the parent are the equivalent of those described in Case 1 except for the specification of the *@jRefDestination* Attribute in the *Spawned* Element.

Where necessary, Resource instances SHALL be copied and logged as in Case 2 by appending the IDs to the appropriate Attribute (*@rRefsRCopied* or *@rRefsRWCopied*) of the *Spawned* Element in the parent of the original Job. This is REQUIRED in single spawning and merging. Furthermore, the *ResourceLink* Elements of the spawned Process SHALL be copied to the *ResourceLinkPool* of the active, big Process Node. In this way, the Input Resources and the Resources to be produced are linked to the Big Job.

## Merging

For each of the spawned Small Jobs, the return procedure is performed as it was in the preceding cases. Once the Process explained in Case 1 is performed, the completed Job is copied back to its original location and the `@Activation` Attribute is restored by setting it to the activation of the Big Job Node after completion.

Eventually, copied Resources SHALL be purged and handled just as they were in Case 2. Then, the merging SHALL be logged by appending the Merged Element to the AuditPool container of the parent of the original Node. In independent spawning and merging, the `@jRefSource` Attribute SHALL be specified in the appropriate Merged Element.

If the Big Job is retained, a Spawning Element with the Attribute `@Independent = "true"` SHALL be appended to the AuditPool of the Big Job. For instance, saving the finished Big Job might be desirable if the audit information contained in the Big Job SHOULD be available for individual invoicing. Finally, the newly created big JDF Node SHOULD be deleted to avoid the double existence of Nodes.

## P.3 JMF Messaging Elements

### P.3.1 Signal

#### P.3.1.1 Element: Trigger

The following 3 Elements were deprecated from Signal/Trigger in JDF 1.2.

#### P.3.1.2 Element: Added

[Deprecated in JDF 1.2](#)

Table P-4: Added Element

Name	Data Type	Description
AddedElement *	element	If the appending of an Element like a service, Controller, Device or Message triggered this signal, this Element describes which service, Controller, Device, Message, etc. has been added. This is an Abstract Element. It is a placeholder for a <code>ResponseTypeObj</code> like <code>NotificationDef</code> , a <code>JDFController</code> , a <code>Device</code> , a <code>JDFService</code> or a <code>MessageService</code> . For details on these Elements see Section 5.8, “Messages for Events and Capabilities”.

#### P.3.1.3 Element: ChangedAttribute

[Deprecated in JDF 1.2](#)

Table P-5: ChangedAttribute Element

Name	Data Type	Description
AttributeName	NMTOKEN	Name of the Attribute that changed.
ElementID ?	NMTOKEN	ID of the Element that changed. Used only in conjunction with a change of a certain Resource or Node which cannot uniquely be addressed by the other Attributes of this Element.
ElementType	NMTOKEN	Name of the Element which contains the changed Attribute.
OldValue	string	Old value. The string SHALL be cast to the appropriate data type that depends on the Attribute’s data type.
NewValue	string	New value of the Attribute.

### P.3.1.4 Element: Removed

[Deprecated in JDF 1.2](#)

**Table P-6: Removed Element**

Name	Data Type	Description
RemovedElement *	element	If the removal of an Element like a service, Controller, Device or Message triggered this signal, this Element describes the service, Controller, Device, Message, etc. that has been removed. This is an Abstract Element. It is a placeholder for ResponseTypeObj like NotificationDef, a JDFController, a Device, a JDFService or a MessageService. For details on these Elements see Section 5.8, “Messages for Events and Capabilities”.

## P.3.2 Events

[Deprecated in JDF 1.5](#)

The Events Message type is intended to be used to query for supported Signal Messages and to subscribe for asynchronous, randomly occurring Signal Messages of a Device or Controller. These events are described in Section 4.6.1, “Classification of Notifications” and can only be transmitted via Signal Messages. If the Query Message contains a Subscription Element, a NotificationFilter Element is combined by a logical AND operation with the Subscription Element for selective subscriptions. An empty Events Message (without a Subscription and NotificationFilter Element) can be used to query for all events as described in Section 5.8.7, “Notification” on page 239, which are supported by a Device or Controller. If all signals are requested, a NotificationFilter with `@SignalTypes = "all"` SHALL be included in the Query Message.

The Controller that subscribes for Events Messages receives Signal Messages. In JDF 1.2, the Events Message was enhanced to subscribe for all types of Signal Messages, not only Notification Signals. The event type and values of Notification Messages are provided by specifying a `@Type` Attribute and an Abstract NotificationDetails Element in the Notification Element, as described in Section 3.16.3.7, “Notification”. Possible NotificationDetails Elements are defined in Section C.3, “NotificationDetails” on page 1142.

**Table P-7: Events Message**

Object Type	Element Name	Description
QueryTypeObj	NotificationFilter ?	Refines the list of events queried.
ResponseTypeObj	NotificationDef *	List of Notification types that match NotificationFilter.

### Example P-1: Query with Subscription to All Events

Example of a Subscription of all Events and the Response Message, including the feature of subscribing for all Messages by setting `NotificationFilter/@SignalTypes = "all"`:

```
<Query ID="M170" Type="Events" xsi:type="QueryEvents">
  <Subscription URL="http://www.anycompany.com/MIS/JMF/JobTracker"/>
  <NotificationFilter Classes="Event Warning Error Fatal" SignalTypes="All"/>
</Query>
```

### Example P-2: Response for Subscription to All Events

The Response Message to the previous Query Message:

```
<Response ID="M1001" refID="M170" Type="Events" xsi:type="ResponseEvents"
  xmlns:anycompany="http://www.anycompany.com">
  <NotificationDef Classes="Warning Error Fatal" Type="Error"/>
  <NotificationDef Classes="Event" Type="FCNKey"/>
```

```

<NotificationDef Classes="Event Error" Type="Barcode"/>
<NotificationDef Classes="Event" Type="SystemTimeSet"/>
<NotificationDef Classes="Event" Type="anycompany:PrivateEvent_1"/>
<NotificationDef Classes="Event" Type="anycompany:PrivateEvent_2"/>
<NotificationDef Classes="Event" Type="anycompany:PrivateEvent_2"/>
<NotificationDef SignalType="Status"/>
<NotificationDef SignalType="Resource"/>
</Response>

```

### P.3.2.1 Element: NotificationDef

Table P-8: NotificationDef Element

Name	Data Type	Description
<i>Classes</i> ? <a href="#">Modified in JDF 1.2</a>	enumerations	<p>Notification/@Class of the Notification in a <a href="#">Signal</a>.  <b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Event</i></li> <li><i>Information</i></li> <li><i>Warning</i></li> <li><i>Error</i></li> <li><i>Fatal</i></li> </ul> <p><b>Constraint:</b> @Classes SHALL NOT be specified unless @SignalType = "Notification". For details, see Section 4.6.1, "Classification of Notifications".</p>
<i>SignalType</i> ?= "Notification" <a href="#">New in JDF 1.2</a>	NMTOKEN	<p><a href="#">Signal</a>/@Type value of the subscribed Message.  <b>Values include those from:</b> <a href="#">Message</a>/@Type.  <b>Note:</b> the values are limited to Signal Messages</p>
<i>Type</i> ? <a href="#">Modified in JDF 1.2</a>	NMTOKEN	<p>Notification type, that is the name of the Element derived from the <a href="#">Abstract NotificationDetails</a> Element.  <b>Constraint:</b> @Type SHALL NOT be specified unless @SignalType = "Notification".  <b>Values include those from:</b> Table C-11, "List of NotificationDetails Elements" on page 1143.</p>

### P.3.3 KnownControllers

[Deprecated in JDF 1.5](#)

The KnownControllers Query Message requests information about the Controllers and/or Devices that are known to the Controller that is queried and can be directly accessed by JMF messaging. KnownControllers is intended to be used with a “registration” server. A processor that needs information about its system environment can query a registration server for a list of known Controllers and/or Devices. A single Controller or Device that supports multiple URLs or protocols is defined using multiple JDFController Elements with the same @ControllerID Attribute. This list can subsequently be iterated using the other Process registration queries in this section. The URL of the master registration server SHALL be defined using a method outside of JDF.

Table P-9: KnownControllers Message (Sheet 1 of 2)

Object Type	Element Name	Description
QueryTypeObj	ControllerFilter <a href="#">New in JDF 1.4</a>	Allows filtering the Response.

**Table P-9: KnownControllers Message (Sheet 2 of 2)**

Object Type	Element Name	Description
ResponseTypeObj	JDFController *	Known Controllers.

**P.3.3.1 Element: ControllerFilter**[New in JDF 1.4](#)**Table P-10: ControllerFilter Element**

Name	Data Type	Description
ControllerID ?	string	Only Controllers whose <i>@ControllerID</i> or Devices whose <i>@DeviceID</i> matches this <i>@ControllerID</i> should be returned in the Response. If this Attribute is not specified, the Response should contain JDFController Elements for all known Controllers and/or Devices.
URLTypes ?	enumerations	Only URL's whose <i>JDFController/@URLType</i> Attribute in the Response match one of the values in this <i>@URLTypes</i> Attribute should be returned in the Response. If this Attribute is not specified, the Response should contain JDFController Elements with URLs of any type. <b>Allowed values are from:</b> <i>JDFController/@URLType</i> .

**P.3.3.2 Element: JDFController****Table P-11: JDFController Element**

Name	Data Type	Description
ControllerID ? <a href="#">New in JDF 1.2</a>	string	String that identifies the Controller or Device. The <i>@ControllerID</i> is used as the <i>@SenderId</i> of JMF Messages that are produced by this Controller or Device. A JMF Message that is intended for a specific Controller SHOULD specify the Controller's <i>@ControllerID</i> value or the Device's <i>@DeviceID</i> in <i>JMF/@DeviceID</i> .
URL	URL	URL of the Controller or Device. If the URL scheme is "file:", <i>@URL</i> SHALL specify the directory where the JMF Messages are to be deposited.
URLType ? <a href="#">New in JDF 1.4</a>	enumeration	Identifies the purpose of this URL. <b>Allowed values are:</b> <i>JDFError</i> <i>JDFInput</i> <i>JDFOutput</i> <i>JMF</i> <i>SecureJMF</i>

**Example P-3: KnownControllers Query**

```
<Query ID="Q1" Type="KnownControllers" SenderID="MIS"
       xsi:type="QueryKnownControllers">
  <ControllerFilter ControllerID="PrintController1" URLTypes="JMF SecureJMF"/>
</Query>
```

**Example P-4: KnownControllers Response**

```
<Response ID="M1" Type="KnownControllers" xsi:type="ResponseKnownControllers"
          refID="Q1" SenderID="RegistrationServer">
```

```

<JDFController ControllerID="PrintController1"
  DescriptiveName="Printer Controller"
  URL="http://www.anycompany.com/controller"
  URLType="JMF"/>
<JDFController ControllerID="PrintController1"
  DescriptiveName="Printer Controller"
  URL="https://www.anycompany.com/controller/secure"
  URLType="SecureJMF"/>
</Response>

```

### P.3.4 RepeatMessages

Deprecated in JDF 1.5

The RepeatMessages Query Message returns a list of Messages that have been previously sent by the Controller. The OPTIONAL MsgFilter Element allows the list to be filtered. The list of JMF Messages that fulfill the filter criteria can be sorted by time, with the most recent listed first. This specification places no requirements on the size of the Message buffer of a Controller that supports RepeatMessages.

Table P-12: RepeatMessages Message

Object Type	Element Name	Description
QueryTypeObj	MsgFilter ?	A filter for the Messages to be repeated. For details, see Section P.3.2, "Events".
ResponseTypeObj	Message *	The recent Messages queried.

#### P.3.4.1 Element: MsgFilter

If the returned list is incomplete because the parameters supplied in the MsgFilter Element cannot be fulfilled by the application, the `@ReturnCode` is either 108 (empty list) or 109 (incomplete list) and SHOULD be flagged as a warning with `Notification[@Class = "Warning" and @Type = "Error"]`.

Table P-13: MsgFilter Element (Sheet 1 of 2)

Name	Data Type	Description
After ?	dateTime	Messages sent only after a certain time.
Before ?	dateTime	Messages sent only before a certain time.
Count ?	integer	Maximum number of Messages, most recent first.
DeviceID ?	string	ID of the Device whose Messages are requested.
Family ? <u>New in JDF 1.3</u>	enumeration	<p>Filter for Message Family.  <b>Allowed values are:</b>  <i>Acknowledge</i>  <i>Command</i> - Repeat Command Messages that are triggered by a Registration Message. <u>New in JDF 1.3</u>  <i>Response</i>  <i>Signal</i>  <u>All – Response, Signal and Acknowledge Messages are queried.</u>  <u>Deprecated in JDF 1.2.</u></p>
JobID ? <u>New in JDF 1.2</u>	string	@JobID of the Job whose Messages are queried/subscribed.
JobPartID ? <u>New in JDF 1.2</u>	string	@JobPartID of the Job whose Messages are queried/subscribed.

**Table P-13: MsgFilter Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>MessageRefID</i> ?	NMTOKEN	The @refID Attribute SHALL match the value of @MessageRefID.
<i>MessageID</i> ?	NMTOKEN	The @ID Attribute SHALL match the value of @MessageID.
<i>MessageType</i> ?	NMTOKEN	@Type Attribute of the requested Messages. Values include those from: Message/@Type.
<i>QueueEntryID</i> ? <i>New in JDF 1.2</i>	string	@QueueEntryID of the Job whose Messages are queried/subscribed. If @QueueEntryID is specified, @JobID, @JobPartID and Part are ignored. If none of @JobID, @JobPartID, Part or @QueueEntryID are specified, MsgFilter applies to all Jobs that will be processed by the receiver.
<i>ReceiverURL</i> ?	URL	URL for which the Messages are intended.
<i>Part</i> * <i>New in JDF 1.2</i>	element	Part of the Job whose Messages are queried/subscribed. For details on Node Partitions, see Section 4.3.2, “Partial Processing of Nodes with Partitioned Resources” on page 182.

**Example P-5: RepeatMessages Response**

The following is an example of a Response Message to a RepeatMessages Query Message. Note the nesting of Response Messages, where the first layer is the response to the RepeatMessages Query Message and its contents are the repeated Messages.

```
<Response ID="RepMsg" Type="RepeatMessages" xsi:type="ResponseRepeatMessages">
  <Response ID="R1" Time="2000-06-14T11:00:01+02:00" Type="Status"
    xsi:type="ResponseStatus"/>
  <Response ID="R2" Time="2000-06-14T10:50:22+02:00" Type="Occupation"
    xsi:type="ResponseOccupation"/>
  <Signal ID="R3" Time="2000-06-14T08:20:23+02:00" Type="Resource"
    xsi:type="SignalResource"/>
  <Signal ID="R4" Time="2000-06-14T03:01:22+02:00" Type="Notification"
    xsi:type="SignalNotification"/>
</Response>
```

**P.3.5 NodeInfo***New in JDF 1.2**Deprecated in JDF 1.3*

The NodeInfo Message can be used as a Command Message or a Query Message to modify or to query JDF NodeInfo Elements. The Query Message simply retrieves information about the NodeInfo without modifying it, while the command modifies those settings within the NodeInfo that are specified. Settings that are not specified remain unchanged.

**P.3.5.1 NodeInfo Query**

The NodeInfo Query Message is made selective by specifying a NodeInfoQuParams Element. The query’s Response Message returns a list of NodeInfoResp Elements that contains the queried information concerning the NodeInfo Elements. If the list is empty because the selective query parameters of the NodeInfoQuParams lead to a null selection, then the @ReturnCode is 103 (@JobID unknown), 104 (@JobPartID unknown) or 108 (empty list) and SHOULD be flagged as a warning with Notification [@Class = "Warning" and @Type = "Error"].

**Table P-14: NodeInfo Query Message**

Object Type	Element Name	Description
QueryTypeObj	NodeInfoQuParams	Specifies the Node queried.
ResponseTypeObj	NodeInfoResp *	Details of the NodeInfo Elements

**P.3.5.1.1 Element: NodeInfoQuParams****Table P-15: NodeInfoQuParams Element**

Name	Data Type	Description
<i>JobID</i>	string	Job ID of the JDF Node that is being queried.
<i>JobPartID</i> ?	string	Job Part ID of the JDF Node that is being queried.
<i>QueueEntryID</i> ?	string	@ <i>QueueEntryID</i> of the Job that is currently being executed. If @ <i>QueueEntryID</i> is specified, @ <i>JobID</i> , @ <i>JobPartID</i> , and Part are ignored. If none of @ <i>JobID</i> , @ <i>JobPartID</i> , Part, or @ <i>QueueEntryID</i> are specified, ResourceQuParams applies to all Jobs.
Part *	element	Part Elements that describe the Partition of the Job whose NodeInfo is modified. For details on Node Partitions, see Section 4.3.2, “Partial Processing of Nodes with Partitioned Resources” on page 182.

**P.3.5.2 NodeInfo Command**

The NodeInfo Command Message is used to modify the NodeInfo – generally scheduling information – of a submitted JDF Node. It is made selective by specifying the OPTIONAL Attributes in the NodeInfoCmdParams Element.

The Response Message contains a list of NodeInfoResp Elements with a copy of NodeInfo after the changes have been applied. If the NodeInfo Command Message was successful, the value of the @*ReturnCode* Attribute is "0". If it is not successful, the value of @*ReturnCode* might be one of those described in the above section about the NodeInfo Query Message; it might also be "200" (invalid parameters) or "201" (insufficient parameters). Partial application of the NodeInfo SHOULD also be flagged as a warning. If the value of @*ReturnCode* is larger than "0", the Controller that issued the command can evaluate the returned NodeInfo in order to find the setting that could not be applied.

**Table P-16: NodeInfo Command Message**

Object Type	Element name	Description
CommandTypeObj	NodeInfoCmdParams	Specifies the NodeInfo Elements to be modified.
ResponseTypeObj	NodeInfoResp *	Contains information about the NodeInfo and the NodeInfo after modification.

**P.3.5.2.1 Element: NodeInfoCmdParams****Table P-17: NodeInfoCmdParams Element**

Name	Data Type	Description
<i>JobID</i>	string	Job ID of the JDF Node that is being modified.
<i>JobPartID</i> ?	string	Job Part ID of the JDF Node that is being modified.

**Table P-17: NodeInfoCmdParams Element**

Name	Data Type	Description
<i>QueueEntryID</i> ?	string	@ <i>QueueEntryID</i> of the Job that is currently being executed. If @ <i>QueueEntryID</i> is specified, @ <i>JobID</i> , @ <i>JobPartID</i> , and Part are ignored. If none of @ <i>JobID</i> , @ <i>JobPartID</i> , Part, or @ <i>QueueEntryID</i> are specified, NodeInfoCmdParams applies to all Jobs.
<i>UpdateMethod</i> = "Complete"	enumeration	Method how NodeInfo is applied to the JDF. <b>Allowed values are:</b> <i>Complete</i> – The NodeInfo in the JDF is completely overwritten by NodeInfo in this Message. <i>Incremental</i> – The NodeInfo in the JDF is incrementally updated by the values that are explicitly set in NodeInfo in this Message.
Part *	element	Part Elements that describe the Partition of the Job whose NodeInfo is modified. For details on Node Partitions, see Section 4.3.2, “Partial Processing of Nodes with Partitioned Resources” on page 182.
NodeInfo ?	element	NodeInfo to be uploaded to the Device.

**P.3.5.2.2 Element: NodeInfoResp****Table P-18: NodeInfoResp Element**

Name	Data Type	Description
<i>JobID</i>	string	Job ID of the JDF Node that is being modified.
<i>JobPartID</i> ?	string	Job Part ID of the JDF Node that is being modified.
<i>QueueEntryID</i> ?	string	@ <i>QueueEntryID</i> of the Job that is currently being executed. If @ <i>QueueEntryID</i> is specified, @ <i>JobID</i> , @ <i>JobPartID</i> , and Part are ignored. If none of @ <i>JobID</i> , @ <i>JobPartID</i> , Part, or @ <i>QueueEntryID</i> are specified, NodeInfoResp applies to all Jobs.
Part *	element	Part Elements that describe the Partition of the Job NodeInfo is modified. For details on Node Partitions, see Section 4.3.2, “Partial Processing of Nodes with Partitioned Resources” on page 182.
NodeInfo ?	element	NodeInfo after uploading to the Controller.

The following is an example for retrieving NodeInfo settings:

```
<Query ID="Q1" Type="NodeInfo">
    <NodeInfoQuParams JobID="J1"/>
</Query>
```

The following is a possible Response Message to the Query Message above:

```
<Response ID="M1" Type="NodeInfo" refID="Q1">
    <NodeInfoResp JobID="J1" JobPartID="P1">
        <NodeInfo/>
    </NodeInfoResp>
    <NodeInfoResp JobID="J1" JobPartID="P2">
        <NodeInfo/>
    </NodeInfoResp>
</Response>
```

### P.3.6 KnownJDFServices

Deprecated in JDF 1.2

In JDF 1.2 and beyond, KnownJDFServices has been replaced with KnownDevices and `@DeviceDetails = "Capabilities"`.

**Table P-19: KnownJDFServices Message**

Object Type	Element name	Description
QueryTypeObj	—	—
ResponseTypeObj	JDFService *	Processes that the Controller or Device can execute.

The KnownJDFServices Query Message returns a list of services that are defined in the JDF specification, such as **ConventionalPrinting**, **RIPing**, or **EndSheetGluing**. It allows a Controller to publish the services that the Devices it controls are capable of providing. The response is a list of JDFService Elements, one for each supported Process type.

#### P.3.6.1 Element: JDFService

JDFService Elements define the Node types that can be processed by the Controller. A JDF processor SHOULD be capable of processing Combined Process Nodes of any of the individual JDFService Elements that are specified. It is therefore not necessary to define every permutation of allowed combinations. It need not be able to process individual Nodes with a type defined in the `@Types` Attribute of a *"Combined"* JDFService Element.

**Table P-20: JDFService Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>CombinedMethod</i> ? <u>New in JDF 1.1</u>	enumeration	<p>Specifies how the Processes specified in <code>@Types</code> may be specified.  <b>Allowed values are:</b></p> <p><i>Combined</i> – The list of Processes in <code>@Types</code> SHALL be specified as a Combined Process.</p> <p><i>ProcessGroup</i> – The list of Processes in <code>@Types</code> SHALL be specified as a <i>"ProcessGroup"</i> of individual Processes.</p> <p><i>CombinedProcessGroup</i> – The list of Processes in <code>@Types</code> may be specified either as a Combined Process or as a <i>"ProcessGroup"</i> of individual Processes.</p> <p><i>None</i> – No support for <i>"Combined"</i> or <i>"ProcessGroup"</i>. Only the individual Process type defined in <code>@Types</code> is supported. The default.</p>
Type	NMTOKEN	JDF <code>@Type</code> Attribute of the supported Process. Extension types may be specified by stating the namespace in the value. <b>Values include those from:</b> JDF/ <code>@Type</code>

**Table P-20: JDFService Element (Sheet 2 of 2)**

Name	Data Type	Description
TypeOrder ? <a href="#">New in JDF 1.1</a>	enumeration	<p>Ordering restriction for Combined Process Nodes.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>Fixed</i> – The order of Process types specified in the <i>@Types</i> Attribute is ordered and each type can be specified only once (e.g., for Cutting and Folding, order does matter). The default.</li> <li><i>Unordered</i> – The order of Process types specified in the <i>@Types</i> Attribute is unordered and each type can be specified only once (e.g., for <b>DigitalPrinting</b>, <b>Screening</b> and <b>Trapping</b>, order does not matter).</li> <li><i>Unrestricted</i> – The order of Process types specified in the <i>@Types</i> Attribute is unordered and each type can be specified multiply (e.g., Cutting, Folding, where the Device can do both Processes, in any order and multiple times).</li> </ul>
Types ?	NMTOKENS	If <i>@Type = "Combined"</i> , or <i>@Type = "ProcessGroup"</i> this Attribute represents the list of Combined Processes. If any of the services are in a namespace other than JDF, the namespace prefix SHOULD be included in this list. For details, see Section 3.5.4, “Combined Process Nodes”.

The following is an example of a Response Message to a KnownJDFServices Query Message:

```
<Response ID="M1" refID="Q1" Type="KnownJDFServices">
  <JDFService Type="Rendering" />
  <JDFService Type="Folding" />
  <JDFService Type="Combined" Types="Gathering Stitching"/>
  <JDFService Type="AnyCompaniesNamespace:MyFolding" />
  ...
</Response>
```

### P.3.7 Occupation

[Deprecated in JDF 1.5](#)

Occupation queries the occupation status of an employee. No Job context is needed to issue an Occupation Message.

**Table P-21: Occupation Message**

Object Type	Element Name	Description
QueryTypeObj	EmployeeDef *	Defines the employees queried.
ResponseTypeObj	Occupation *	The occupation status of the employees.

#### P.3.7.1 Element: EmployeeDef

The Occupation Query Message might be focused to certain employees specifying a EmployeeDef Element. If no EmployeeDef Element is specified, a list of all known employees is returned.

**Table P-22: EmployeeDef Element**

Name	Data Type	Description
PersonalID ?	string	<i>@PersonalID</i> of the employee being tracked.

### P.3.7.2 Element: Occupation

The response returns a list of Occupation Elements for the queried employees. These Elements consist of one entry for every Job that is currently being executed. The list format accommodates both employees that service multiple Jobs or Job Parts in parallel and multiple employees working on one Job.

**Table P-23: Occupation Element**

Name	Data Type	Description
<i>Busy</i> ?= "100"	double	Busy state of the employee in percentage. A value of 100 means that the employee is fully occupied with this task. The sum of all @ <i>Busy</i> values of one employee SHOULD NOT exceed 100.
<i>JobID</i> ?	string	@ <i>JobID</i> of the JDF Node that the employee is assigned to. If no @ <i>JobID</i> is specified but Devices are, the employee is performing tasks not related to a Job.
<i>JobPartID</i> ?	string	Job Part ID of the JDF Node that is currently being executed.
<i>QueueEntryID</i> ? <small>New in JDF 1.2</small>	string	@ <i>QueueEntryID</i> of the Job that is currently being executed. If @ <i>QueueEntryID</i> is specified, @ <i>JobID</i> , @ <i>JobPartID</i> and <i>Part</i> are ignored. If none of @ <i>JobID</i> , @ <i>JobPartID</i> , <i>Part</i> or @ <i>QueueEntryID</i> are specified, Occupation applies to all Jobs.
<b>Device</b> *	element	Devices that the employee is currently assigned to. The data type of <b>Device</b> is ResourceElement. See Section 3.15.1, “ResourceElement – Subelement of a Resource” on page 113.
<b>Employee</b>	element	Description of the employee being tracked. The data type of <b>Employee</b> is ResourceElement. See Section 3.15.1, “ResourceElement – Subelement of a Resource” on page 113.
<b>Part</b> * <small>New in JDF 1.2</small>	element	<b>Part</b> Elements that describe the Partition of the that is being executed. For details on Node Partitions, see Section 4.3.2, “Partial Processing of Nodes with Partitioned Resources” on page 182

### Example P-6: Occupation Response

The following is an example of Response Message to an Occupation Query Message:

```
<Response ID="M1" Type="Occupation" xsi:type="ResponseOccupation" refID="Q1">
    <!--Two Jobs on one Device with one operator-->
    <Occupation Busy="30" JobID="J1">
        <Employee PersonalID="P1234"/>
        <Device DeviceID="Press1"/>
    </Occupation>
    <Occupation Busy="70" JobID="J2">
        <Employee PersonalID="P1234"/>
        <Device DeviceID="Press1"/>
    </Occupation>
    <!--Another operator on Job j2 -->
    <Occupation Busy="50" JobID="J2">
        <Employee PersonalID="P4321"/>
        <Device DeviceID="Press1"/>
    </Occupation>
    <!--No Job context -->
    <Occupation Busy="0">
        <Device DeviceID="Press2"/>
        <Employee PersonalID="P5678"/>
    </Occupation>
</Response>
```

### P.3.8 Track

Deprecated in JDF 1.5

The Track Query Message requests information about the location of Jobs that are known by a Controller. If a high level Controller controls lower level Controllers, it SHOULD also list the Jobs that are controlled by these. The Response Message is a list of TrackResult Elements.

**Table P-24: Track Message**

Object Type	Element Name	Description
QueryTypeObj	TrackFilter ?	Refines the Track Query Message.
ResponseTypeObj	TrackResult *	Details of the tracked Jobs.

#### P.3.8.1 Element: TrackFilter

The TrackFilter Element refines the list of TrackResult Elements that are to be returned. Only Jobs that match all parameters specified are included.

**Table P-25: TrackFilter Element**

Name	Data Type	Description
<i>JobID</i> ?	string	@JobID of the JDF Node that is being tracked. Defaults to list JobPhase Elements of all known Nodes.
<i>JobPartID</i> ?	string	@JobPartID of the JDF Node that is being tracked.
<i>ProjectID</i> ? <u>New in JDF 1.2</u>	string	@ProjectID of the JDF Node that is being tracked.
<i>QueueEntryID</i> ? <u>New in JDF 1.2</u>	string	@QueueEntryID of the Job that is currently being executed. If @QueueEntryID is specified, @JobID, @JobPartID and Part are ignored. If none of @JobID, @JobPartID, Part, @ProjectID or @QueueEntryID are specified, TrackFilter applies to all Jobs.
<i>Status</i> ?	enumerations	The JDF/@Status of the Jobs being tracked. The value of this attribute is a list of any combination of values. <b>Default value is:</b> all enumerations, if not known or specified. <b>Allowed values are from:</b> JDF/@Status (Table 3-4, “JDF XJDF Node” on page 52).
<i>Part</i> * <u>New in JDF 1.2</u>	element	Part Elements that describe the Partition of the Job that is being tracked. For details on Node Partitions, see Section 4.3.2, “Partial Processing of Nodes with Partitioned Resources” on page 182.

#### P.3.8.2 Element: TrackResult

One TrackResult is returned for each known JDF or spawned JDF part. TrackResult Elements contain information about the location of distributed Jobs.

**Table P-26: TrackResult Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>JobID</i>	string	@JobID of the JDF Node that is being tracked.
<i>JobPartID</i> ?	string	@JobPartID of the highest level Node of the JDF Node that is being tracked.
<i>ProjectID</i> ? <u>New in JDF 1.2</u>	string	@ProjectID of the highest level Node of the JDF Node that is being tracked.

**Table P-26: TrackResult Element (Sheet 2 of 2)**

Name	Data Type	Description
QueueEntryID ? <a href="#">New in JDF 1.2</a>	string	@QueueEntryID of the Job that is currently being tracked.
URL	URL	URL of the Controller that owns this Job.
IsDevice	boolean	If "true", the Controller that emitted this Message is the Device that has access to the Job and can be queried for details of the Job.
Part * <a href="#">New in JDF 1.2</a>	element	Part Elements that describe the Partition of the Job that is being tracked. For details on Node Partitions, see Section 4.3.2, "Partial Processing of Nodes with Partitioned Resources" on page 182.

**Example P-7: Track Response**

The following is an example of a Response Message on a Track Message:

```
<Response ID="M1" Type="Track" xsi:type="ResponseTrack" refID="Q1">
  <TrackResult IsDevice="true" JobID="1" JobPartID="42"
    URL="http://www.anycompany.com/controller"/>
</Response>
```

**P.3.9 QueueEntryStatus**

[Deprecated in JDF 1.2](#)

In JDF 1.2 and beyond, use QueueStatus with an appropriate QueueFilter instead of QueueEntryStatus.

**Table P-27: QueueEntryStatus Message**

Object Type	Element name	Description
QueryTypeObj <a href="#">Modified in JDF 1.1A</a>	QueueEntryDefList	Defines the addressed queue entries. Note that this Element was QueueEntryDef * prior to JDF 1.1A.
ResponseTypeObj	QueueEntry *	Describes the status of the queried queue entries.

For the definition of the Elements above see Section 5.14, "Elements for Queues".

The QueueEntryStatus Message returns queue entry descriptions. The QueueEntryDef Elements specify the queue entries to be queried. If no QueueEntryDef Element is specified, the query returns a list of QueueEntry Elements, one for each entry in the queue. If no QueueEntryDef is specified and the query defines a persistent channel, a Signal is emitted for any entry whose status changes. This includes changes as a result of modifications of the queue status, such as hold or resume.

**P.3.9.1 Element: QueueEntryDefList**

[New in JDF 1.1A](#)

[Deprecated in JDF 1.2](#)

The QueryTypeObj of QueueEntryStatus has been modified from QueueEntryDef \* to QueueEntryDefList because of a type collision in the XML Schema. QueueEntryDef had been used both as a QueryTypeObj and as a CommandTypeObj.

**Table P-28: QueueEntryDefList Element**

Name	Data Type	Description
QueueEntryDef *	element	Defines the addressed queue entries.

## P.4 Deprecated Processes

### P.4.1 DBDocTemplateLayout

Deprecated in JDF 1.5

This Process specifies the creation of a master document template that is used as an Input Resource for the **DBTemplateMerging** Process. It is similar to the **Process** except that the output is a set of document templates. Document template are represented in JDF as **LayoutElement** Resources with *@Template = "true"*.

**Table P-29: DBDocTemplateLayout – Input Resources**

Name	Description
<b>LayoutElement</b> *	Page elements without links to a database.
<b>DBRules</b> ?	Description of the rules that are to be applied to database records in order to generate graphic output.
<b>DBSchema</b> ?	Database schema that describe the structure of data in the database.

**Table P-30: DBDocTemplateLayout – Output Resources**

Name	Description
<b>LayoutElement</b> *	The document template is a <b>LayoutElement</b> with links to a database. These links are proprietary to the linking application and are not described in JDF. The <i>@Template</i> Attribute SHALL be "true".

### P.4.2 DBTemplateMerging

Deprecated in JDF 1.5

This Process specifies the creation of personalized PDL Instance Documents by combining a document template and instance data records from a database. The resulting Instance Documents will generally be consumed by an **Imposition**, a **RIPing** and ultimately, by a **DigitalPrinting** Process.

**Table P-31: DBTemplateMerging – Input Resources**

Name	Description
<b>DBMergeParams</b> ?	Parameters of the merge Process.
<b>DBSelection</b> ?	Instance database records to be merged into the document.
<b>LayoutElement</b> *	Document template page element with internal links to a database.

**Table P-32: DBTemplateMerging – Output Resources**

Name	Description
<b>RunList</b> ?	Page element without links to a database. This Element usually contains a printable <b>LayoutElement</b> Resource such as PPML, PDF or even plain ASCII.

### P.4.3 FormatConversion

New in JDF 1.1

Deprecated in JDF 1.5

The **FormatConversion** Process controls the conversion from **ByteMap** to an external file raster format. The **FormatConversionParams** Resource defines the type and parameters to control the output file specified by the output **RunList**.

**Deprecation note:** starting with JDF 1.5, use a Combined Process of **RasterReading** and **Rendering**.

**Table P-33: FormatConversion – Input Resources**

Name	Description
FormatConversionParams ?	Parameters that control the operation of the Process that produces the resulting image file pages.
RunList ?	List of <b>ByteMap</b> Resources to be converted to raster file format. <a href="#">of PDL files to be converted</a> .

**Table P-34: FormatConversion – Output Resources**

Name	Description
RunList ?	This Resource identifies the location of the resulting <a href="#">raster converted PDL Files</a> . If the <b>FileSpec/@MimeType</b> of this Resource is specified, then it SHALL match the input <b>FormatConversionParams/@MimeType</b> . If <b>FileSpec/@MimeType</b> is not specified, then <b>FormatConversionParams/@MimeType</b> is used to update the Output Resource.

## P.4.4 Ordering

Deprecated in JDF 1.5

This Process can be used to describe the **Ordering** (requisition) of a **Resource Element**. Orders can be placed internally (i.e., within the company or externally).

**Table P-35: Ordering – Input Resources**

Name	Description
OrderingParams ?	Necessary information about the items to be ordered (e.g., the supplier address, item quantity or unit type).

**Table P-36: Ordering – Output Resources**

Name	Description
Resource + ResourceModified in JDF 1.1	All kinds of <b>PhysicalResources</b> <a href="#">Resource Elements</a> can be ordered.

## P.4.5 Packing

Deprecated in JDF 1.1

This Process can be used to describe the **Packing** of a **PhysicalResource** Element for transport purposes. The **Packing** Process has been deprecated in version 1.1 and beyond. It is replaced by the individual Processes defined in Section 6.7.5, “Packaging Processes”.

**Table P-37: Packing – Input Resources**

Name	Description
PackingParams	Necessary information about the <b>Packing</b> Process.
PhysicalResource	All kinds of <b>PhysicalResources</b> can be packed.

**Table P-38: Packing – Output Resources**

Name	Description
PhysicalResource	The packaged PhysicalResources. Note that @Amount Attributes referring to this Resource still refer to individual products and not to boxes, cartons or pallets.

#### P.4.6 **FilmToPlateCopying**

Deprecated in JDF 1.1

**FilmToPlateCopying** has been replaced by the more generic **ContactCopying**.

**FilmToPlateCopying** is the Process of making an analog copy of a film onto a printing plate.

**Table P-39: FilmToPlateCopying – Input Resources**

Name	Description
DevelopingParams ?	Controls the physical and chemical specifics of the media development Process.
ExposedMedia	The film or films to be copied onto the plate.
Media	The unexposed plate.
PlateCopyParams	The settings of the exposure task.

**Table P-40: FilmToPlateCopying – Output Resources**

Name	Description
ExposedMedia	The resulting exposed plate.

#### P.4.7 **PreflightAnalysis**

Deprecated in JDF 1.2

This Resource was deprecated as a result of a major revision to the **Preflight** Process and its associated Resources.

**PreflightAnalysis** Resources record the results of a **Preflight** Process. The semantics for results are specific to the **FileType** of the file. The Elements in this Resource, detailed in the table below, place the results in specific categories. The value for each of these Elements is an array of **PreflightResultsDetail** and **PreflightInstance** Sub-elements. Within the **PreflightInstance** Subelements, results are further broken down into **PreflightInstanceDetails**.

Each **PreflightResultsDetail** and **PreflightInstance** Subelement in the **PreflightAnalysis** hierarchy describes the results of a comparison of the properties of the file against one **PreflightConstraint** in the **PreflightProfile**.

##### Resource Properties

Resource Class:	Parameter
Resource referenced by:	
Example Partition:	
Input of Processes:	
Output of Processes:	<b>Preflight</b>

**Table P-41: PreflightAnalysis Resource (Sheet 1 of 2)**

Name	Data Type	Description
ColorsResultsPool ?	element	A pool of <b>PreflightDetail</b> and <b>PreflightInstance</b> Subelements that provides analysis about color.

**Table P-41: PreflightAnalysis Resource (Sheet 2 of 2)**

Name	Data Type	Description
DocumentResultsPool ?	element	A pool of PreflightDetail and PreflightInstance Subelements that provides analysis about documents.
FontsResultsPool ?	element	A pool of PreflightDetail and PreflightInstance Subelements that provides analysis about fonts.
FileTypeResultsPool ?	element	A pool of PreflightDetail and PreflightInstance Subelements that provides analysis about file types.
ImagesResultsPool ?	element	A pool of PreflightDetail and PreflightInstance Subelements that provides analysis about images.
PagesResultsPool ?	element	A pool of PreflightDetail and PreflightInstance Subelements that provides analysis about finished pages.

**P.4.7.1 Element: PreflightDetail**

PreflightDetail Subelements are used to describe one property within the **PreflightAnalysis** category in which they occur. This Subelement is also used by **PreflightInventory** Resource.

**Table P-42: PreflightDetail Element**

Name	Data Type	Description
PageRefs	IntegerRangeList	Identifies the set of pages in a <b>RunList</b> Resource that exhibit the characteristic identified by the combination of the <i>@Property</i> Attribute and the Value Element.
Property ?	string	Identifies the property described by this Element.
Status ?	enumeration	<b>Allowed values are:</b> <i>Error</i> – Value violates the ConstraintValue specified in the associated PreflightConstraint Element. The constraint was flagged as an Error in the profile. <i>Warning</i> – Value violates the ConstraintValue specified in the associated PreflightConstraint Element. The constraint was flagged as a Warning in the profile. <i>Ignore</i> – The constraint is ignored, and no PreflightDetail or PreflightInstanceDetail Elements are created for this constraint. <i>IgnoreValue</i> – No comparison was made against a ConstraintValue. In other words, either the <i>@Status</i> for the PreflightConstraint was "Ignore" or "IgnoreValue", or this PreflightDetail is part of a <b>PreflightInventory</b> hierarchy.
Value ?	element	Identifies the value of the property. The semantics are PDL-specific.

**P.4.7.2 Element: PreflightInstance**

PreflightInstance Subelements are used to collect PreflightInstanceDetail Elements for one instance of some object which occurs in the PDL files referenced by a run list. For example, there might be one PreflightInstance Element for each font that occurs in the pages of a run list. This Subelement is also used by **PreflightInventory** Resources.

**Table P-43: PreflightInstance Element**

Name	Data Type	Description
<i>Identifier</i> ?	string	Identifies the instance this Element collects PreflightInstanceDetail Elements.
<i>PageRefs</i> <i>Modified in JDF 1.1</i>	IntegerRangeList	Identifies the set of finished pages in a <b>RunList</b> on which the instance occurs.
PreflightInstanceDetail * <i>Modified in JDF 1.1</i>	element	A pool of PreflightInstanceDetail Elements that describe the properties for this instance

**P.4.7.3 Element: PreflightInstanceDetail**

PreflightInstanceDetail Subelements describe one property of one instance of some object type that occurs in a PDL file. For example, several PreflightInstanceDetail Elements might describe the properties of a single font. This Subelement is also used by **PreflightInventory** Resources

**Table P-44: PreflightInstanceDetail Element**

Name	Data Type	Description
<i>Status</i> ?	enumeration	<p>Specifies the results of the comparison between the value of the property for this instance with the ConstraintValue for the associated PreflightConstraint Element.</p> <p><b>Allowed values are:</b></p> <p><i>Error</i> – Value violates the ConstraintValue specified. The constraint was flagged as an Error in the profile.</p> <p><i>Warning</i> – Value violates the ConstraintValue specified. The constraint was flagged as a Warning in the profile.</p> <p><i>IgnoreValue</i> – No comparison was made against a ConstraintValue. In other words, either the <i>@Status</i> for the Constraint was "<i>Ignore</i>" or "<i>IgnoreValue</i>", or this PreflightInstanceDetail is part of a <b>PreflightInventory</b> hierarchy.</p>
<i>Property</i> ?	string	Identifies the property described by this Element.
<i>Value</i> ?	element	Identifies the value of the property. The semantics are PDL-specific.

**P.4.8 PreflightInventory**

Deprecated in JDF 1.2

This Resource was deprecated as a result of a major revision to the **Preflight** Process and its associated Resources.

**PreflightInventory** Resources, like **PreflightAnalysis** Resources, record the results of a **Preflight** Process. The semantics for results are specific to the FileType of the for the file. The Elements in this Resource, detailed in the table below, place the results in specific categories. The value of each of these Elements is an array of PreflightResultsDetail and PreflightInstance Subelements. Within the PreflightInstance Subelements, results are further broken down into PreflightInstanceDetail.

Each PreflightResultsDetail or PreflightInstance Subelement in the **PreflightInventory** hierarchy describes the results of a comparison of the properties of the file against one PreflightConstraint in the **PreflightProfile**.

**Resource Properties**

Resource Class:	Parameter
Resource referenced by:	
Example Partition:	

**Input of Processes:****Preflight****Output of Processes:****Preflight****Table P-45: PreflightInventory Resource**

Name	Data Type	Description
ColorsResultsPool ?	element	A pool of PreflightDetail and PreflightInstance Subelements that provides a color inventory.
DocumentResultsPool ?	element	A pool of PreflightDetail and PreflightInstance Subelements that provides a document inventory.
FontsResultsPool ?	element	A pool of PreflightDetail and PreflightInstance Subelements that provides a font inventory.
FileTypeResultsPool ?	element	A PreflightDetail and PreflightInstance Subelement that provides a file-type inventory.
ImagesResultsPool ?	element	A pool of PreflightDetail and PreflightInstance Subelements that provides an image inventory.
PagesResultsPool ?	element	A pool of PreflightDetail and PreflightInstance Subelements that provides a finished page inventory.

## P.4.9 PreflightProfile

Deprecated in JDF 1.2This Resource was deprecated as a result of a major revision to the **Preflight** Process and its associated Resources.

**PreflightProfile** Resources specify a set of constraints against which a file may be tested. The semantics for constraints are specific to the **FileType** of the for the file. The Elements in this Resource, detailed in the table below, place the results in specific categories. The value for each of these Elements is an array of **PreflightConstraint** Sub-elements. Within the **PreflightConstraint** Resources, the **ConstraintValue** Element indicates allowable values and the **@Status** Attribute indicates the error level (if any) to be flagged when exceptions to the constraints are identified.

### Resource Properties

**Resource Class:****Parameter****Resource referenced by:****Example Partition:****Input of Processes:****Preflight****Output of Processes:****Table P-46: PreflightProfile Resource (Sheet 1 of 2)**

Name	Data Type	Description
ColorsConstraintsPool ?	element	A pool of <b>PreflightConstraint</b> Subelements. Each Element in this pool identifies a specific constraint concerning colors against which to test the file
DocumentConstraintsPool ?	element	A pool of <b>PreflightConstraint</b> Subelements. Each Element in this pool identifies a specific constraint concerning documents against which to test the file
FontsConstraintsPool ?	element	A pool of <b>PreflightConstraint</b> Subelements. Each Element in this pool identifies a specific constraint concerning fonts against which to test the file

**Table P-46: PreflightProfile Resource (Sheet 2 of 2)**

Name	Data Type	Description
FileTypeConstraintsPool ?	element	A <b>Preflight</b> constraint. The <b>@Type</b> Attribute SHALL have a value of "array" and SHALL contain string objects that identify the allowable types of data in the file. The strings in the <b>@Value</b> array SHALL be MIME-file types as recorded by the Internet Assigned Numbers Authority (IANA). IANA has procedures for registering new file types if needed.
ImagesConstraintsPool ?	element	A pool of <b>PreflightConstraint</b> Subelements. Each Element in this pool identifies a specific constraint concerning images against which to test the file
PagesConstraintsPool ?	element	A pool of <b>PreflightConstraint</b> Subelements. Each Element in this pool identifies a specific constraint concerning finished pages against which to test the file

#### P.4.9.1 Element: **PreflightConstraint**

**Table P-47: PreflightConstraint Element**

Name	Data Type	Description
<i>AttemptFixupErrors = "false"</i>	boolean	If "true", the Device performing preflight SHOULD attempt to fix errors that are identified during preflight. Errors that are corrected are not given a <b>@Status</b> Attribute. Default = "false"
<i>AttemptFixupWarnings = "false"</i>	boolean	If "true", the Device performing preflight SHOULD attempt to fix warnings that are identified during preflight. Warnings that are corrected are not given a <b>@Status</b> Attribute. Default = "false"
<i>Constraint ?</i>	string	Describes the specific file characteristic to be checked.
<i>Status</i>	enumeration	<b>Allowed values are:</b> <i>Error</i> – Values that violate the <b>ConstraintValue</b> specified are flagged as Errors in <b>PreflightDetail</b> and <b>PreflightInstanceDetail</b> Elements. <i>Warning</i> – Values that violate the <b>ConstraintValue</b> specified are flagged as Warnings in <b>PreflightDetail</b> and <b>PreflightInstanceDetail</b> Elements. <i>Ignore</i> – The constraint is ignored, and no <b>PreflightDetail</b> or <b>PreflightInstanceDetail</b> Elements are created for this constraint. <i>IgnoreValue</i> – No comparison is made against the <b>ConstraintValue</b> .
<i>ConstraintValue ?</i>	element	Provides a value against which to test occurrences of the characteristic in the file. Note: The semantics of the <b>ConstraintValue</b> Element depend on the PDL characteristic in question.

#### P.4.10 Proofing

Deprecated in JDF 1.2

The **Proofing** Process is deprecated in JDF 1.2. Instead, use a Combined Process to produce the hard proof (e.g., one that includes the **ImageSetting**, **ConventionalPrinting**, or **DigitalPrinting** Process). Then input the hard proof to a separate **Approval** Process.

The **Proofing** Process results in the creation of a physical proof, represented by an **ExposedMedia** Resource. Proofs can be used to check an imposition or the expected colors for a Job. The inputs of this Process are a **RunList**, which identifies the pages to proof; the **ProofingParams** Resource, which describes the type of proof to be created; and a **Media** Resource to describe the physical media that will be used.

**Table P-48: Proofing – Input Resources**

Name	Description
<b>ColorantControl</b> ? <i>Modified in JDF 1.1A</i>	Identifies the color model used by the Job.
<b>ColorSpaceConversionParams</b> ?	This Resource provides information needed to convert colorspaces in the pages for proofing. Generally present if a color proof is desired, unless the pages in the <b>RunList</b> have already been operated on by a previous colorspace conversion process.
<b>Layout</b> ?	REQUIRED if an imposition proof is desired.
<b>Media</b>	This Resource characterizes the output media for the proof.
<b>ProofingParams</b>	This Resource provides the parameters needed to produce the desired proof.
<b>RunList</b> ( <i>Document</i> )	Identifies the pages to be proofed. When the <b>Layout</b> Resource is present in the <b>ProofingParams</b> Resource, @ <i>Ord</i> values from ContentObject Subelements refer to pages in this <b>RunList</b> .
<b>RunList</b> ( <i>Marks</i> ) ?	Structured list of incoming marks. These are typically printers marks (e.g., fold, cut or punch marks, or color bars). When the <b>Layout</b> Resource is present in the <b>ProofingParams</b> Resource, @ <i>Ord</i> values from MarkObject Subelements refer to pages in this <b>RunList</b> .

**Table P-49: Proofing – Output Resources**

Name	Description
<b>ExposedMedia</b>	The resulting physical proof.

#### P.4.11 SoftProofing

*Deprecated in JDF 1.2*

The **SoftProofing** Process is deprecated in JDF/1.2. Instead, use a Combined Process to produce the soft proof in which the last Process is the **Approval** Process that approves the soft proof.

**SoftProofing** is the Process of reviewing final-form output on a monitor rather than in paper form. The inputs are a **RunList**, which identifies the pages to proof; the **ProofingParams** Resource, which describes the type of proof to be created.

Within the **ProofingParams** Resource, the proof Device parameter specifies the characterization the monitor on which the proof will be viewed. This processor SHALL create and perform a transformation from the final target Device to the proof Device colors before displaying the document contents.

The soft proofing parameters allow sufficient control to determine whether any images are displayed in the proof. If so, the ability to select low resolution proxies or full resolution images is provided. The mechanism for approving proofs requires the generation of a PDF file containing the proofing parameters and a digital signature noting the acceptance of them. The approval PDF file need not contain any graphical data.

Like all other color manipulation supported in JDF, the color conversion controls are based on the use of ICC profiles. While the assumed characterization of input data can take many forms, each can internally be represented as an

ICC Profile. In order to perform the transformations, input profiles SHALL be paired with the identified final target Device profile to create the transformation.

**Table P-50: SoftProofing – Input Resources**

Name	Description
<b>ColorantControl ?</b> <a href="#">Modified in JDF 1.1A</a>	Identifies the color model used by the Job.
<b>ColorSpaceConversionParams ?</b>	This Resource provides information needed to convert colorspaces in the pages for proofing. Generally present if a color proof is desired, unless the pages in the <b>RunList</b> have already been operated on by a previous colorspace conversion process.
<b>Layout ?</b>	REQUIRED if an imposition proof is desired.
<b>ProofingParams</b>	Provides the parameters needed to produce the desired proof.
<b>RunList (Document)</b>	Identifies the pages to be proofed. When the <b>Layout</b> Resource is present in the <b>ProofingParams</b> Resource, @ <i>Ord</i> values from ContentObject Subelements refer to pages in this <b>RunList</b> .
<b>RunList (Marks) ?</b>	Structured list of incoming marks. These are typically printer's marks (e.g., fold marks, cut marks, punch marks, or color bars). When the <b>Layout</b> Resource is present in the <b>ProofingParams</b> Resource, @ <i>Ord</i> values from MarkObject Subelements refer to pages in this <b>RunList</b> .

**Table P-51: SoftProofing – Output Resources**

Name	Description

## P.4.12 IDPrinting

[Deprecated in JDF 1.1](#)

The **IDPrinting** Process was deprecated in JDF/1.1. Instead, implementations SHOULD use a Combined Process with the **DigitalPrinting** Process and other Processes, thus improving interoperability by reducing one of the combinations of Processes. Also the **IDPrinting** Process defined a number of Resources and Subelements which are deprecated since they duplicate other Resources.

**IDPrinting**, which stands for Integrated Digital Printing, is a specific form of digital printing. It combines functionality that might be represented by the **Interpreting**, **Rendering**, **Screening**, and **DigitalPrinting** Processes in a single Process. In addition, Devices which support **IDPrinting** frequently provide some degree of finishing capabilities, such as collating and stapling, as well as some automated layout capabilities, such as N-up and duplex printing.

Controls for **IDPrinting** are provided in the **IDPrintingParams** Resource. These controls are intended to be somewhat limited in their scope. If greater control over various aspects of the printing Process is needed, **IDPrinting** SHOULD NOT be used. Ultimately, the controls specified for **IDPrinting** can be used to generate an Internet Printing Protocol (IPP) Job. See JDF/1.0 Appendix F for a mapping between JDF **IDPrinting** and IPP. **IDPrinting** may be combined with other Processes, such as **Trapping** or **ColorSpaceConversion**.

**Table P-52: IDPrinting – Input Resources (Sheet 1 of 2)**

Name	Description
<b>ColorantControl ?</b>	The <b>ColorantControl</b> Resources that define the ordering and usage of inks in print modules.

**Table P-52: IDPrinting – Input Resources (Sheet 2 of 2)**

Name	Description
<b>Component (Cover) ?</b>	A finished cover may be combined with the pages that will be output by this Process.
<b>Component (Input) ?</b>	Various components can be used in <b>IDPrinting</b> instead of <b>Media</b> . Examples include waste, precut <b>Media</b> , or a set of preprinted Sheets or webs.
<b>Component (Proof) ?</b>	A Proof component is used if a proof was produced during an earlier <b>ConventionalPrinting</b> Process.
<b>ExposedMedia ?</b>	A Proof is useful for comparisons (completeness, color accuracy) with the print out of the <b>IDPrinting</b> Process.
<b>FontPolicy ?</b>	Describes the behavior of the font machinery in absence of requested fonts.
<b>Ink ?</b>	Ink or toner and information about it is needed for <b>IDPrinting</b> .
<b>InterpretingParams *</b>	A set of Resources that specify how the Device SHOULD interpret the PDL files which are referenced by the <b>RunList</b> for the Process. Note that <b>InterpretingParams</b> is an Abstract Resource. Instances are PDL-specific.
<b>IDPrintingParams ?</b>	Specific parameters to set up the machinery.
<b>Media ?</b>	The physical <b>Media</b> and information about the <b>Media</b> , such as thickness, type, and size, are used to set up paper travel in the press. This has to be present if no preprinted <b>Component (Input)</b> Resource is present. Note: Printing a Job on more than one Web or Sheet at the same time is parallel processing.
<b>RenderingParams ?</b>	This Resource describes the format of the <b>ByteMap</b> Elements to be created.
<b>RunList</b>	The set of pages to be printed.
<b>ScreeningParams ?</b>	Parameters specifying which halftone mechanism is to be applied and with what specific controls.
<b>TransferFunctionControl ?</b>	Controls whether the Device performs transfer functions and what values are used when doing so.

**Table P-53: IDPrinting – Output Resources**

Name	Description
<b>Component (Good)</b>	Components are produced for other printing Processes or postpress Processes. Note that the <b>@Amount</b> Attribute of the <b>ResourceLink</b> to this Resource indicates the number of copies which will be produced.
<b>Component (Waste) ?</b>	Produced waste, may be used by other Processes.

### P.4.13 AdhesiveBinding

Deprecated in JDF 1.1

The **AdhesiveBinding** has been split into the following individual Processes:

- **CoverApplication**,
- **Gluing**,
- **SpinePreparation**,
- **SpineTaping**.

Note that the parameters of the **GlueApplication** ABOperations have been moved into **CoverApplicationParams** and **SpineTapingParams** as **GlueApplication** refelements. The generic **GlueApplication** ABOperation is now described by the **Gluing** Process.

#### P.4.14 Dividing

Deprecated in JDF 1.1.

**Dividing** has been replaced by **Cutting**. In-line finishing of Web Presses often includes equipment for cutting the ribbon(s) in cross direction. This operation can be described with the **Dividing** Process. **Dividing** in cross direction is likely to happen after former folding, which is a **LongitudinalRibbonOperations** Process. It may affect one or more ribbons at the same time that are all part of one **Component**.

**Table P-54: Dividing – Input Resources**

Name	Description
<b>Component</b>	The <b>Dividing</b> Process consumes one <b>Component</b> : the Web(s) or ribbon(s) entering the crosscutting machinery. The substrate might have been treated with <b>LongitudinalRibbonOperations</b> and may be folded with a former fold.
<b>DividingParams</b>	Specific parameters to set up the machinery.

**Table P-55: Dividing – Output Resources**

Name	Description
<b>Component</b>	One <b>Component</b> is produced: either the divided Web or ribbon.

#### P.4.15 LongitudinalRibbonOperations

Deprecated in JDF 1.1

In-line finishing within Web Printing presses can include folding, perforating, or applying a line of glue on the ribbon while it is traveling in longitudinal direction. In version 1.1 of JDF and beyond, in-line finishing is described using the “standard” finishing Processes (e.g., **Creasing**, **Cutting**, **Folding** or in a Combined Process Node with **ConventionalPrinting**).

**Table P-56: LongitudinalRibbonOperations – Input Resources**

Name	Description
<b>Component</b>	The <b>Component</b> can consist of more than one Web or ribbon that has been combined with the <b>Gathering</b> Process.
<b>LongitudinalRibbonOperationParams</b>	Specific parameters to set up the machinery tools for the <b>LongitudinalRibbonOperations</b> Process.

**Table P-57: LongitudinalRibbonOperations – Output Resources**

Name	Description
<b>Component +</b>	A ribbon is produced that is used in other postpress Processes. If the <b>LongitudinalRibbonOperations</b> Process was slitting, more than one <b>Component</b> is produced.

#### P.4.16 Numbering

Deprecated in JDF 1.5

**Numbering** is the Process of stamping or applying variable marks in order to produce unique components for items such as lottery notes or currency. No database access is needed, and the counters automatically increase incrementally. **Numbering** is also used for alphanumeric, automatic and unique marking.

**Table P-58: Numbering – Input Resources**

Name	Description
Component ?	One <b>Component</b> (e.g., a printed Sheet or a pile of Sheets) are modified in the <b>Numbering</b> Process.
NumberingParams ?	Specific parameters to set up the machinery.

**Table P-59: Numbering – Output Resources**

Name	Description
Component ?	One <b>Component</b> is produced: the numbered Sheet.

#### P.4.17 **SaddleStitching**

Deprecated in JDF 1.1

In **SaddleStitching**, Signatures are collected so that all sections have a common spine, and then stitched with staples through the spine. **SaddleStitching** has been replaced by **Stitching** in JDF 1.1.

**Table P-60: SaddleStitching – Input Resources**

Name	Description
Component	The only REQUIRED <b>Component</b> is the collected pile.
SaddleStitchingParams	Specific parameters to set up the machinery.

**Table P-61: SaddleStitching – Output Resources**

Name	Description
Component	The stitched-together components.

#### P.4.18 **SideSewing**

Deprecated in JDF 1.1

Replaced by **ThreadSewing**.

This is a binding technique resulting in robust products that have a significant loss of inner margin space and poor handling characteristics. For these reasons, other binding techniques are used more often. In **SideSewing**, the first step is to create the holes in the book block and inject the glue (see Section 6.7.2, “HoleMaking”). Then the entire book is sewn at once with a *@ThreadMaterial* such as “*Cotton*” or “*Polyester*”. If the book block is rather thick, a **Stitching** Process using wire might be performed before **SideSewing**.

**Table P-62: SideSewing – Input Resources**

Name	Description
Component	The only REQUIRED <b>Component</b> is the gathered Sheets.
SideSewingParams	Specific parameters to set up the machinery.

**Table P-63: SideSewing – Output Resources**

Name	Description
Component	The <b>Component</b> is produced.

## P.5 Deprecated Intents

### P.5.1 BindingIntent Deprecated Subelements

Note: **BindingIntent** is still a valid Resource. The following sections from within **BindingIntent** were deprecated and were deemed large enough to warrant moving them to this section.

#### P.5.1.1 Element: AdhesiveBinding

[Deprecated in JDF 1.1](#)

**Table P-64: AdhesiveBinding Element**

Name	Data Type	Description
<i>Scoring</i> ?	EnumerationSpan	<p>Scoring option for <b>AdhesiveBinding</b>.</p> <p><b>Allowed values are:</b></p> <p><i>TwiceScored</i>  <i>QuadScored</i>  <i>None</i></p> <p><b>Note:</b> Values are based on viewing the cover in its flat pre-binding state.</p>
<i>SpineGlue</i> ?	EnumerationSpan	<p>Glue type used to define <b>AdhesiveBinding</b> procedures.</p> <p><b>Allowed values are:</b></p> <p><i>ColdGlue</i>  <i>Hotmelt</i>  <i>PUR – Polyurethane Rubber</i></p>
<i>TapeBinding</i> ?	OptionSpan	If " <i>true</i> ", a cloth tape which has been pre-glued with hot-melt adhesive is used in <b>AdhesiveBinding</b> the unmilled block (e.g., FastBack or DocuTech binding).

#### P.5.1.2 Element: BookCase

[Deprecated in JDF 1.1](#)

This Subelements contains details of the book case for hard-cover book binding. The actual binding parameters are set in the appropriate **AdhesiveBinding**, **ThreadSewing**, or **ThreadSealing** Elements.

**Table P-65: BookCase Element**

Name	Data Type	Description
<i>HeadBands</i> ?	OptionSpan	The following <b>CaseBinding</b> choice specifies the use of headbands on a case bound book.  If " <i>true</i> ", headbands are inserted both top and bottom.
<i>Shape</i> ?	EnumerationSpan	Indicates the shape of the "back" or spine of a case bound book.  <b>Allowed values are:</b>  <i>RoundedBack</i> <i>SquareBack</i>
<i>Thickness</i> ?	NumberSpan	Specifies thickness of board which is wrapped as front and back covers of a case bound book, in points.

## P.5.2 DeliveryIntent Deprecated Subelements

Note: **DeliveryIntent** is still a valid Resource. The following sections from within **DeliveryIntent** were deprecated and were deemed large enough to warrant moving them to this section. All Pricing related information has been moved to [PrintTalk].

### P.5.2.1 Element: Pricing

[Deprecated in JDF 1.3](#)

**Table P-66: Pricing Element**

Name	Data Type	Description
<i>AdditionalPrice</i> ?	double	Price for ordering the number of copies specified in the <i>@AdditionalAmount</i> Attribute as specified in the parent Element of the Pricing.
<i>Currency</i> ?	NMTOKEN	Three digit currency definition according to [ISO4217:2001]. It defaults to the currency defined in the parent quote.
<i>HasPrice = "true"</i>	boolean	Specifies whether the line item defined by this quote has a price. If " <i>false</i> ", the line item is not included in the parent quote, and the price is unknown and SHALL be added. If " <i>true</i> ", the line item is included in the parent quote.
<i>Item</i> ?	string	Name of the item that this particular quote element describes. If not specified, Pricing applies to the entire DropItemIntent.
<i>Price</i> ?	double	Price for ordering the number of copies specified in the <i>@Amount</i> Attribute as specified in the parent Element of the Pricing. If not specified, it defaults to the sum of prices of the direct child Pricing Elements.
<i>Payment</i> ? <a href="#">New in JDF 1.1</a>	element	Details of the payment method.
<i>Pricing</i> *	element	Individual items of the quote. Note that a parent quote defines the complete quote (i.e., including the values defined in the line items of any child quotes but excluding all line items with <i>@HasPrice = "false"</i> ). The sum of line items need not be identical to the parent quote.

### P.5.2.2 Element: Payment

[New in JDF 1.1](#)

[Deprecated in JDF 1.3](#)

**Table P-67: Payment Element**

Name	Data Type	Description
<i>PayTerm</i> ?	text element	Describes the payment terms & conditions.
<i>CreditCard</i> ?	element	Specifies credit card information

### P.5.2.3 Element: CreditCard

[New in JDF 1.1](#)

[Deprecated in JDF 1.3](#)

**Table P-68: CreditCard Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Authorization</i> ?	String	Authorization code for this transaction.

**Table P-68: CreditCard Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>AuthorizationExpires</i> ?	gYearMonth	Expiration date of the <i>@Authorization</i> .
<i>Expires</i>	gYearMonth	Expiration date of the credit card.
<i>Number</i>	NMTOKEN	Credit card number. The format is specified without blanks or any other separator characters.
<i>Type</i>	NMTOKEN	Credit card brand. <b>Values include:</b> <i>Amex</i> <i>DinersClub</i> <i>Discovery</i> <i>MasterCard</i> – This includes derived brands (e.g., EuroCard). <i>Visa</i>

### P.5.3 NumberingIntent

Deprecated in JDF 1.5

This Resource describes the parameters of stamping or applying variable marks in order to produce unique components, for items such as lottery notes or currency.

#### Resource Properties

Resource Class: Intent

Resource referenced by: [Intents](#)

Process Resource Pairing: [NumberingParams](#)

Example Partition: [Intents](#)

Input of Processes: Any Product Intent Node (Section , “”)

Output of Processes: [Intents](#)

**Table P-69: NumberingIntent Resource Intent Element**

Name	Data Type	Description
<i>ColorName</i> ? <i>ColorName</i> ?	EnumerationSpanenumeration	Defines the color of the numbering. <b>Allowed values are from:</b> Table A-3, “NamedColor Enumeration Values” on page 1125.
<i>ColorNameDetails</i> ? <i>ColorNameDetails</i> ? <a href="#">New in JDF 1.4</a>	StringSpanstring	A more specific, specialized or site-defined name for the color. If ColorNameDetails is supplied, ColorName SHOULD also be supplied.
<i>ColorPool</i> ? <i>ColorRef</i> ?	refelementIDREF	Reference to a <a href="#">ResourceSet</a> [@Name=“Color”]. Additional details about the colors used.
NumberItem +	element	Individual position of the numbers on the finished page.

### P.5.3.1 Element: NumberItem

**Table P-70: NumberItem Element**

Name	Data Type	Description
ColorName ?ColorName ?	EnumerationSpanenumeration	Defines the color of the numbering. <b>Default value is from: NumberingIntent/@ColorName.</b> <b>Allowed values are from:</b> Table A-3, “NamedColor Enumeration Values” on page 1125. <a href="http://www.w3.org/TR/html4/types.html#h-6.5.">http://www.w3.org/TR/html4/types.html#h-6.5.</a>
ColorNameDetails ? ColorNameDetails ?New in JDF 1.4	StringSpanstring	A more specific, specialized or site-defined name for the color. If ColorNameDetails is supplied, ColorName SHOULD also be supplied.
Orientation?Orientation ?	NumberSpandouble	Rotation of the numbering machine in degrees. If Orientation/@Actual = 0, the top of the numbers is along the leading edge.
SeparationSpec ?Separations ?	elementNMTO-KENS	Specifies the names of the <b>Color</b> elements in the <b>ColorPool</b> that is used for Numbering.
StartValue ?= "1"	string	First value of the numbering machine.
Step ?= "1"	integer	Number that specifies the difference between two subsequent numbers of the numbering machine.
XPosition ?XPosition ?	NumberSpandouble	Position of the number in the X direction of the product.
YPosition ?YPosition ?	NumberSpandouble	Position of the number in the Y direction of the product.
SeparationSpec ?Separations ?	elementNMTO-KENS	Specifies the names of the <b>Color</b> elements in the <b>ColorPool</b> that is used for Numbering.

### P.5.4 SizeIntent

Deprecated in JDF 1.1

**SizeIntent** has been deprecated in JDF 1.1. All contents have been moved to **LayoutIntent**. This Resource records the size of the finished pages for the product component. It does not, however, specify the size of any intermediate results, such as press Sheets.

#### Resource Properties

Resource Class:	Intent
Resource referenced by:	—
Process Resource Pairing:	<b>CutMark, CuttingParams, Layout, LayoutPreparationParams, Sheet, Surface, TrimmingParams</b>
Example Partition:	"Option"
Input of Processes:	Any Product Intent Node (Section , "")
Output of Processes:	—

**Table P-71: SizeIntent Resource (Sheet 1 of 2)**

Name	Data Type	Description
Dimensions	XYPairSpan	Specifies the height and width of the product component in points. Note: Height and width are ambiguously specified in JDF 1.0.
Pages ?	IntegerSpan	Specifies the number of pages of the product component.

**Table P-71: SizeIntent Resource (Sheet 2 of 2)**

Name	Data Type	Description
Type = "Folded"	enumeration	<p>Specifies whether the product component referred to is flat or finished.</p> <p><b>Allowed values are:</b></p> <p><i>Folded</i> – Size of the product after folding. The default value</p> <p><i>Flat</i> – Size of the unfolded Sheet. Note that this describes the size of a Sheet that is folded to create a product, not the size of the Sheet in the press.</p>

## P.6 Deprecated Parameters

### P.6.1 AdhesiveBindingParams

Deprecated in JDF 1.1

This Resource describes the details of the following four subprocesses of the **AdhesiveBinding** Process:

- Back preparation
- Multiple glue applications
- Spine taping
- Cover application

These subprocesses are identified as instances of the Abstract **ABOperation** Element. Although a workflow may exist that groups these Processes according to its own capabilities, it is likely that they will be performed in the order presented. A description of each follows the table containing the contents of the **AdhesiveBindingParams** Resource.

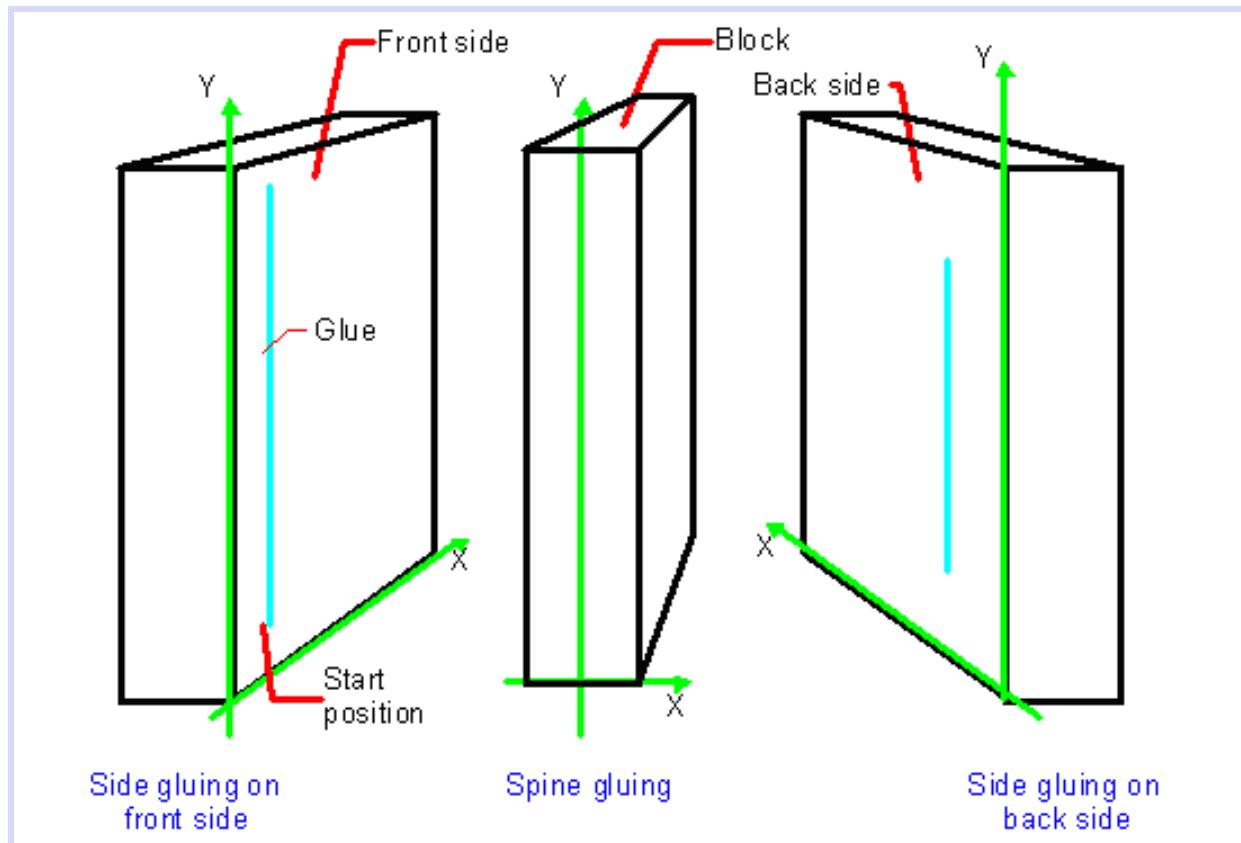
#### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Example Partition:	—
Input of Processes:	<b>AdhesiveBinding</b>
Output of Processes:	—

**Table P-72: AdhesiveBindingParams Resource**

Name	Data Type	Description
FlexValue ?	double	Flex quality parameter given in [N/cm].
PullOutValue ?	double	Pull out quality parameter given in [N/cm].
ABOperation +	Element	An Abstract Element which is a placeholder for an operation ( <b>SpinePreparation</b> , <b>GlueApplication</b> , <b>SpineTaping</b> , and <b>CoverApplication</b> ). Each ABOperation Element describes the parameters of one single operation of the complete <b>AdhesiveBinding</b> Process.

Figure P-2: Parameters and coordinate system for glue application



## P.6.2 BoxFoldingParams Deprecated Subelements

### P.6.2.1 Element: BoxApplication

Deprecated in JDF 1.4

A BoxApplication describes the application of an external **Component** such as a window or handle to a folding box in the box folder-gluer. Note that a short description of the application SHOULD be specified in **BoxApplication/@DescriptiveName**. Application of an external **Component** SHOULD be described with a combined **Inserting** process.

Table P-73: BoxApplication Element

Name	Data Type	Description
<i>ApplicationArea</i> ?	rectangle	Area in the current coordinate system of the folder gluer where the <b>Component</b> is applied. Note: A single point is specified by $X_0 = X_1$ and $Y_0 = Y_1$ of the rectangle and a line is specified by $X_0 = X_1$ or $Y_0 = Y_1$ .
<b>Component</b>	refelement	Reference to a <b>Component</b> that is applied. This <b>Component</b> SHALL also be specified as in input <b>Component</b> to the <b>BoxFolding</b> Process with <b>@ProcessUsage = "Application"</b>
<b>GlueLine</b> *	element	Specification of a glue lines needed to glue the <b>Component</b> described in this <b>BoxApplication</b> . The glue lines are applied to the <b>Component</b> in the coordinate system of the <b>BoxApplication/Component</b> . The glue lines applied to the blank are specified in <b>BoxFoldingParams Deprecated Subelements/GlueLine</b> .

### P.6.3 CustomerMessage

[Deprecated in JDF 1.5](#)

**CustomerMessage** is an abstract definition of messages to the customer. Formatting and details of the content generation of the message are system dependent.

**Table P-74: CustomerMessage Element**

Name	Data Type	Description
<i>Language</i> ?	language	Language to be used for the <i>CustomerMessage</i> .
<i>MessageEvents</i>	NMTOKENS	Defines the set of events that trigger a message that is defined or specified by the system. <b>Values include those from:</b> Table C-20, “MessageEvents and MilestoneType Values” on page 1146.
<i>ShowList</i> ? <a href="#">Modified in JDF 1.4</a>	NMTOKENS	List of parameters to display in the <i>CustomerMessage</i> . <b>Values include those from:</b> Table I-1, “Predefined variables used in @XXXTemplate and @ShowList” on page 1171. <a href="#">New in JDF 1.4</a> <b>Modification note:</b> starting with JDF 1.4, the values come from a common list rather than a list that is custom to this Element.
<i>ComChannel</i> *	element	Communication channel for the desired <i>CustomerMessage</i> . In case it is not specified, the <i>CustomerMessage</i> will be provided according to system predefined information. If multiple <i>ComChannel</i> Elements are specified, the <i>CustomerMessage</i> SHOULD be sent to all specified communication channels.

### P.6.4 DBMergeParams

[Deprecated in JDF 1.5](#)

This Resource specifies the parameters of the **DBTemplateMerging** Process.

#### Resource Properties

Resource Class:	Parameter
Resource references:	
Resource inheritance:	
Example Partition:	
Input of Processes:	
Output of Processes:	

**Table P-75: DBMergeParams Resource**

Name	Data Type	Description
<i>FileSpec</i> ? <i>FileSpecRef</i> ?	refelemen-tIDREF	URL of the generated destination file. This is most often a printable file type (e.g., PDF or PPML). If <b>FileSpec</b> is not specified, <b>DBMergeParams</b> SHALL be a Pipe Resource.
<i>SplitDocuments</i> ?	integer	Indicates how often to split documents to create a new file.

## P.6.5 DBRules

Deprecated in JDF 1.5

This Resource specifies the rules that are to be applied to convert a database record into a graphic element. It is described by a text element with a human-readable description of the selection rules. For example:

```
insert the "Age" field behind the birthday;
if income>100,000 use Porsche.gif, else use bicycle.jpeg for image #2.
```

The internal representation of the mapping of database fields to graphic content within the document template is implementation-dependent. It can vary from fully variable, multi-page, automated document layout to simply inserting some line-feed characters between database records in an address field. Therefore, **DBRules** is defined as a simple human-readable text element.

### Resource Properties

Resource Class:	Parameter
Resource references:	
Resource inheritance:	
Example Partition:	
Input of Processes:	
Output of Processes:	

**Table P-76: DBRules Resource**

Name	Data Type	Description
Comment +	element	Human-readable description of the database rules that map database fields to image or text content.

## P.6.6 DBSchema

Deprecated in JDF 1.5

This Resource specifies the formal structure of a database record, regardless of type. It is encoded as a text element with a human-readable description of the database schema.

### Resource Properties

Resource Class:	Parameter
Resource references:	
Resource inheritance:	
Example Partition:	
Input of Processes:	
Output of Processes:	

**Table P-77: DBSchema Resource**

Name	Data Type	Description
DBSchemaType	enumeration NMTO-KEN	Database type. <b>Allowed values are:</b> Values include: <i>CommaDelimited</i> <i>SQL</i> <i>XML</i>
Comment +	element	Human-readable description of the database schema.

## P.6.7 DBSelection

Deprecated in JDF 1.5

This Resource specifies a selection of records from a database.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Example Partition:	—
Input of Processes:	—
Output of Processes:	—

Table P-78: DBSelection Resource

Name	Data Type	Description
DataBase	URL	URL of the database
Records ?	IntegerRangeList	The indices of the database records. If both Records and Select are specified, Records SHALL be applied to the result of Select.
Select ?	string	Database selection criteria in the native language of the database (e.g., SQL).

## P.6.8 DividingParams

Deprecated in JDF 1.1.

Since the **Dividing** Process has been replaced by **Cutting**, this Resource is no longer REQUIRED. This Resource contains Attributes and Elements used in executing the **Dividing** Process.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Example Partition:	"RibbonName", "SheetName", "SignatureName", "WebName"
Input of Processes:	<b>Dividing</b>
Output of Processes:	—

Table P-79: DividingParams Resource

Name	Data Type	Description
DividePositions	DoubleList	Array containing the cross cut positions in y-direction (direction of Web traveling).

## P.6.9 FormatConversionParams

New in JDF 1.1

Deprecated in JDF 1.5

This Resource defines the parameters needed for generic **FormatConversion** of digital files.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	—
Example Partition:	"DocIndex", "RunIndex", "RunTags"
Input of Processes:	<b>FormatConversion</b>
Output of Processes:	—

**Table P-80: FormatConversionParams Resource**

Name	Data Type	Description
<b>ColorPool</b> ? <i>ColorRef</i> ? New in JDF 1.2	refelement IDREF	Reference to a <b>ResourceSet</b> [@Name="Color"]. Additional detail about the colors used in the file to be converted.
<b>FileSpec</b> ( <i>InputFormat</i> ) ? Deprecated in JDF 1.2	refelement	The format of the original file is specified in a <b>FileSpec</b> with @ResourceUsage = "InputFormat". A URL SHOULD NOT be specified because the list of files is given by the input <b>RunList</b> of the <b>FormatConversion</b> Process. The purpose of this Element in JDF 1.1 and earlier was to provide the MIME type of the file to be created. This is now defined directly using the <b>FileSpec</b> of the input <b>RunList</b> of the <b>FormatConversion</b> Process.
<b>FileSpec</b> ( <i>OutputFormat</i> ) ? Deprecated in JDF 1.2	refelement	The format of the converted file is specified in a <b>FileSpec</b> with @ResourceUsage = "OutputFormat". A URL SHOULD NOT be specified because the list of files is given by the output <b>RunList</b> of the <b>FormatConversion</b> Process. The purpose of this Element in JDF 1.1 and earlier was to provide the MIME type of the file to be created. This is now defined directly using the <b>FileSpec</b> of the output <b>RunList</b> .
<b>ImageCompressionParams</b> ? New in JDF 1.2	refelement	Provides a set of controls that determines how images will be down-sampled and compressed in the converted documents
<b>TIFFFormatParams</b> ? New in JDF 1.2	element	Parameters specific to conversion of rasters to TIFF files. (See below.) <b>FormatConversion</b> SHOULD NOT be used to convert non-raster files to TIFF. The appropriate <b>Interpreting</b> and <b>Rendering</b> Processes SHOULD be used first.

To control the creation of files in formats other than TIFF, equivalent Subelements to **TIFFFormatParams** may be defined. It is possible to use **ImageCompressionParams** to request de-screening of 1-bit per channel rasters to contone rasters (usually accompanied by a reduction in resolution). Additional data regarding the screens used in the original rasters MAY be provided as a **ScreeningParams** Resource supplied in a **LayoutElement** as part of the input **RunList**.

## P.6.10 **IDPrintingParams**

Deprecated in JDF 1.1

This Resource contains the parameters needed to control the **IDPrinting** Process.

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

—

**Example Partition:**

"DocIndex", "DocRunIndex", "DocSheetIndex", "PartVersion",  
"Run", "RunIndex", "RunTags", "SheetIndex", "SheetName",  
"Side"

**Input of Processes:**

**IDPrinting**

**Output of Processes:**

—

**Table P-81: IDPrintingParams Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>AttributesNaturalLang = "US English"</i>	language	Language selected for communicating Attributes. Default = "US English"
<i>IDPAttributeFidelity = "false"</i>	boolean	Indicates whether or not the Device SHALL reject the Job if there are Attribute Values or Elements that it does not support. Default = "false"
<i>IPPJobPriority = "50"</i>	integer	The scheduling priority for the Job where 100 is the highest and 1 is the lowest. Amongst the Jobs that can be printed, all higher priority Jobs SHALL be printed before any lower priority ones. Default = 50
<i>IPPVersion ?</i>	XYPair	A pair of numbers indicating the version of the IPP protocol to use when communicating to IPP Devices. The X value is the major version number.
<i>OutputBin ?</i>	NMTOKEN	Specifies the bin to which the finished document is to be output. <b>Values include those from:</b> Table P-82, "OutputBin Attribute Values" on page 1347.
<i>PageDelivery ?</i>	enumeration	Indicates how pages are to be delivered to the output bin or finisher. <b>Allowed values are:</b> <i>SameOrderFaceUp</i> – Order as defined by the <b>RunList</b> , with the “front” sides of the media up. <i>SameOrderFaceDown</i> – Order as defined by the <b>RunList</b> , with the “front” sides of the media up. <i>ReverseOrderFaceUp</i> – Order reversed, as defined by the <b>RunList</b> , with the “front” sides of the media up. <i>ReverseOrderFaceDown</i> – Order reversed, as defined by the <b>RunList</b> , with the “front” sides of the media down.
<i>PrintQuality ?</i>	enumeration	Indicates how pages are to be delivered to the output bin or finisher. <b>Allowed values are:</b> <i>High</i> – Highest quality available on the printer. <i>Normal</i> – The default quality provided by the printer. <i>Draft</i> – Lowest quality available on the printer.
<i>SheetCollate ?</i>	boolean	Determines whether the sequencing of the leaves in the output of the Job. If "true", Sheets for each copy of the document are sequenced together, followed by the Sheets for the next copy. If "false", all copies of the first Sheet are sequenced, followed by the second and subsequent Sheet. @ <i>SheetCollate</i> describes the order of the final Sheet, but does not prescribe the order in which they are produced.
Cover *	element	0, 1 or 2 Cover Elements. The default instance is that there is no cover.
<i>IDPFinishing ?</i>	refelement	This Element provides the details of how media for each Instance Document is to be finished.
<i>IDPLayout ?</i>	refelement	This Element provides the details of how the contents the finished pages will be imaged onto media.

**Table P-81: IDPrintingParams Resource (Sheet 2 of 2)**

Name	Data Type	Description
JobSheet *	element	A set of Sheets which SHALL be produced with the Job. The default case is that no Job Sheets are produced
MediaIntent ?	refelement	A <b>MediaIntent</b> Element. This Element is ignored if a <b>MediaSource</b> Resource is present and can be honored for the <b>IDPrinting</b> Process. If <b>MediaSource</b> is absent or cannot be honored, this Element describes the intended media for the Job to allow the Device to select from among the available media.
MediaSource ?	refelement	Describes the source and physical orientation of the media to be used.

— Attribute: **OutputBin**

**Table P-82: OutputBin Attribute Values**

Value	Description
Top	The bin that, when facing the Device, can best be identified as “top”.
Middle	The bin that, when facing the Device, can best be identified as “middle”.
Bottom	The bin that, when facing the Device, can best be identified as “bottom”.
Side	The bin that, when facing the Device, can best be identified as “side”.
Left	The bin that, when facing the Device, can best be identified as “left”.
Right	The bin that, when facing the Device, can best be identified as “right”.
Center	The bin that, when facing the Device, can best be identified as “center”.
Rear	The bin that, when facing the Device, can best be identified as “rear”.
FaceUp	The bin that can best be identified as “face up” with respect to the Device.
FaceDown	The bin that can best be identified as “face down” with respect to the Device.
FitMedia	Requests the Device to select a bin based on the size of the media.
LargeCapacity	The bin that can best be identified as the “large capacity” bin (in terms of the number of Sheets) with respect to the Device.
Mailbox-N	The Job will be output to the bin that is best identified as “Mailbox-1”, “Mailbox-2” ...etc.
Stacker-N	The Job will be output to the bin that is best identified as “Stacker-1”, “Stacker-2” ...etc.
Tray-N	The Job will be output to the tray that is best identified as “Tray-1”, “Tray-2” ... etc.

#### P.6.10.1 Element: **Cover**

Deprecated in JDF 1.1

This Element describes the cover requested for the Job. Covers may be applied to the whole Job, or to each Instance Document in the Job. Note that front and back covers may be specified.

**Table P-83: Cover Element (Sheet 1 of 2)**

Name	Data Type	Description
BackSide = "false"	boolean	The next page from the <b>RunList</b> is imaged onto the back of this cover. This would be the inside of a “Front” cover and outside of a “Back” cover. Default = “false”

**Table P-83: Cover Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>CoverType</i> = "Front"	enumeration	Specifies whether this Cover Element specifies the front or back cover. <b>Allowed values are:</b> <i>Front</i> – The front cover. <i>Back</i> – The back cover.
<i>FrontSide</i> = "false"	boolean	The next page from the <b>RunList</b> is imaged onto the front of this cover. This would be the outside of a "Front" cover and inside of a "Back" cover. Default = "false"
<i>IDPFinishing</i> ?	refelement	An <b>IDPFinishing</b> Element that describes the finishing options for the cover.
<i>IDPLayout</i> ?	element	This Element provides the details of how page contents will be imaged onto the cover.
<i>MediaIntent</i> ?	refelement	A <b>MediaIntent</b> Element. This Element describes the media to be used for the Job. This Element is ignored if a <b>MediaSource</b> Resource is present and can be honored for the <b>IDPrinting</b> Process. If <b>MediaSource</b> is absent or cannot be honored, this Element describes the intended media for the Job to allow the Device to select from among the available media.
<i>MediaSource</i> ?	refelement	Describes the source and physical orientation of the media to be used.

**P.6.10.2 Element: IDPFinishing**[Deprecated in JDF 1.1](#)

**IDPFinishing** Elements describe finishing operations that are to be applied to sets of Sheets that are output by the **IDPrinting** Process. The finishings are applied to the entire Job when there are no Instance Documents. Otherwise, each Instance Document is finished separately. Operation-specific Subelements may also be present when a Device provides controls for a finishing operation. Additional Subelements are expected to be defined over time. Also, more detail will be added to the currently defined Elements

**Table P-84: IDPFinishing Element**

Name	Data Type	Description
<i>Finishings</i> ?	IntegerList	A set of finishing operations to apply to the Job. The operations are encoded as an enumeration. <b>Values include those from:</b> Table P-85, "Finishings Attribute Values".
<i>IDPFolding</i> ?	refelement	Provides details of how to fold the set of pages (or document). When this Element is present, <i>@Finishings</i> is ignored.
<i>IDPHoleMaking</i> ?	refelement	Provides details of how to punch holes in the set of pages (or document). When this Element is present, <i>@Finishings</i> is ignored.
<i>IDPStitching</i> ?	refelement	Provides details of how to stitch the set of pages (or document). When this Element is present, <i>@Finishings</i> is ignored.
<i>IDPTrimming</i> ?	refelement	Provides details of how to trim the set of pages (or document). When this Element is present, <i>@Finishings</i> is ignored.

## — Attribute: **Finishings**

**Table P-85: Finishings Attribute Values**

<b>Value</b>	<b>Description</b>
3	(none) Perform no finishing
4	(staple) Bind the document(s) with one or more staples. The exact number and placement of the staples is site-defined.
5	(punch) This value indicates that holes are REQUIRED in the finished document. The exact number and placement of the holes is site-defined. The punch specification may be satisfied (in a site- and implementation-specific manner) either by drilling/punching, or by substituting predrilled media.
6	(cover) This value is specified when it is desired to select a non-printed (or preprinted) cover for the document. This does not supplant the specification of a printed cover (on cover stock medium) by the document itself.
7	(bind) This value indicates that a binding is to be applied to the document; the type and placement of the binding is site-defined.
8	(saddle-stitch) Bind the document(s) with one or more staples (wire stitches) along the middle fold. The exact number and placement of the staples and the middle fold is implementation and/or site-defined.
9	(edge-stitch) Bind the document(s) with one or more staples (wire stitches) along one edge. The exact number and placement of the staples is implementation and/or site-defined.
10	(fold) Fold the document(s) with one or more folds. The exact number and orientations of the folds is implementation and/or site-defined.
11	(trim) Trim the document(s) on one or more edges. The exact number of edges and the amount to be trimmed is implementation and/or site-defined.
12	(bale) Bale the document(s). The type of baling is implementation and/or site-defined.
13	(booklet-maker) Deliver the document(s) to the Signature booklet maker. This value is a short cut for specifying a Job that is to be folded, trimmed and then saddle-stitched.
14	(jog-offset) Shift each copy of an output document from the previous copy by a small amount which is Device dependent. This value has no effect on the “Job-Sheet.” This value SHOULD NOT have an effect if each copy of the Job consists of one Sheet.
50	(bind-left) Bind the document(s) along the left edge. The type of the binding is site-defined.
51	(bind-top) Bind the document(s) along the top edge. The type of the binding is site-defined.
52	(bind-right) Bind the document(s) along the right edge. The type of the binding is site-defined.
53	(bind-bottom) Bind the document(s) along the bottom edge. The type of the binding is site-defined.

### P.6.10.3 Element: **IDPFolding**

[Deprecated in JDF 1.1](#)

This Element describes the folding requested for a set of pages in the document.

**Table P-86: IDPFolding Element**

<b>Name</b>	<b>Data Type</b>	<b>Description</b>
FoldingParams ?	refelement	Describes the details of how to fold the media.

### P.6.10.4 Element: **IDPHoleMaking**

[Deprecated in JDF 1.1](#)

This Element describes the hole making requested for a set of pages in the document.

**Table P-87: IDPHoleMaking Element**

Name	Data Type	Description
HoleMakingParams ?	refelement	Describes the details of the holes to be punched into the Media.

**P.6.10.5 Element: IDPLayout**[Deprecated in JDF 1.1](#)**Table P-88: IDPLayout Element (Sheet 1 of 2)**

Name	Data Type	Description
Border = "0"	number	A real number that indicates the width of a border, in points, which will be drawn around the page images on the media. Default = "0" (i.e., no border will be drawn).
FinishedPageOrientation = "Portrait"	enumeration	Indicates the desired orientation of the finished page. This value is used with <i>@PresentationDirection</i> to determine how pages will be imaged onto the media. <b>Allowed values are:</b> <i>Portrait</i> – The short edges of the media are the top and bottom. <i>Landscape</i> – The long edges of the media are the top and bottom.
ForceFrontSide ?	NumberRangeList	A set of numbers which identify a set of finished pages in the <b>RunList</b> that are always to be imaged on the front side of a piece of media.
ImageShift ?	element	Element which describes how page images are to be placed onto the media. When <i>@NumberUp</i> is present and is not "1,1", <i>@NumberUp</i> is applied before the <b>ImageShift</b> , and all contents for each surface are shifted the same amount.
NumberUp ?	XYPair	The number of pages to impose onto a single side of media. The way in which the pages are to be imaged onto the media is determined by the values of <i>@FinishedPageOrientation</i> and <i>@PresentationDirection</i> . <i>@FinishedPageOrientation</i> indicates how the page will be oriented, and <i>@PresentationDirection</i> indicates how page images will be distributed, given that orientation.

**Table P-88: IDPLayout Element (Sheet 2 of 2)**

Name	Data Type	Description
<i>PresentationDirection ?</i>	enumeration	<p>Indicates the order in which the requested <i>@NumberUp</i> pages will be imaged onto the media. The value of <i>@FinishedPageOrientation</i> is used to define “top”, “left”, “right” and “bottom” for the media.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>ToBottomToRight</i> – Pages are imaged in successive columns, from left to right, starting at the top of each column.</li> <li><i>ToBottomToLeft</i> – Pages are imaged in successive columns, from right to left, starting at the top of each column.</li> <li><i>ToTopToRight</i> – Pages are imaged in successive columns, from left to right, starting at the bottom of each column.</li> <li><i>ToTopToLeft</i> – Pages are imaged in successive columns, from right to left, starting at the bottom of each column.</li> <li><i>ToRightToBottom</i> – Pages are imaged in successive rows, from top to bottom, starting at the left of each row.</li> <li><i>ToRightToTop</i> – Pages are imaged in successive rows, from bottom to top, starting at the left of each row.</li> <li><i>ToLeftToBottom</i> – Pages are imaged in successive rows, from top to bottom, starting at the right of each row.</li> <li><i>ToLeftToTop</i> – Pages are imaged in successive rows, from bottom to top, starting at the right of each row.</li> </ul>
<i>Rotate = "0"</i>	number	<p>A number of degrees which the page contents are to be rotated prior to being imaged onto page contents. A positive value is taken to mean an counter-clockwise rotation. The page contents will be scaled to fit the printable area of the media after the rotation.</p> <p>Note: Text will be reflowed in cases where the PDL for the page allows reflow by the Device.</p> <p>Default = "0"</p>
<i>Sides = "OneSided"</i>	enumeration	<p>Indicates how pages are to be imposed onto sides of the medium.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li><i>OneSided</i> – Page contents will only be imaged on one side of the media. The default.</li> <li><i>TwoSidedLongEdge</i> – Impose pages upon the front and back sides of media Sheets so that the orientation of the pages on each side is appropriate for binding along the long edge. Equivalent to “work-and-turn”.</li> <li><i>TwoSidedShortEdge</i> – Impose pages upon the front and back sides of media Sheets so that the orientation of the pages on each side is appropriate for binding along the short edge. Equivalent to “work-and-tumble”.</li> </ul>

### P.6.10.6 Element: **IDPStitching**

Deprecated in JDF 1.1

This Element describes the stitching requested for a set of pages in the document

**Table P-89: IDPStitching Element**

Name	Data Type	Description
<i>StitchingPosition</i> ?	enumeration	<p>Specifies the location for stitching. All locations are interpreted as if the document were a portrait document. Ignored if <b>StitchingParams</b> is present.</p> <p><b>Allowed values are:</b></p> <p><i>None</i> – The document is not to be stitched.</p> <p><i>TopLeft</i> – Bind the document with one or more staples in the top left corner.</p> <p><i>BottomLeft</i> – Bind the document with one or more staples in the Bottom left corner.</p> <p><i>TopRight</i> – Bind the document with one or more staples in the top right corner.</p> <p><i>BottomRight</i> – Bind the document with one or more staples in the bottom right corner.</p> <p><i>LeftEdge</i> – Bind the document with one or more staples across the left edge.</p> <p><i>TopEdge</i> – Bind the document with one or more staples across the top edge.</p> <p><i>RightEdge</i> – Bind the document with one or more staples across the right edge.</p> <p><i>BottomEdge</i> – Bind the document with one or more staples across the bottom edge.</p> <p><i>DualLeftEdge</i> – Bind the document with two staples across the left edge.</p> <p><i>DualTopEdge</i> – Bind the document with two staples across the top edge.</p> <p><i>DualRightEdge</i> – Bind the document with two staples across the right edge.</p> <p><i>DualBottomEdge</i> – Bind the document with two staples across the bottom edge.</p>
<i>StitchingReferenceEdge</i> ?	enumeration	<p>The edge of the output media relative to which the stapling or stitching SHALL be applied. If <b>StitchingParams</b> is present, <i>@StitchingReferenceEdge</i> defines the <i>@BindingEdge</i>.</p> <p><b>Allowed values are:</b></p> <p><i>Bottom</i> – The bottom edge coincides with the x-axis of the coordinate system.</p> <p><i>Top</i> – The top edge is opposite and parallel to the bottom edge.</p> <p><i>Left</i> – The left edge coincides with the y-axis of the coordinate system.</p> <p><i>Right</i> – The right edge is opposite and parallel to the left edge.</p>
<b>StitchingParams</b> ?	refelement	A <b>StitchingParams</b> Element which provides detailed control of the stitching. <i>@StitchingReferenceEdge</i> SHALL be present if <b>StitchingParams</b> is provided.

### P.6.10.7 Element: **IDPTrimming**

Deprecated in JDF 1.1

This Element describes the trimming requested for a set of pages in the document.

**Table P-90: IDPTrimming Element**

Name	Data Type	Description
TrimmingParams ?	refelement	Describes the details of how to trim the media.

### P.6.10.8 Element: **ImageShift**

Deprecated in JDF 1.1

ImageShift Elements describe how finished page contents will be imaged onto media. All Attributes refer to positioning along the “X” or “Y” axis. The “X” dimension is the first number of the **Media @Dimension** Attribute; “Y” is the second number

**Table P-91: ImageShift Element**

Name	Data Type	Description
PositionX = "None"	enumeration	<p>Indicates how finished page images are to be positioned horizontally on the surface. Shifts are applied after positioning.</p> <p><b>Allowed values are:</b></p> <p><i>Center</i> – Center the page images horizontally on the surface without regard to limitations of the printable area.</p> <p><i>Left</i> – Position the left edge of the page images so they is coincident with the left edge of the printable area of the surface.</p> <p><i>None</i> – Place the page images wherever the print data specifies (the default).</p> <p><i>Right</i> – Position the right edge of the page images so they is coincident with the right edge of the printable area of the surface.</p>
PositionY = "None"	enumeration	<p>Indicates how finished page images are to be positioned vertically on the surface. Shifts are applied after positioning.</p> <p><b>Allowed values are:</b></p> <p><i>Bottom</i> – Position the bottom edge of the page images so they is coincident with the bottom edge of the printable area of the surface.</p> <p><i>Center</i> – Center the page images horizontally on the surface without regard to limitations of the printable area.</p> <p><i>None</i> – Place the page images wherever the print data specifies (the default).</p> <p><i>Top</i> – Position the top edge of the page images so they is coincident with the top edge of the printable area of the surface.</p>
ShiftX ?	integer	The image is to be shifted along the x axis on both sides of the media.
ShiftY ?	integer	The image is to be shifted along the y axis on both sides of the media.
ShiftXSide1 ?	integer	The image is to be shifted along the x axis on the front side of the media.
ShiftXSide2 ?	integer	The image is to be shifted along the x axis on the back side of the media.
ShiftYSide1 ?	integer	The image is to be shifted along the y axis on the front side of the media.
ShiftYSide2 ?	integer	The image is to be shifted along the y axis on the back side of the media.

### P.6.10.9 Element: **JobSheet**

Deprecated in JDF 1.1

This Element describes a Job Sheet which may be produced along with the Job. Job Sheets include separators, Sheets, and error Sheets. The information provided on the Sheet depends on the type of Sheet. In addition, any Sheet type may include an optional Message as a comment Subelement for the Sheet Element. Such a Message comment SHALL have a @Name Attribute with the value 'SheetMessage'.

**Table P-92: JobSheet Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>SheetFormat = "Standard"</i>	NMTOKEN	<p>Identifies the format of the <i>JobSheet</i>. One one value is defined here, but site-specific values may be defined.</p> <p><b>Values include:</b></p> <p><i>Standard</i></p>
<i>SheetOccurrence</i>	enumeration	<p>Indicates when the Sheet is to be produced and inserted into the set of output pages.</p> <p><b>Allowed values are:</b></p> <p><i>Always</i> – Valid for "<i>ErrorSheet</i>" or "<i>AccountingSheet</i>". The Sheet is always produced at the end of the Job.</p> <p><i>End</i> – Valid for "<i>JobSheet</i>" or "<i>SeparatorSheet</i>". The Sheet is produced at the end of the Job (for "<i>JobSheet</i>") or at the end of each copy of each Instance Document (for "<i>SeparatorSheet</i>").</p> <p><i>OnError</i> – Valid for "<i>ErrorSheet</i>". The Sheet is produced at the end of the Job when an error or warning occurs.</p> <p><i>Slip</i> – Valid for "<i>SeparatorSheet</i>". The Sheet is produced between each copy of each Instance Document.</p> <p><i>Start</i> – Valid for "<i>JobSheet</i>" or "<i>SeparatorSheet</i>". The Sheet is produced at the start of the Job (for "<i>JobSheet</i>") or at the start of each copy of each Instance Document (for "<i>SeparatorSheet</i>").</p> <p><i>Both</i> – Valid for "<i>JobSheet</i>" or "<i>SeparatorSheet</i>". The Sheet is produced at the beginning and end of the Job (for "<i>JobSheet</i>"s) or at the beginning and end of each copy of each Instance Document (for "<i>SeparatorSheet</i>"s).</p> <p><i>None</i> – Valid for any @<i>SheetType</i>.</p>
<i>SheetType</i>	enumeration	<p>Identifies the type of Sheet.</p> <p><b>Allowed values are:</b></p> <p><i>AccountingSheet</i> – A Sheet that reports accounting information for the Job.</p> <p><i>ErrorSheet</i> – A Sheet that reports errors for the Job.</p> <p><i>JobSheet</i> – A Sheet that delimits the Job.</p> <p><i>SeparatorSheet</i> – A Sheet that delimits one copy (set) of the Job.</p>
IDPFinishing ?	refelement	An IDPFinishing Element that describes the finishing options for the Job Sheet.
IDPLayout ?	element	This Element provides the details of how page contents will be imaged onto the Job Sheet.

**Table P-92: JobSheet Element (Sheet 2 of 2)**

Name	Data Type	Description
<b>MediaIntent ?</b>	refelement	A <b>MediaIntent</b> Element. This Element describes the media to be used for the Job Sheets. This Element is ignored if a <b>MediaSource</b> Resource is present and can be honored. If <b>MediaSource</b> is absent or cannot be honored, this Element describes the intended media for the Job Sheets to allow the Device to select from among the available media.
<b>MediaSource ?</b>	refelement	Describes the source and physical orientation of the media to be used.

**Overriding IDPrintingParams using Partitioning**

**IDPrintingParams** MAY be overridden using Partitioning mechanisms as described in Section 3.15.5, “Description of Partitioned Resources”. Overrides MAY apply to a set of Instance Documents, set of copies of Instance Documents, or to a set of finished pages, output surfaces, Sheets of media in a personalized printing Job, or header or trailer insert Sheets added by a RunList. Note: If more than one override refers to the same content, the lowest level override takes precedence. The following list defines Partitioning precedence, from lowest to highest (i.e., the lower entries in the list take precedence):

- Job level Partitioning (*lowest priority*):  
"PartVersion", "Run", "SheetName", "Side", "RunTags"
- Page level Partitioning:  
"RunIndex"  
"SheetIndex"
- Instance Document level Partitioning (*highest priority*):  
"DocCopies"  
"DocIndex"  
"DocSheetIndex"  
"DocRunIndex"

**Note:** It is strongly discouraged to mix page-level Partitions and Instance Document-level Partitions. Cover Elements in **IDPrintingParams** are counted when calculating **@DocSheetIndex** or **@DocRunIndex**.

**Example of a Partitioned IDPrinting Node**

The following example shows how Partitioning can be used to describe a fairly complex example. Three color models (**ColorantControl** Partitions) are applied to a set of Sheets using the **@DocSheetIndex** key;

- 1 DeviceN:DocSheetIndex = "0" defines the cover;
- 2 DeviceCMYK @DocSheetIndex = "1" defines the first Sheet (non cover);
- 3 DeviceGray:DocSheetIndex = "2 ~ -1" defines all other Sheets;

The cover is selected from a different input tray using the **@Location** key. The same key is used to describe the **Media** in each tray.

```
<?xml version='1.0' encoding='utf-8' ?>
<JDF ID="HDM20010402140111" Type="IDPrinting" JobID="HDM20010402140111"
      Status="Waiting" Version="1.2">
  <ResourcePool>
    <Media ID="Link0003" Class="Consumable" Locked="false" Status="Available"
          Dimension="700 900" MediaType="Paper" PartIDKeys="Location">
      <Media Weight="90" Location="Tray 1"/>
      <Media Weight="120" Location="Tray 2"/>
    </Media>
  </ResourcePool>
</JDF>
```

```

</Media>
<RunList ID="Link0004" Class="Parameter" Locked="false" Status="Available"
    PartIDKeys="Run">
    <RunList Run="Run0005" Pages="0">
        <LayoutElement>
            <FileSpec URL="Cover.pdf"/>
        </LayoutElement>
    </RunList>
    <RunList Run="Run0006" Pages="0 ~ 7">
        <LayoutElement>
            <FileSpec URL="File2.pdf"/>
        </LayoutElement>
    </RunList>
</RunList>
<IDPrintingParams ID="Link0008" Class="Parameter" Locked="false"
    Status="Available">
    <IDPLayout NumberUp="2 2"/>
    <MediaSource MediaLocation="Tray 1">
        <MediaRef rRef="Link0003"/>
    </MediaSource>
    <Cover CoverType="Front" FrontSide="true">
        <IDPLayout NumberUp="1 1"/>
        <MediaSource MediaLocation="Tray 2">
            <MediaRef rRef="Link0003"/>
        </MediaSource>
    </Cover>
</IDPrintingParams>
<ColorantControl ID="Link0009" Class="Parameter" Locked="false"
    Status="Available" PartIDKeys="DocSheetIndex">
    <ColorantControl DocSheetIndex="0" ProcessColorModel="DeviceN"/>
    <ColorantControl DocSheetIndex="1" ProcessColorModel="DeviceCMYK"/>
    <ColorantControl DocSheetIndex="2 ~ -1" ProcessColorModel="DeviceGray"/>
</ColorantControl>
</ResourcePool>
<ResourceLinkPool>
    <MediaLink rRef="Link0003" Usage="Input"/>
    <RunListLink rRef="Link0004" Usage="Input"/>
    <IDPrintingParamsLink rRef="Link0008" Usage="Input"/>
    <ColorantControlLink rRef="Link0009" Usage="Input"/>
</ResourceLinkPool>
</JDF>

```

## P.6.11 Layout Deprecated Subelement

Note: **Layout** is still a valid Resource. The following sections from within **Layout** were deprecated and were deemed large enough to warrant moving them to this section.

### P.6.11.1 Element: Signature

Deprecated in JDF 1.3

This Element groups individual **Sheet** Resources into one **Signature** Subelement. In JDF 1.3 and beyond, **Signature** is represented as a Partition of **Layout** with **Layout/@PartIDKeys "SignatureName"** set.

**Table P-93: Signature Element**

Name	Data Type	Description
Name ?	string	Unique name of the Signature. @Name is used for external reference to a Signature, as in a Part Element.
InsertSheet *	refelement	Specifies how to complete a Signature in an automated printing environment.
Media ? <a href="#">New in JDF 1.1</a>	refelement	Describes the media to be used. Defaults to <b>Layout/Media</b> .
MediaSource ? <a href="#">Deprecated in JDF 1.1</a>	refelement	Describes the media to be used. Replaced by <b>Media</b> in JDF 1.1.
Sheet *	refelement	Resources that comprise the Signature.

## P.6.12 LongitudinalRibbonOperationParams

[Deprecated in JDF 1.1](#)

This Resource provides the parameters of the **LongitudinalRibbonOperations** Process. It is defined as a list of Abstract @LROperation Elements.

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	
Example Partition:	"RibbonName", "SheetName", "SignatureName", "WebName"
Input of Processes:	<b>LongitudinalRibbonOperations</b>
Output of Processes:	

**Table P-94: LongitudinalRibbonOperationParams Resource**

Name	Data Type	Description
LROperation +	element	Abstract Element which is a placeholder for a longitudinal ribbon operation.

### P.6.12.1 Element: LROperation

[Deprecated in JDF 1.1](#)

LROperation is an Abstract Element that describes the **LongitudinalRibbonOperations** Process. The defined instances (subclasses) of LROperation are LongFold, LongGlue, LongPerforate, and LongSlit. All instances of LROperation have the following common contents.

**Table P-95: LROperation Element**

Name	Data Type	Description
WorkingList = "0 1000000000"	NumberList	List of lengths of the @Operation to be performed in point. Entries with an odd position (first, third, etc.) in the list define an offset where the tool is inactive. Entries with an even position define a working length where the tool is on. The start position is the leading edge of the plate. If the sum of all entries is higher than the circumference of the press cylinder, the values exceeding the circumference are cropped. Counting always restarts at the leading edge. Default = "0 1000000000" (i.e., always on).
XOffset	double	Position of the tool for longitudinal action along the cylinder axis.

**P.6.12.2 Element: LongFold**Deprecated in JDF 1.1.

**LongFold** is derived from the Abstract Element **LROperation** and describes a longitudinal fold operation and has no further contents in addition to those of **LROperation**.

**P.6.12.3 Element: LongGlue**Deprecated in JDF 1.1.

**LongGlue** is derived from the Abstract Element **LROperation** and describes a longitudinal gluing operation and has the following contents in addition to those of **LROperation**.

**Table P-96: LongGlue Element**

Name	Data Type	Description
<i>GlueBrand</i> ?	string	Glue brand. Use only when <i>@Operation</i> = "Glue".
<i>GlueType</i> ?	Enumeration	If <i>@Operation</i> = "Glue", the listed values can be used: <b>Allowed values are:</b> <i>ColdGlue</i> <i>Hotmelt</i> <i>PUR</i> – Polyurethane
<i>LineWidth</i> ?	double	Width of the <i>@Operation</i> line.
<i>MeltingTemperature</i> ?	integer	Temperature needed for melting the glue (in degrees centigrade). Use only when <i>@GlueType</i> = "Hotmelt" and <i>@Operation</i> = "Glue".

**P.6.12.4 Element: LongPerforate**Deprecated in JDF 1.1.

**LongPerforate** is derived from the Abstract Element **LROperation** and describes a longitudinal gluing operation and has the following contents in addition to those of **LROperation**.

**Table P-97: LongPerforate Element**

Name	Data Type	Description
<i>TeethPerDimension</i> ?	integer	If <i>@Operation</i> = "Perforate", the number of teeth in a given perforation extent is defined in teeth/point. <i>MicroPerforation</i> is defined by specifying a large number of teeth (n>1000).

**P.6.12.5 Element: LongSlit**Deprecated in JDF 1.1.

**LongSlit** is derived from the Abstract Element **LROperation** and describes a longitudinal cut operation and has no further contents in addition to those of **LROperation**.

**P.6.13 MediaSource**Deprecated in JDF 1.1

This Resource describes the source and physical orientation of the media to be used in **DigitalPrinting** or **IDPrinting**.

**Resource Properties****Resource Class:** Parameter

<b>Resource referenced by:</b>	<b>DigitalPrintingParams, IDPrintingParams, InsertSheet, Layout, Sheet, Tile</b>
<b>Example Partition:</b>	
<b>Input of Processes:</b>	<b>DigitalPrinting, IDPrinting</b>
<b>Output of Processes:</b>	

**Table P-98: MediaSource Resource**

Name	Data Type	Description
<i>LeadingEdge</i> ?	number	Specifies the size, in points, of the edge of the media that represents the scanline direction. If this Attribute is absent, the scanline direction is assumed to be along the x-axis of the "Dimension" parameter for the <b>Media</b> .
<i>MediaLocation</i> ?	string	Identifies the location, such as a slot name or ID, of the media in the Device. If the media Resource is Partitioned by <i>@Location</i> (see also Section 3.15.6.4, "Locations of PhysicalResources") there SHOULD be a match between one <i>@Location</i> Partition Key and this <i>@MediaLocation</i> value.
<i>ManualFeed = "false"</i>	boolean	Indicates whether the media will be fed manually. Default = "false"
<b>Media</b> ?	refelement	A <b>Media</b> Resource which identifies the media to be used. Only one of <b>Component</b> or <b>Media</b> SHOULD be specified.

## P.6.14 NumberingParams

Deprecated in JDF 1.5

This Resource describes the parameters of stamping or applying variable marks in order to produce unique components (e.g., lottery notes, currency). One **NumberingParams** Element SHALL be defined per numbering machine.

### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	
<b>Example Partition:</b>	
<b>Input of Processes:</b>	<b>Numbering</b>
<b>Output of Processes:</b>	

**Table P-99: NumberingParams Resource**

Name	Data Type	Description
NumberingParam *	element	Set of parameters for one numbering machine

## P.6.15 Element: NumberingParam

**Table P-100: NumberingParam Element (Sheet 1 of 2)**

Name	Data Type	Description
<i>Orientation</i>	double	Rotation of the numbering machine in degrees. If <i>@Orientation = "0"</i> , the top of the numbers is along the leading edge.
<i>StartValue</i> ?	string	First value of the numbering machine.
<i>Step</i> ?= "1"	integer	Number that specifies the difference between two subsequent numbers of the numbering machine.

**Table P-100: NumberingParam Element (Sheet 2 of 2)**

Name	Data Type	Description
XPosition	double	Position of the numbering machine along the printer axis.
YPosition	DoubleList	List of stamp positions, in points, starting from the leading edge.

### P.6.16 OrderingParams

Deprecated in JDF 1.5

Attributes of the **Ordering** Process, which results in an acquisition.

#### Resource Properties

Resource Class:	Parameter
Resource referenced by:	
Example Partition:	
Input of Processes:	<b>Ordering</b>
Output of Processes:	

**Table P-101: OrderingParams Resource**

Name	Data Type	Description
Amount	double	Amount of the ordered Resource.
Contact *	refelement	Address and further information of the Contact responsible for this order.
ContactRefs ? <a href="#">New in JDF 1.1</a>	IDREFS	
Unit	string	Unit of measurement for @Amount.
Comment	element	<b>OrderingParams</b> require a Comment Element that contains a human-readable description of what to order.
Company ? <a href="#">Deprecated in JDF 1.1</a>	refelement	Address and further information of the Company responsible for this order. Replaced with Contact/Company in JDF 1.1.

### P.6.17 PackingParams

Deprecated in JDF 1.1

The **PackingParams** Resource has been deprecated in version 1.1 and beyond. It is replaced by the individual Resources used by the Processes defined in Section 6.7.4, “Numbering” and Section 6.7.5, “Packaging Processes”.

This Resource specifies the box packing parameters for a JDF Job, using information that identifies the type of package, the wrapping used, and the shape of the package. Note that this specifies packing for shipping only, not packing of items into custom boxes etc. Boxes are convenience packaging, and are not envisioned to be protection for shipping. Cartons perform this function. All quantities are specified as finished pieces per wrapped/boxed/carton or palletized package.

The model for packaging is that products are *wrapped* together, wrapped packages are placed in *boxes*, boxes are placed in *cartons*, and cartons are stacked on *pallets*.

#### Resource Properties

Resource Class:	Parameter
Resource referenced by:	
Example Partition:	
Input of Processes:	<b>Packing</b>
Output of Processes:	

**Table P-102: PackingParams Resource**

Name	Data Type	Description
<i>BoxedQuantity</i> ?	integer	How many units of <i>product</i> in a box.
<i>BoxShape</i> ?	shape	Describes the length, width and height of the box in points.
<i>CartonQuantity</i> ?	integer	How many units of <i>product</i> in a carton.
<i>CartonShape</i> ?	shape	Describes the length, width and height of the carton in points (e.g., 288 544 1012).
<i>CartonMaxWeight</i> ?	double	Maximum weight of an individual carton in kilograms.
<i>CartonStrength</i> ?	double	Strength of the carton in Newtons per square meter.
<i>PalletQuantity</i> ?	integer	Number of <i>product</i> per pallet
<i>PalletSize</i> ?	XYPair	Describes the length and width of the pallet in points (e.g., 3500 3500).
<i>PalletMaxHeight</i> ?	double	Maximum height of a loaded pallet in points.
<i>PalletMaxWeight</i> ?	double	Maximum weight of a loaded pallet in kilograms.
<i>PalletType</i> ?	enumeration	Type of pallet used. <b>Allowed values are:</b> <i>2Way</i> – Two-way entry <i>4Way</i> – Four-way entry <i>Euro</i> – Standard 1*1 m Euro pallet
<i>PalletWrapping</i> = "None"	enumeration	Wrapping of the completed pallet. <b>Allowed values are:</b> <i>StretchWrap</i> <i>Banding</i> <i>None</i> – The default.
<i>WrappedQuantity</i> ?	integer	Number of units of <i>product</i> per wrapped package.
<i>WrappingMaterial</i> = "None"	name	Examples include: <i>RubberBand</i> <i>ShrinkWrap</i> <i>PaperBand</i> <i>Polyethylene</i> <i>None</i> – The default.

### P.6.18 PlaceHolderResource

Deprecated in JDF 1.5

This Resource is used to link Process Group Nodes when the exact nature of interchange Resources is still unknown. In this way, a skeleton of Process networks can be constructed, with the **PlaceHolderResource** Resources serving as place holders in lieu of the appropriate Resources. This Resource needs no structure besides that provided in an Abstract Resource Element as it has no inherent value except as a stand-in for other Resources.

#### Resource Properties

**Resource Class:** PlaceHolder

**Resource referenced by:**

**Example Partition:**

**Input of Processes:** Process Group Nodes

**Output of Processes:** Process Group Nodes

### Resource Structure

The Resource has no additional structure.

## P.6.19 PlateCopyParams

Deprecated in JDF 1.1

This Resource specifies the parameters of the **FilmToPlateCopying** Process.

### Resource Properties

**Resource Class:** Parameter

**Resource referenced by:**

**Example Partition:**

**Input of Processes:** FilmToPlateCopying

**Output of Processes:**

Table P-103: PlateCopyParams Resource

Name	Data Type	Description
Cycle ?	integer	Number of exposure light units to be used. The amount depends on the subject to be exposed.
Diffusion ?	enumeration	The diffusion foil setting. <b>Allowed values are:</b> On Off
Vacuum ?	double	Amount of vacuum pressure to be used. Measured in bars.

## P.6.20 ProofingParams

Deprecated in JDF 1.2

This Resource specifies the settings needed for all proofing operations, including both “hard” or “soft” proofing, of color and imposition proofs.

### Resource Properties

**Resource Class:** Parameter

**Resource referenced by:**

**Example Partition:**

"DocIndex", "RunIndex", "RunTags", "SheetName", "Side",  
"SignatureName"

**Input of Processes:** Proofing, SoftProofing

**Output of Processes:**

**Table P-104: ProofingParams Resource**

Name	Data Type	Description
<i>ColorType</i> ?	enumeration	<p>Color quality of the proof.</p> <p><b>Allowed values are:</b></p> <p><i>Monochrome</i> – Black and white.</p> <p><i>BasicColor</i> – Color does not match precisely. This implies the absence of a color matching system.</p> <p><i>MatchedColor</i> – Color is matched to the output of the press using a color matching system.</p>
<i>DisplayTraps</i> = "false"	boolean	If "true", the trap networks are shown in the proof. Default = "false"
<i>HalfTone</i> = "false"	boolean	Specifies whether the proof is to emulate halftone screens. Default = "false"
<i>ImageViewingStrategy</i> = "NoImages"	string	<p>Identifies which images will be displayed during the <i>SoftProofing</i> Process.</p> <p><b>Allowed values are:</b></p> <p><i>NoImages</i> – Default value.</p> <p><i>OmitReference</i> – Displays only images actually embedded in the file.</p> <p><i>UseProxies</i> – Displays images embedded in the file and proxy versions of referenced data.</p> <p><i>UseReplacements</i> – Displays embedded images plus the full resolution version of referenced images.</p>
<i>ManualFeed</i> = "false" <i>New in JDF 1.1</i>	boolean	Indicates whether the media will be fed manually. Default = "false"
<i>ProofRenderingIntent</i> = "Perceptual" <i>New in JDF 1.1</i>	enumeration	<p>Identifies the rendering intents associated with the proof. Values are ICC-defined rendering intent values:</p> <p><b>Allowed values are:</b></p> <p><i>Saturation</i></p> <p><i>Perceptual</i> – The default.</p> <p><i>RelativeColorimetric</i></p> <p><i>AbsoluteColorimetric</i></p>
<i>ProofType</i> = "None"	enumeration	<p>Describes the type of the proof.</p> <p><b>Allowed values are:</b></p> <p><i>None</i> – Default value. Not a proof or the type is unknown.</p> <p><i>Page</i> – Page proof</p> <p><i>Imposition</i> – Imposition proof.</p>
<i>Resolution</i> ?	XYPair	Resolution of the output.
<i>FileSpec</i> ?	refelement	A <b>FileSpec</b> Resource pointing to an ICC profile that describes the proofer Device. The <i>@ResourceUsage</i> Attribute of the <b>FileSpec</b> SHALL be " <i>ProoferProfile</i> ".
<i>Media</i> ?	refelement	Describes the media to be used.

## P.6.21 RunList Deprecated Subelements

### P.6.21.1 Element: DynamicInput

[Deprecated in JDF 1.4](#)

Table P-105: DynamicInput Element

Name	Data Type	Description
Name ?	string	Label that SHALL match the @ReplaceField Attribute of the appropriate DynamicField Element
—	text	Defines the text string that is to be inserted as a replacement for the text defined in @ReplaceField of a DynamicField Element.

## P.6.22 SaddleStitchingParams

This Resource provides the parameters of the **SaddleStitching** Process.

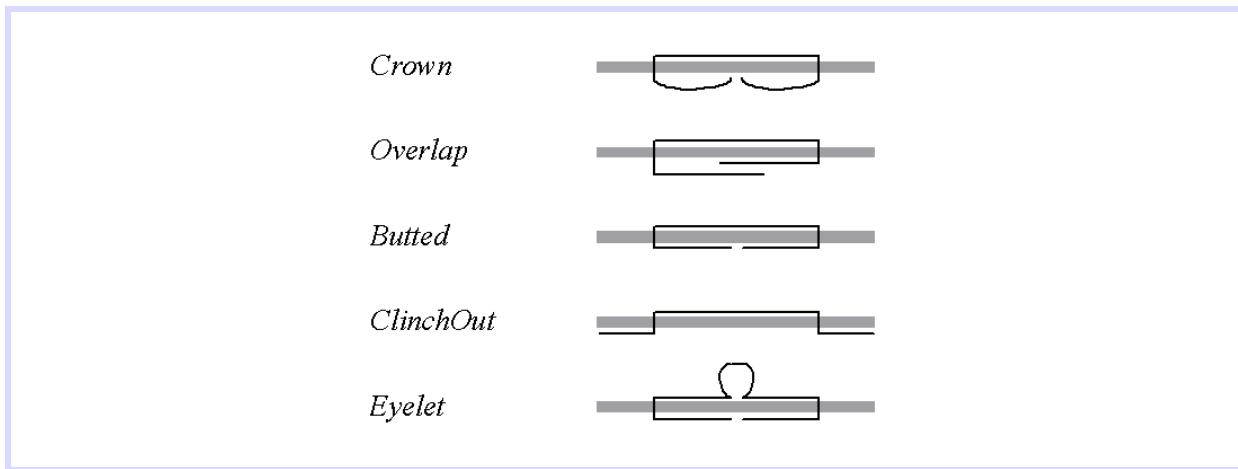
[Deprecated in JDF 1.1](#)

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	
Example Partition:	
Input of Processes:	<b>SaddleStitching</b>
Output of Processes:	

Table P-106: SaddleStitchingParams Resource

Name	Data type	Description
NumberOfStitches	integer	The number of stitches that will be made.
StitchPositions ?	NumberList	Array containing the stitch positions along the saddle. The center of the stitch SHALL be specified, and the number of entries SHALL match the number given in the @NumberOfStitches Attribute.
StapleShape ?	enumeration	<p>Shape of staples.</p> <p><b>Allowed values are:</b></p> <ul style="list-style-type: none"> <li>Crown</li> <li>Overlap</li> <li>Butted</li> <li>CinchOut</li> <li>Eyelet</li> </ul> <p><b>Note:</b> these values are displayed in Figure P-3, below.</p>
StitchWidth ?	double	Width of each stitch.
WireGauge ?	double	Gauge of the wire being used.
WireBrand ?	string	Brand of wire being used.

**Figure P-3: Staple shapes**

The Process coordinate system is defined as follows — The Y-axis is aligned with the binding edge, and increases from the registered edge to the edge opposite the registered edge. The X-axis, meanwhile, is aligned with the registered edge. It increases from the binding edge to the edge opposite the binding edge, which is the product front edge.

### P.6.23 Sheet

Deprecated in JDF 1.3

This Resource provides a description of a Sheet, as well as the marks on that Sheet. In JDF 1.3 and beyond, Sheet is represented as a Partition of **Layout** with **Layout/@PartIDKeys "SheetName"** set.

#### Resource Properties

<b>Resource Class:</b>	Parameter
<b>Resource referenced by:</b>	<b>InsertSheet, Layout</b>
<b>Example Partition:</b>	" <i>SheetName</i> ".
<b>Input of Processes:</b>	
<b>Output of Processes:</b>	

**Table P-107: Sheet Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>LockOrigins = "false"</i>	boolean	Determines the relationship of the coordinate systems for front and back surfaces. When " <i>false</i> ", all contents for all surfaces are transformed into the first quadrant, in which the origin is at the lower left corner of the surface. When " <i>true</i> ", contents for the front surface are imaged into the first quadrant (as above), but contents for the back surface are imaged into the second quadrant, in which the origin is at the lower right. This allows the front and back origins to be aligned even if the exact media size is unknown.
<i>Name ?</i> <u>Clarified in JDF 1.2</u>	string	Name of the Sheet. <b>@Name</b> SHALL be unique within a given <b>Layout</b> . Name is used for external reference to a Sheet in, for example, a <b>Part</b> Element.
<i>SurfaceContentsBox ?</i>	rectangle	This box, specified in surface coordinate space, defines the area into which contents and marks will occur for all <b>Surfaces</b> in the <b>Sheet</b> . CTMs for <b>MarkObject</b> or <b>ContentObject</b> Elements transform page contents or marks into this rectangle.

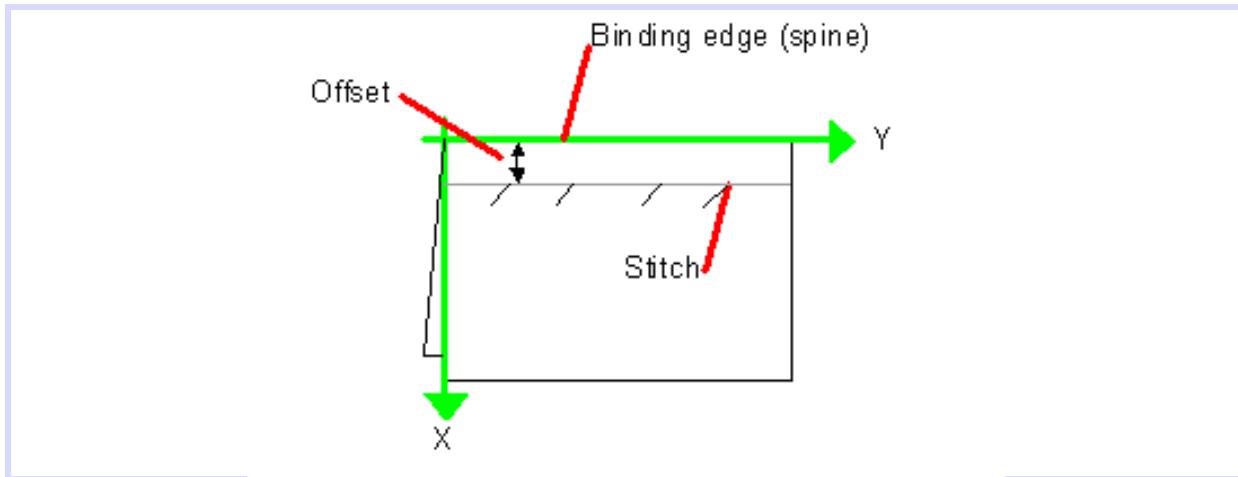
**Table P-107: Sheet Resource (Sheet 2 of 2)**

Name	Data Type	Description
InsertSheet *	refelement	Specifies how to complete a Sheet in an automated printing environment.
<b>Media ?</b> <i>New in JDF 1.1</i>	refelement	Describes the media to be used. Defaults to <b>Layout</b> /Signature/ <b>Media</b> .
<b>MediaSource ?</b> <i>Deprecated in JDF 1.1</i>	refelement	Describes the media to be used. Replaced by <b>Media</b> in JDF 1.1.
<b>Surface (Front) ?</b>	refelement	Describes the front surface to be used. Two surfaces may be attached: one front surface and one back surface. The surface is defined by the <b>@Side</b> Attribute of the <b>Surface</b> Resource. <b>Surface/@Side</b> SHALL be " <i>Front</i> ".
<b>Surface (Back) ?</b>	refelement	Describes the back surface to be used. <b>Surface/@Side</b> SHALL be " <i>Back</i> ".

## P.6.24 SideSewingParams

*Deprecated in JDF 1.1*

This Resource provides the parameters for the **SideSewing** Process. **SideSewing** is a special case of **ThreadSewing**. The Process coordinate system is defined in the following way: the Y-axis is aligned with the binding edge. It then increases from the registered edge to the edge opposite to the registered edge. The X-axis is aligned with the registered edge, which then increases from the binding edge to the edge opposite to the binding edge (i.e., the product front edge).

**Figure P-4: Parameters and coordinate system used for side sewing**

### Resource Properties

Resource Class:	Parameter
Resource referenced by:	
Example Partition:	
Input of Processes:	<b>SideSewing</b>
Output of Processes:	

**Table P-108: SideSewingParams Resource**

Name	Data Type	Description
<i>NumberOfNeedles</i>	integer	Specifies the number of needles to be used.
<i>NeedlePositions</i> ?	NumberList	Array containing the Y-coordinates of the needle positions. The number of entries SHALL match the number given in @ <i>NumberOfNeedles</i> .
<i>Offset</i>	double	Specifies the distance between the stitch and the binding edge.
<i>SewingPattern</i> ?	enumeration	Specifies the sewing pattern to be used. <b>Allowed values are:</b> <i>Normal</i> <i>Staggered</i> <i>CombinedStaggered</i>
<i>ThreadMaterial</i> ?	enumeration	Specifies the thread material to be used. <b>Allowed values are:</b> <i>Cotton</i> <i>Nylon</i> <i>Polyester</i>
<i>ThreadThickness</i> ?	double	The thickness of the thread to be used.
<i>ThreadBrand</i> ?	string	The brand of thread to be used.

## P.6.25 Surface

Deprecated in JDF 1.3

This Resource describes the marks on a Sheet surface. Up to two **Surface** Resources may be defined for a **Sheet**. In JDF 1.3 and beyond, **Surface** is represented as a Partition of **Layout** with **Layout/@PartIDKeys "Side"** set.

### Resource Properties

**Resource Class:**

Parameter

**Resource referenced by:**

Sheet

**Example Partition:**

"*Side*". Otherwise it is strongly discouraged to Partition the **Layout** tree, including **Surface**.

**Input of Processes:**

**Output of Processes:**

**Table P-109: Surface Resource (Sheet 1 of 2)**

Name	Data Type	Description
<i>Side</i>	enumeration	The side of the <b>Sheet</b> that the <b>Surface</b> describes. <b>Allowed values are:</b> <i>Front</i> <i>Back</i>
<i>SurfaceContentsBox</i> ?	rectangle	This rectangle provides the region of the surface into which the contents of ContentObject Elements and MarkObjects are to be imaged. <b>Note:</b> The @ <i>SurfaceContentsBox</i> also provides a translation for an object's @CTM.

**Table P-109: Surface Resource (Sheet 2 of 2)**

Name	Data Type	Description
PlacedObject *	element	<p>Provides a list of the ContentObject and MarkObject Elements to be placed on to the surface. Contains the marks on the surface in rendering order. See the description that follows.</p> <p><b>Note:</b> PlacedObject is not a container but an Abstract type.</p>

## Appendix Q List of Figures

---

Figure 1-1 Handling of Default Values of JDF Attributes . . . . .	18
Figure 2-1 Example of JDF and JMF workflow interactions . . . . .	29
Figure 2-2 Example of XJDF and XJMF workflow interactions . . . . .	30
Figure 2-3 JDF tree structure . . . . .	32
Figure 2-4 Example of a hierarchical tree structure of JDF Nodes . . . . .	34
Figure 2-5 Example of a Process chain linked by Input Resources and Output Resources . . . . .	34
Figure 2-6 Standard coordinate system . . . . .	36
Figure 2-7 Relation between Resource and process coordinate systems . . . . .	36
Figure 2-8 Relation between Resource and process coordinate systems . . . . .	37
Figure 2-9 Layout of simple saddle stitched brochure (product example) . . . . .	40
Figure 2-10 Equation for Surface Coordinate System Transformations . . . . .	41
Figure 2-11 Surface coordinate system . . . . .	41
Figure 2-12 Press coordinate system used for Sheet-Fed Printing . . . . .	41
Figure 2-13 Press coordinate system used for Web Printing . . . . .	42
Figure 2-14 Coordinate systems after Folding (product example) . . . . .	42
Figure 2-15 Coordinate systems after Collecting (product example) . . . . .	43
Figure 2-16 Examples of Transformations and Coordinate Systems in JDF XJDF. . . . .	44
Figure 2-17 Transforming a point (example) . . . . .	46
Figure 3-1 Any-Element (generic content) – a diagram of its structure . . . . .	50
Figure 3-2 JDF Node – a Diagram of its Structure . . . . .	59
Figure 3-3 XJDF Node – a Diagram of its Structure . . . . .	60
Figure 3-4 Job hierarchy with Process, Process Group and Product Intent Nodes . . . . .	65
Figure 3-5 Combined Process Node dependencies . . . . .	71
Figure 3-6 ResourcePool and Abstract Resource Element – a diagram of the structure . . . . .	80
Figure 3-7 ResourceSet – a Diagram of its Structure . . . . .	83
Figure 3-8 AmountPool – a Diagram of its Structure . . . . .	91
Figure 3-9 Nodes linked by a Resource . . . . .	97
Figure 3-10 ResourceLink Elements and ResourceRef Elements . . . . .	98
Figure 3-11 ResourceLinkPool and ResourceLink Element – a diagram of the structure . . . . .	100
Figure 3-12 AmountPool – a Diagram of its Structure . . . . .	107
Figure 3-13 Amount handling . . . . .	118
Figure 3-14 Workflow for splitting shared Input Resources . . . . .	145
Figure 3-15 Workflow for combining shared Output Resources . . . . .	145
Figure 3-16 Workflow for splitting independent Input Resources . . . . .	145
Figure 3-17 Workflow for combining independent Output Resources . . . . .	146
Figure 3-18 AuditPool and Abstract Audit Element – a diagram of the structure . . . . .	148
Figure 3-19 Specific Audit - a Diagram of its Structure . . . . .	151
Figure 4-1 Life Cycle of a JDF Node . . . . .	179
Figure 4-2 Example of a simple Process chain linked by Resources . . . . .	180
Figure 4-3 Example of a simple Process chain linked by Resources . . . . .	181
Figure 4-4 Example of a Pipe Resource Linking Two Processes via Pull . . . . .	184
Figure 4-5 Example of a Pipe Resource Linking Two Processes via Push . . . . .	184
Figure 4-6 Example of status transitions in case of overlapping Processing . . . . .	185
Figure 4-7 The spawning and merging mechanism and its phases . . . . .	190
Figure 4-8 JDF Node structure that requires Resource copying during spawning and merging . . . . .	192
Figure 4-9 Example for a JDF Node structure with nested spawning . . . . .	194

Figure 4-10 Parameter space in Device capabilities . . . . .	197
Figure 5-1 JMF Root Element – a diagram of its structure . . . . .	204
Figure 5-2 Interaction of Messages with a Subscription . . . . .	209
Figure 5-3 Interaction of Command and Acknowledge Messages . . . . .	218
Figure 5-4 Example of Reliable Signaling . . . . .	221
Figure 5-5 Without UpdateJDF Message . . . . .	290
Figure 5-6 With UpdateJDF Message . . . . .	290
Figure 5-7 Mechanism of a PipePull Message . . . . .	299
Figure 5-8 Mechanism of a PipePush Message . . . . .	300
Figure 5-9 JMF QueueEntry Status Transition Diagram . . . . .	305
Figure 5-10 XJMF QueueEntry Status Transition Diagram . . . . .	307
Figure 5-11 Effects of the global queue Messages on the queue Status . . . . .	327
Figure 6-1 Imposition for Cut and Stack . . . . .	373
Figure 6-2 Worst case scenario for area coverage calculation . . . . .	381
Figure 6-3 Overview of Web Printing . . . . .	391
Figure 6-4 Bundle Creation . . . . .	398
Figure 6-5 Bundle Transport . . . . .	398
Figure 6-6 Combined Process with Feeding Process . . . . .	405
Figure 6-7 Input Components . . . . .	405
Figure 6-8 Output Component . . . . .	405
Figure 6-9 Gathering . . . . .	406
Figure 6-10 Print Roll . . . . .	413
Figure 6-11 Packaging Process Coordinate System . . . . .	424
Figure 7-1 ProductList– a Diagram of its Structure . . . . .	430
Figure 7-2 Roll-up Display . . . . .	444
Figure 7-3 Structure of a normal hardcover book . . . . .	454
Figure 7-4 Structure of a padded hardcover book . . . . .	454
Figure 7-5 Structure of a book with GlueProcedure = "SideOnly" (Layflat) . . . . .	460
Figure 8-1 BinderySignature Trims . . . . .	519
Figure 8-2 WebCellAlignment, Example 1 . . . . .	520
Figure 8-3 WebCellAlignment Example 2 . . . . .	521
Figure 8-4 WebCellAlignment Example 3 . . . . .	522
Figure 8-5 Definition of margins in SignatureCell . . . . .	526
Figure 8-6 Tightbacking for Block Preparation . . . . .	527
Figure 8-7 Rounding and Backing for Block Preparation . . . . .	527
Figure 8-8 Folding examples for some values of BoxFoldAction/@Action . . . . .	531
Figure 8-9 BoxFoldingType Attribute for values of Type00, Type01 and Type02 . . . . .	531
Figure 8-10 BoxFoldingType Attribute for values of Type03, Type04 and Type10 . . . . .	532
Figure 8-11 BoxFoldingType Attribute for values of Type 11, Type12 and Type13 . . . . .	532
Figure 8-12 BoxFoldingType Attribute for values of Type15 and Type20 . . . . .	533
Figure 8-13 Box packing . . . . .	535
Figure 8-14 BundlingParams Coordinate System . . . . .	539
Figure 8-15 CaseMakingParams . . . . .	542
Figure 8-16 Parameters and coordinate system for CasingIn . . . . .	543
Figure 8-17 Parameters used for channel binding . . . . .	544
Figure 8-18 Coordinate systems used for collecting . . . . .	546
Figure 8-19 Component – terms and definitions . . . . .	579
Figure 8-20 Orientation of the Finished Product on the Roll . . . . .	585
Figure 8-21 Parameters and coordinate system for cover application . . . . .	603
Figure 8-22 Parameters and coordinate system for glue application . . . . .	604

---

Figure 8-23 Definition of the PlatePosition Attribute on a newspaper-Web Press .....	611
Figure 8-24 Example of a single physical section of eight pages .....	612
Figure 8-25 Basic Shape for RepeatDesc/@LayoutStyle Examples .....	630
Figure 8-26 RepeatDesc/@LayoutStyle = "StraightNest" .....	630
Figure 8-27 RepeatDesc/@LayoutStyle = "Reverse2ndRow" .....	631
Figure 8-28 RepeatDesc/@LayoutStyle = "Reverse2ndRowAligned" .....	631
Figure 8-29 RepeatDesc/@LayoutStyle = "Reverse2ndColumn" .....	632
Figure 8-30 RepeatDesc/@LayoutStyle = "Reverse2ndColumnAligned" .....	632
Figure 8-31 RepeatDesc/@GutterX2 and @GutterY2: Secondary Gutters .....	633
Figure 8-32 Parameters and coordinate system used for end-Sheet gluing .....	646
Figure 8-33 Names of the reference edges of a Sheet in the FoldingParams Resource .....	661
Figure 8-34 Fold catalog part 1 .....	664
Figure 8-35 Fold catalog part 2 .....	665
Figure 8-36 Coordinate system used for Gathering .....	668
Figure 8-37 Parameters and coordinate system for glue application .....	669
Figure 8-38 Parameters and coordinate system used for Inserting .....	698
Figure 8-39 Setup of the Jacketing Machinery .....	706
Figure 8-40 Parameters and coordinate system for jacketing .....	707
Figure 8-41 Anchor with No Scaling and No Rotation .....	720
Figure 8-42 Anchor with No Scaling and Rotation of 90° Clockwise .....	721
Figure 8-43 Anchor with 1.5 Scaling and Rotation of 90° Clockwise .....	722
Figure 8-44 Diagram of a 4-up cross-folded saddle-stitch imposition with vertical gutter creep ..	776
Figure 8-45 Diagram of a step-and-repeat 2-up saddle-stitch imposition with vertical spine gutter creep .....	777
Figure 8-46 Parameters used for channel binding .....	781
Figure 8-47 Paper Roll with some Roll-specific Information .....	798
Figure 8-48 Relief and Floor Thickness for a Flexo Plate or Flexo Sleeve .....	798
Figure 8-49 Types of Interlocks for Flexo Sleeve .....	798
Figure 8-50 TabSetCollationOrder Attribute Values .....	800
Figure 8-51 Diagram of a Single Bank of Tabs .....	801
Figure 8-52 Inside Loss, Outside Gain .....	802
Figure 8-53 PRGroup – a diagram of its structure .....	840
Figure 8-54 PrintRollingParams Coordinate System .....	852
Figure 8-55 ShapeTemplate Example 1 .....	894
Figure 8-56 ShapeTemplate Example 2 .....	895
Figure 8-57 ShapeTemplate Example 3 .....	895
Figure 8-58 Parameters and coordinate systems for the SpinePreparation Process .....	902
Figure 8-59 Parameters and coordinate system for the SpineTaping Process .....	903
Figure 8-60 Stacking Layers .....	904
Figure 8-61 Pile Patterns .....	904
Figure 8-62 Odd count handling for a Bundle .....	905
Figure 8-63 Odd count handling for a Layer .....	905
Figure 8-64 Staple shapes .....	908
Figure 8-65 Parameters and coordinate system used for saddle stitching .....	908
Figure 8-66 Parameters and coordinate system used for Stitching .....	909
Figure 8-67 Stitching Coordinate System for StitchOrigin Values .....	909
Figure 8-68 Strapped Bundle .....	913
Figure 8-69 Strapped Bundle with Sub-bundles .....	913
Figure 8-70 Shingling for Stripping .....	918

Figure 8-71 Shingling for Stripping – Details .....	918
Figure 8-72 RelativeBox including margins .....	919
Figure 8-73 Definition of margins in StripCellParams .....	922
Figure 8-74 Parameters and coordinate system used for thread sewing .....	929
Figure 8-75 Parameters and coordinate system used for side sewing .....	929
Figure 8-76 Parameters and coordinate system used for trimming .....	941
Figure 9-1 DeviceCap – a diagram of its structure .....	950
Figure 9-2 Abstract State Element – a diagram of its structure .....	961
Figure 9-3 macro Element – a diagram of its structure .....	989
Figure 9-4 Abstract Term Element – a diagram of its structure .....	993
Figure 9-5 Abstract Evaluation Element – a diagram of its structure .....	997
Figure 10-1 Anchor with No Scaling and No Rotation .....	1056
Figure 10-2 Anchor with No Scaling and Rotation of 90° Clockwise .....	1057
Figure 10-3 Anchor with 1.5 Scaling and Rotation of 90° Clockwise .....	1058
Figure 10-4 Hole line parameters .....	1067
Figure 10-5 Line hole punching for multiple webs .....	1068
Figure 10-6 RegisterRibbon lengths and coordinate system for BlockPreparation .....	1084
Figure 11-1 Life Cycle of a Process .....	1089
Figure 11-2 Example of a Pipe Resource Linking Two Processes via Pull .....	1091
Figure 11-3 Example of a Pipe Resource Linking Two Processes via Push .....	1091
Figure 11-4 Example of status transitions in case of overlapping Processing .....	1092
Figure 11-5 Example of Exchange of Certificates .....	1098
Figure 11-6 Interaction of Messages with a Subscription .....	1100
Figure 11-7 Example of Reliable Signaling .....	1101
Figure J-1 Legend for Interpreting Diagrams .....	1175
Figure P-1 Example of the spawning and merging of independent Jobs .....	1310
Figure P-2 Parameters and coordinate system for glue application .....	1341
Figure P-3 Staple shapes .....	1365
Figure P-4 Parameters and coordinate system used for side sewing .....	1366

## Appendix R List of Tables

---

Table 0-1 Callout Icon Usage.....	Ixxix
Table 1-1 Basic References .....	4
Table 1-2 Modification Notes .....	6
Table 1-3 Cardinality Symbols .....	7
Table 1-4 Template for Element Descriptions .....	8
Table 1-5 Glossary .....	9
Table 1-6 Conformance Terminology .....	16
Table 1-7 JDFXJDF Data Types .....	20
Table 1-8 Units Used in JDF XJDF .....	23
Table 2-1 Information contained in JDF Nodes, arranged numerically .....	32
Table 2-2 Information contained in JDF Nodes, arranged by group .....	33
Table 2-3 Data types for specifying coordinates and transformation .....	37
Table 2-4 Matrices and Orientation values for describing the orientation of a Component .....	39
Table 2-5 JDF XJDF Processes used for the production of the simple brochure .....	40
Table 3-1 Any Element (generic content) .....	48
Table 3-2 Definition of "XXX" .....	51
Table 3-3 Behavior for Activation Values inTable 3-4 .....	51
Table 3-4 JDF XJDF Node .....	52
Table 3-5 Comment Element .....	60
Table 3-6 GeneralID Element.....	63
Table 3-7 AncestorPool Element.....	72
Table 3-8 Ancestor Element.....	72
Table 3-9 ResourcePool Element .....	74
Table 3-10 Abstract Resource Element.....	75
Table 3-11 SourceResource Element .....	79
Table 3-12 ProductList Element .....	81
Table 3-13 ResourceSet Element .....	81
Table 3-14 Dependent Element .....	84
Table 3-15 Part Element .....	85
Table 3-16 AmountPool Element .....	91
Table 3-17 PartAmount Element .....	91
Table 3-18 WasteDetails Attribute Values .....	92
Table 3-19 Abstract Parameter Resource Element.....	93
Table 3-20 Abstract PhysicalResource Element .....	94
Table 3-21 Location Element .....	95
Table 3-22 ResourceLinkPool Element.....	97
Table 3-23 ResourceLink Element.....	100
Table 3-24 ProcessUsage Attribute Values .....	105
Table 3-25 AmountPool Element.....	107
Table 3-26 PartAmount Element.....	107
Table 3-27 Lot Element .....	112
Table 3-28 Abstract ResourceElement.....	113
Table 3-29 Abstract ResourceRef Element.....	114
Table 3-30 Example of actual amount and amount handling .....	118
Table 3-31 Identical Element.....	125
Table 3-32 Partitionable Resource Element.....	128
Table 3-33 Part Element .....	129

Table 3-34 Condition Attribute Values .....	138
Table 3-35 PartUsage Attribute examples.....	142
Table 3-36 AuditPool Element .....	147
Table 3-37 Abstract Audit Element .....	149
Table 3-38 List of Audit Elements .....	149
Table 3-39 Created Audit Element .....	152
Table 3-40 Deleted Audit Element.....	152
Table 3-41 Merged Audit Element.....	152
Table 3-42 Modified Audit Element .....	153
Table 3-43 AuditNotification Element .....	153
Table 3-44 Notification Audit Element .....	154
Table 3-45 PhaseTime Audit Element .....	157
Table 3-46 AuditStatus Element .....	158
Table 3-47 Activity Element .....	159
Table 3-48 ModulePhase Element .....	159
Table 3-49 ProcessRun Audit Element .....	161
Table 3-50 AuditResource Element .....	163
Table 3-51 ResourceAudit Audit Element .....	163
Table 3-52 Spawed Audit Element.....	167
Table 3-53 Excerpt from TrappingParams .....	170
Table 4-1 Examples of Resource and Process states in the case of simple Process routing .	181
Table 4-2 Examples of Partitioning across multiple Resources .....	182
Table 4-3 Actions generated when a dynamic-pipe buffer passes various levels .....	186
Table 4-4 Event Sequence in Digital Finishing .....	187
Table 5-1 JMF XJMF Element .....	200
Table 5-2 Message Element .....	202
Table 5-3 List of JMF Messages .....	205
Table 5-4 List of XJMF Messages.....	207
Table 5-5 Query Message Element .....	209
Table 5-6 Subscription Element .....	210
Table 5-7 Command Message Element Family .....	212
Table 5-8 Signal Message Element Family .....	214
Table 5-9 Trigger Element.....	215
Table 5-10 ChangedPath Element.....	216
Table 5-11 Response Message Element Family .....	217
Table 5-12 Acknowledge Message Element .....	219
Table 5-13 Registration Message Element .....	220
Table 5-14 Subscription Element .....	222
Table 5-15 ObservationTarget Element .....	223
Table 5-16 Template for Message tables .....	226
Table 5-17 Messages for events and capabilities .....	227
Table 5-18 Messages for events and capabilities .....	227
Table 5-19 KnownDevices Message .....	228
Table 5-20 QueryKnownDevices Message .....	229
Table 5-21 DeviceFilter Element .....	230
Table 5-22 ResponseKnownDevices Message .....	230
Table 5-23 DeviceList Element .....	231
Table 5-24 SignalKnownDevices Message .....	231
Table 5-25 KnownMessages Message .....	232
Table 5-26 QueryKnownMessages Message .....	232

---

Table 5-27 KnownMsgQuParams Element .....	232
Table 5-28 ResponseKnownMessages Message .....	233
Table 5-29 MessageService Element .....	234
Table 5-30 SignalKnownMessages Message .....	235
Table 5-31 KnownSubscriptions Message .....	236
Table 5-32 QueryKnownSubscriptions Message .....	236
Table 5-33 SubscriptionFilter Element .....	237
Table 5-34 ResponseKnownSubscriptions Message .....	237
Table 5-35 SubscriptionInfo Element .....	238
Table 5-36 SignalKnownSubscriptions Message .....	239
Table 5-37 Notification Signal .....	239
Table 5-38 QueryNotification Message .....	240
Table 5-39 NotificationFilter Element .....	240
Table 5-40 ResponseNotification Message .....	241
Table 5-41 SignalNotification Message .....	242
Table 5-42 Notification Element .....	243
Table 5-43 Error Element .....	245
Table 5-44 Event Element .....	245
Table 5-45 Milestone Element .....	245
Table 5-46 RequestForAuthentication Command Message .....	246
Table 5-47 AuthenticationCmdParams Element .....	246
Table 5-48 Certificate Element.....	247
Table 5-49 AuthenticationResp Element .....	248
Table 5-50 RequestForAuthentication Query Message .....	248
Table 5-51 AuthenticationQuParams Element .....	248
Table 5-52 StopPersistentChannel Message .....	250
Table 5-53 CommandStopPersistentChannel Message .....	250
Table 5-54 StopPersChParams Element .....	250
Table 5-55 ResponseStopPersistentChannel Message .....	251
Table 5-56 Messages to query/affect a Job, Device or Controller .....	252
Table 5-57 Messages Relating to Jobs and Devices .....	253
Table 5-58 FlushResources Command.....	253
Table 5-59 CommandFlushResources Message .....	253
Table 5-60 FlushResources Query .....	254
Table 5-61 QueryFlushResources Message .....	254
Table 5-62 FlushResourceParams Element .....	255
Table 5-63 ResponseFlushResources Message .....	255
Table 5-64 FlushedResources Element .....	255
Table 5-65 SignalFlushResources Message .....	256
Table 5-66 ModifyNode Command .....	256
Table 5-67 ModifyNode Signal .....	256
Table 5-68 ModifyNodeCmdParams Element.....	257
Table 5-69 NewComment Element .....	257
Table 5-70 NewJDF Query Message .....	258
Table 5-71 NewJDFQuParams Element .....	258
Table 5-72 NewJDF Command Message .....	258
Table 5-73 NewJDFCmdParams Element .....	259
Table 5-74 IDInfo Element .....	259
Table 5-75 Resource Query Message .....	260
Table 5-76 QueryResource Message .....	261

Table 5-77 ResourceQuParams Element .....	261
Table 5-78 Resource Command Message .....	266
Table 5-79 CommandResource Message .....	266
Table 5-80 ResourceCmdParams Element .....	267
Table 5-81 ResponseResource Message .....	270
Table 5-82 ResourceInfo Element .....	270
Table 5-83 SignalResource Message .....	275
Table 5-84 ResourcePull Message .....	276
Table 5-85 ResourcePullParams Element .....	276
Table 5-86 ShutDown Message .....	277
Table 5-87 CommandShutDown Message .....	278
Table 5-88 ShutDownCmdParams Element .....	278
Table 5-89 ResponseShutDown Message .....	279
Table 5-90 Status Message .....	279
Table 5-91 QueryStatus Message .....	279
Table 5-92 StatusQuParams Element .....	281
Table 5-93 ResponseStatus Message .....	282
Table 5-94 DeviceInfo Element .....	283
Table 5-95 Activity Element .....	285
Table 5-96 JobPhase Element .....	286
Table 5-97 ModuleStatus Element .....	288
Table 5-98 SignalStatus Message .....	289
Table 5-99 UpdateJDF Command .....	291
Table 5-100 UpdateJDF Signal .....	291
Table 5-101 UpdateJDFCmdParams Element .....	291
Table 5-102 CreateLink Element .....	292
Table 5-103 CreateResource Element .....	292
Table 5-104 MoveResource Element .....	292
Table 5-105 RemoveLink Element .....	292
Table 5-106 WakeUp Message .....	293
Table 5-107 CommandWakeUp Message .....	294
Table 5-108 WakeUpCmdParams Element .....	294
Table 5-109 ResponseWakeUp Message .....	294
Table 5-110 Messages for Control of Dynamic Pipes .....	295
Table 5-111 Messages for Control of Dynamic Pipes .....	295
Table 5-112 CommandPipeControl Message .....	296
Table 5-113 PipeParams Element .....	296
Table 5-114 PipeClose Message .....	298
Table 5-115 PipePull Message .....	298
Table 5-116 PipePush Message .....	299
Table 5-117 PipePause Message .....	300
Table 5-118 ResponsePipeControl Message .....	301
Table 5-119 Messages for queue entry handling .....	302
Table 5-120 Messages for queue entry handling .....	302
Table 5-121 Status Transitions for QueueEntry Handling Messages .....	303
Table 5-122 AbortQueueEntry Message .....	308
Table 5-123 AbortQueueEntryParams Element .....	308
Table 5-124 HoldQueueEntry Message .....	309
Table 5-125 HoldQueueEntryParams Element .....	309
Table 5-126 CommandModifyQueueEntry Message .....	309

---

Table 5-127 ModifyQueueEntryParams Element .....	310
Table 5-128 Operation Attribute Values .....	311
Table 5-129 ResponseModifyQueueEntry Message .....	311
Table 5-130 RemoveQueueEntry Message .....	312
Table 5-131 RemoveQueueEntryParams Element .....	312
Table 5-132 RequestQueueEntry Message .....	313
Table 5-133 CommandRequestQueueEntry Message .....	313
Table 5-134 RequestQueueEntryParams Element .....	313
Table 5-135 ResponseRequestQueueEntry Message .....	314
Table 5-136 ResubmitQueueEntry Message .....	315
Table 5-137 CommandResubmitQueueEntry Message .....	315
Table 5-138 ResubmissionParams Element .....	316
Table 5-139 ResponseResubmitQueueEntry Message .....	316
Table 5-140 ResumeQueueEntry Message .....	317
Table 5-141 ResumeQueueEntryParams Element .....	317
Table 5-142 ReturnQueueEntry Message .....	318
Table 5-143 CommandReturnQueueEntry Message .....	318
Table 5-144 ReturnQueueEntryParams Element .....	319
Table 5-145 ResponseReturnQueueEntry Message .....	319
Table 5-146 SetQueueEntryPosition Message .....	320
Table 5-147 QueueEntryPosParams Element .....	320
Table 5-148 SetQueueEntryPriority Message .....	320
Table 5-149 QueueEntryPriParams Element .....	321
Table 5-150 SubmitQueueEntry Message .....	321
Table 5-151 CommandSubmitQueueEntry Message .....	321
Table 5-152 QueueSubmissionParams Element .....	322
Table 5-153 ResponseSubmitQueueEntry Message .....	324
Table 5-154 SuspendQueueEntry Message .....	325
Table 5-155 SuspendQueueEntryParams Element .....	325
Table 5-156 Messages for global handling of queues .....	326
Table 5-157 Messages for global handling of queues .....	326
Table 5-158 Definition of the Queue Status Attribute Values .....	326
Table 5-159 CloseQueue Message .....	327
Table 5-160 FlushQueue Command Message .....	328
Table 5-161 FlushQueueParams Element .....	328
Table 5-162 FlushQueue Query Message .....	328
Table 5-163 FlushQueueInfo Element .....	329
Table 5-164 HoldQueue Message .....	329
Table 5-165 OpenQueue Message .....	329
Table 5-166 QueueStatus Message .....	330
Table 5-167 QueryQueueStatus Message .....	330
Table 5-168 QueueStatusParams Element .....	330
Table 5-169 ResponseQueueStatus Message .....	331
Table 5-170 SignalQueueStatus Message .....	331
Table 5-171 ResumeQueue Message .....	332
Table 5-172 SubmissionMethods Message .....	332
Table 5-173 SubmissionMethods Element .....	332
Table 5-174 Queue Element .....	333
Table 5-175 QueueEntry Element .....	335
Table 5-176 QueueEntryDef Element .....	337

Table 5-177 QueueFilter Element .....	338
Table 5-178 Messages for Gang Jobs .....	340
Table 5-179 Messages for Gang Jobs .....	340
Table 5-180 Contents of the ForceGang Command Message .....	340
Table 5-181 CommandForceGang Message .....	340
Table 5-182 GangCmdFilter Element .....	341
Table 5-183 ResponseForceGang Message .....	341
Table 5-184 GangStatus Message .....	341
Table 5-185 CommandGangStatus Message .....	342
Table 5-186 GangQuFilter Element .....	342
Table 5-187 ResponseGangStatus Message .....	342
Table 5-188 GangInfo Element .....	343
Table 6-1 Template for Input Resources .....	346
Table 6-2 Generic Input Resources .....	347
Table 6-3 Template for Output Resources .....	347
Table 6-4 Approval – Input Resources .....	348
Table 6-5 Approval – Output Resources .....	348
Table 6-6 Buffer – Input Resources .....	348
Table 6-7 Buffer – Output Resources .....	348
Table 6-8 Combine – Input Resources.....	349
Table 6-9 Combine – Output Resources.....	349
Table 6-10 Delivery – Input Resources .....	349
Table 6-11 Delivery – Output Resources .....	349
Table 6-12 ManualLabor – Input Resources .....	350
Table 6-13 ManualLabor – Output Resources.....	350
Table 6-14 QualityControl – Input Resources .....	350
Table 6-15 QualityControl – Output Resources .....	350
Table 6-16 ResourceDefinition – Input Resources.....	351
Table 6-17 ResourceDefinition – Output Resources.....	351
Table 6-18 Split – Input Resources .....	351
Table 6-19 Split – Output Resources .....	351
Table 6-20 Verification – Input Resources .....	351
Table 6-21 Verification – Output Resources .....	352
Table 6-22 AssetListCreation – Input Resources .....	352
Table 6-23 AssetListCreation – Output Resources .....	353
Table 6-24 Bending – Input Resources .....	353
Table 6-25 Bending – Output Resources .....	353
Table 6-26 ColorCorrection – Input Resources .....	354
Table 6-27 ColorCorrection – Output Resources .....	354
Table 6-28 ColorSpaceConversion – Input Resources .....	354
Table 6-29 ColorSpaceConversion – Output Resources .....	355
Table 6-30 ContactCopying – Input Resources .....	355
Table 6-31 ContactCopying – Output Resources .....	355
Table 6-32 ContoneCalibration – Input Resources .....	355
Table 6-33 ContoneCalibration – Output Resources .....	356
Table 6-34 CylinderLayoutPreparation – Input Resources .....	356
Table 6-35 CylinderLayoutPreparation – Output Resources.....	356
Table 6-36 DieDesign – Input Resources .....	357
Table 6-37 DieDesign – Output Resources .....	357
Table 6-38 DieLayoutProduction – Input Resources .....	357

---

Table 6-39 DieLayoutProduction – Output Resources .....	357
Table 6-40 DigitalDelivery – Input Resources .....	360
Table 6-41 DigitalDelivery – Output Resources .....	360
Table 6-42 ImageEnhancement – Input Resources .....	360
Table 6-43 ImageEnhancement – Output Resources .....	361
Table 6-44 ImageReplacement – Input Resources.....	361
Table 6-45 ImageReplacement – Output Resources .....	361
Table 6-46 ImageSetting – Input Resources .....	361
Table 6-47 ImageSetting – Output Resources .....	362
Table 6-48 Imposition – Input Resources .....	362
Table 6-49 Imposition – Output Resources .....	362
Table 6-50 Glossary for Automated Imposition .....	363
Table 6-51 Variables for Automated Imposition .....	367
Table 6-52 InkZoneCalculation – Input Resources .....	375
Table 6-53 InkZoneCalculation – Output Resources .....	375
Table 6-54 Interpreting – Input Resources .....	376
Table 6-55 Interpreting – Output Resources .....	376
Table 6-56 LayoutElementProduction – Input Resources .....	376
Table 6-57 LayoutElementProduction – Output Resources .....	377
Table 6-58 LayoutPreparation – Input Resources.....	377
Table 6-59 LayoutPreparation – Output Resources.....	377
Table 6-60 LayoutShifting – Input Resources .....	378
Table 6-61 LayoutShifting – Output Resources .....	378
Table 6-62 PageAssigning – Input Resources .....	378
Table 6-63 PageAssigning – Output Resources .....	378
Table 6-64 PDFToPSConversion – Input Resources .....	378
Table 6-65 PDFToPSConversion – Output Resources .....	379
Table 6-66 PDLCreation – Input Resources .....	379
Table 6-67 PDLCreation – Output Resources .....	379
Table 6-68 Preflight – Input Resources .....	379
Table 6-69 Preflight – Output Resources .....	380
Table 6-70 PreviewGeneration – Input Resources .....	382
Table 6-71 PreviewGeneration – Output Resources .....	382
Table 6-72 PSToPDFConversion – Input Resources .....	382
Table 6-73 PSToPDFConversion – Output Resources .....	383
Table 6-74 RasterReading – Input Resources .....	383
Table 6-75 RasterReading – Output Resources .....	383
Table 6-76 Rendering – Input Resources .....	383
Table 6-77 Rendering – Output Resources.....	384
Table 6-78 Scanning – Input Resources .....	385
Table 6-79 Scanning – Output Resources .....	385
Table 6-80 Screening – Input Resources .....	385
Table 6-81 Screening – Output Resources .....	386
Table 6-82 Separation – Input Resources .....	386
Table 6-83 Separation – Output Resources .....	386
Table 6-84 SheetOptimizing – Input Resources .....	387
Table 6-85 SheetOptimizing – Output Resources .....	387
Table 6-86 Stripping – Input Resources .....	388
Table 6-87 Stripping – Output Resources .....	388
Table 6-88 Tiling – Input Resources .....	389

Table 6-89 Tiling – Output Resources .....	390
Table 6-90 Trapping – Input Resources .....	390
Table 6-91 Trapping – Output Resources .....	390
Table 6-92 ConventionalPrinting – Input Resources .....	391
Table 6-93 ConventionalPrinting – Output Resources .....	393
Table 6-94 DigitalPrinting – Input Resources .....	394
Table 6-95 DigitalPrinting – Output Resources .....	395
Table 6-96 Varnishing – Input Resources .....	395
Table 6-97 Varnishing – Output Resources .....	395
Table 6-98 BlockPreparation – Input Resources .....	396
Table 6-99 BlockPreparation – Output Resources .....	396
Table 6-100 BoxFolding – Input Resources .....	397
Table 6-101 BoxFolding – Output Resources .....	397
Table 6-102 BoxPacking – Input Resources .....	397
Table 6-103 BoxPacking – Output Resources .....	397
Table 6-104 Bundling – Input Resources .....	398
Table 6-105 Bundling – Output Resources .....	398
Table 6-106 CaseMaking – Input Resources .....	399
Table 6-107 CaseMaking – Output Resources .....	399
Table 6-108 CasingIn – Input Resources .....	399
Table 6-109 CasingIn – Output Resources .....	399
Table 6-110 ChannelBinding – Input Resources .....	400
Table 6-111 ChannelBinding – Output Resources .....	400
Table 6-112 CoilBinding – Input Resources .....	400
Table 6-113 CoilBinding – Output Resources .....	400
Table 6-114 Collecting – Input Resources .....	401
Table 6-115 Collecting – Output Resources .....	401
Table 6-116 CoverApplication – Input Resources .....	401
Table 6-117 CoverApplication – Output Resources .....	401
Table 6-118 Creasing – Input Resources .....	402
Table 6-119 Creasing – Output Resources .....	402
Table 6-120 Cutting – Input Resources .....	402
Table 6-121 Cutting – Output Resources .....	403
Table 6-122 DieMaking – Input Resources .....	403
Table 6-123 DieMaking – Output Resources .....	403
Table 6-124 Embossing – Input Resources .....	403
Table 6-125 Embossing – Output Resources .....	404
Table 6-126 EndSheetGluing – Input Resources .....	404
Table 6-127 EndSheetGluing – Output Resources .....	404
Table 6-128 Feeding – Input Resources .....	405
Table 6-129 Feeding – Output Resources .....	405
Table 6-130 Folding – Input Resources .....	406
Table 6-131 Folding – Output Resources .....	406
Table 6-132 Gathering – Input Resources .....	406
Table 6-133 Gathering – Output Resources .....	407
Table 6-134 Gluing – Input Resources .....	407
Table 6-135 Gluing – Output Resources .....	407
Table 6-136 HeadBandApplication – Input Resources .....	407
Table 6-137 HeadBandApplication – Output Resources .....	408
Table 6-138 HoleMaking – Input Resources .....	408

---

Table 6-139 HoleMaking – Output Resources .....	408
Table 6-140 Inserting – Input Resources .....	408
Table 6-141 Inserting – Output Resources .....	409
Table 6-142 Jacketing – Input Resources .....	409
Table 6-143 Jacketing – Output Resources .....	409
Table 6-144 Labeling – Input Resources .....	409
Table 6-145 Labeling – Output Resources .....	409
Table 6-146 Laminating – Input Resources .....	410
Table 6-147 Laminating – Output Resources .....	410
Table 6-148 LooseBinding – Input Resources .....	411
Table 6-149 LooseBinding – Output Resources .....	411
Table 6-150 Palletizing – Input Resources .....	412
Table 6-151 Palletizing – Output Resources .....	412
Table 6-152 Perforating – Input Resources .....	412
Table 6-153 Perforating – Output Resources .....	412
Table 6-154 PlasticCombBinding – Input Resources.....	412
Table 6-155 PlasticCombBinding – Output Resources.....	413
Table 6-156 PrintRolling – Input Resources .....	413
Table 6-157 PrintRolling – Output Resources .....	413
Table 6-158 RingBinding – Input Resources.....	413
Table 6-159 RingBinding – Output Resources.....	414
Table 6-160 ShapeCutting – Input Resources .....	414
Table 6-161 ShapeCutting – Output Resources .....	414
Table 6-162 ShapeDefProduction – Input Resources .....	415
Table 6-163 ShapeDefProduction – Output Resources .....	415
Table 6-164 Shrinking – Input Resources .....	415
Table 6-165 Shrinking – Output Resources .....	415
Table 6-166 SpinePreparation – Input Resources .....	415
Table 6-167 SpinePreparation – Output Resources .....	416
Table 6-168 SpineTaping – Input Resources .....	416
Table 6-169 SpineTaping – Output Resources .....	416
Table 6-170 Stacking – Input Resources .....	416
Table 6-171 Stacking – Output Resources .....	416
Table 6-172 StaticBlocking – Input Resources .....	417
Table 6-173 StaticBlocking – Output Resources .....	417
Table 6-174 Stitching – Input Resources .....	417
Table 6-175 Stitching – Output Resources .....	417
Table 6-176 Strapping – Input Resources .....	418
Table 6-177 Strapping – Output Resources .....	418
Table 6-178 StripBinding – Input Resources.....	418
Table 6-179 StripBinding – Output Resources.....	418
Table 6-180 ThreadSealing – Input Resources .....	419
Table 6-181 ThreadSealing – Output Resources .....	419
Table 6-182 ThreadSewing – Input Resources .....	419
Table 6-183 ThreadSewing – Output Resources .....	419
Table 6-184 Trimming – Input Resources .....	419
Table 6-185 Trimming – Output Resources .....	420
Table 6-186 WebInlineFinishing – Input Resources .....	420
Table 6-187 WebInlineFinishing – Output Resources .....	420
Table 6-188 Winding – Input Resources .....	421

---

Table 6-189 Winding – Output Resources .....	421
Table 6-190 WireCombBinding – Input Resources .....	421
Table 6-191 WireCombBinding – Output Resources .....	421
Table 6-192 Wrapping – Input Resources .....	421
Table 6-193 Wrapping – Output Resources .....	422
Table 7-1 Product Element .....	427
Table 7-2 ProductType Attribute Values .....	428
Table 7-3 Intent Element .....	429
Table 7-4 Product Intent – Input Resources Elements .....	430
Table 7-5 Product Intent – Output Resources .....	431
Table 7-6 Template for Intent Resources .....	432
Table 7-7 Abstract Span Element.....	433
Table 7-8 List of Span Elements .....	433
Table 7-9 DurationSpan Element .....	434
Table 7-10 EnumerationSpan Element .....	434
Table 7-11 IntegerSpan Element.....	435
Table 7-12 NameSpan Element .....	435
Table 7-13 NumberSpan Element.....	436
Table 7-14 OptionSpan Element.....	436
Table 7-15 ShapeSpan Element .....	436
Table 7-16 StringSpan Element .....	437
Table 7-17 TimeSpan Element.....	437
Table 7-18 XYPairSpan Element .....	438
Table 7-19 ArtDeliveryIntent Resource .....	438
Table 7-20 ArtDelivery Element.....	440
Table 7-21 AssemblingIntent Element .....	443
Table 7-22 Assemble Element .....	444
Table 7-23 BindIn Element.....	444
Table 7-24 BlowIn Element .....	444
Table 7-25 StickOn Element .....	445
Table 7-26 BindingIntent Resource Element .....	446
Table 7-27 BindingType Attribute Values .....	448
Table 7-28 AdhesiveNote Element.....	449
Table 7-29 BindList Element .....	449
Table 7-30 BindItem Element.....	449
Table 7-31 ChannelBinding Element.....	451
Table 7-32 CoilBinding Element .....	451
Table 7-33 EdgeGluing Element .....	451
Table 7-34 HardCoverBinding Element .....	452
Table 7-35 LooseBinding Element .....	455
Table 7-36 PlasticCombBinding Element.....	456
Table 7-37 RingBinding Element.....	457
Table 7-38 SaddleStitching Element .....	458
Table 7-39 SideSewing Element.....	458
Table 7-40 SideStitching Element .....	458
Table 7-41 SoftCoverBinding Element .....	458
Table 7-42 StripBinding Element.....	460
Table 7-43 Tabs Element .....	460
Table 7-44 Tape Element .....	461
Table 7-45 ThreadSealing Element.....	461

---

Table 7-46 ThreadSewing Element .....	461
Table 7-47 WireCombBinding Element .....	462
Table 7-48 ColorIntent Resource Element .....	463
Table 7-49 SurfaceColor Element .....	465
Table 7-50 ColorStandard Attribute Values .....	466
Table 7-51 ColorsUsed Element .....	467
Table 7-52 ContentCheckIntent Element .....	467
Table 7-53 PreflightItem Element .....	467
Table 7-54 ProofItem Element .....	468
Table 7-55 DeliveryIntent Resource .....	470
Table 7-56 DropIntent Element .....	472
Table 7-57 DropItemIntent Element .....	475
Table 7-58 EmbossingIntent Resource Element .....	476
Table 7-59 EmbossingItem Element .....	476
Table 7-60 FoldingIntent Resource Element .....	478
Table 7-61 HoleMakingIntent Resource Element .....	480
Table 7-62 InsertingIntent Resource .....	481
Table 7-63 InsertList Element .....	481
Table 7-64 Insert Element .....	481
Table 7-65 LaminatingIntent Resource Element .....	482
Table 7-66 LayoutIntent Resource Element .....	483
Table 7-67 MediaIntent Resource Element .....	487
Table 7-68 PackingIntent Resource .....	494
Table 7-69 ProductionIntent Resource Element .....	496
Table 7-70 ProofingIntent Resource Element .....	497
Table 7-71 PreflightItem Element .....	497
Table 7-72 ProofItem Element .....	497
Table 7-73 PublishingIntent Resource Element .....	499
Table 7-74 ScreeningIntent Resource .....	499
Table 7-75 ShapeCuttingIntent Resource Element .....	500
Table 7-76 ShapeCut Element .....	500
Table 7-77 VariableIntent Element .....	501
Table 8-1 Resource Element .....	503
Table 8-2 Location Element .....	505
Table 8-3 ApprovalParams Resource .....	506
Table 8-4 ApprovalPerson Element .....	506
Table 8-5 ApprovalSuccess Resource .....	507
Table 8-6 ApprovalDetails Element Resource .....	507
Table 8-7 Assembly Resource .....	508
Table 8-8 AssemblySection Element .....	510
Table 8-9 PageAssignedList Element .....	511
Table 8-10 AssetListCreationParams Resource .....	512
Table 8-11 BendingParams Resource .....	512
Table 8-12 BinderySignature Resource .....	513
Table 8-13 SignatureCell Element .....	523
Table 8-14 BlockPreparationParams Resource .....	527
Table 8-15 BoxFoldingParams Resource .....	528
Table 8-16 BoxFoldAction Element .....	529
Table 8-17 Action Attribute Values .....	529
Table 8-18 BoxPackingParams Resource .....	534

---

Table 8-19 BufferParams Resource .....	535
Table 8-20 Bundle Resource .....	536
Table 8-21 BundleItem Element .....	537
Table 8-22 BundlingParams Resource .....	539
Table 8-23 ByteMap Resource.....	540
Table 8-24 Band Element.....	540
Table 8-25 PixelColorant Element.....	541
Table 8-26 CaseMakingParams Resource .....	542
Table 8-27 CasingInParams Resource .....	543
Table 8-28 ChannelBindingParams Resource .....	544
Table 8-29 CoilBindingParams Resource .....	545
Table 8-30 CollectingParams Resource .....	546
Table 8-31 Color Resource .....	547
Table 8-32 DeviceNColor Element.....	552
Table 8-33 Diecutting Data (DDES3) .....	553
Table 8-34 PrintConditionColor Element .....	554
Table 8-35 ColorantControl Resource .....	558
Table 8-36 ColorantAlias Element.....	563
Table 8-37 ColorantConvertProcess Element.....	563
Table 8-38 ColorantOrder Element .....	563
Table 8-39 ColorantParams Element.....	564
Table 8-40 DeviceColorantOrder Element .....	564
Table 8-41 ColorSpaceSubstitute Element .....	564
Table 8-42 Sample output for different values of ProcessColorModel, ColorantParams, ColorantOrder, ColorantControlLink and DeviceColorantOrder Elements .....	564
Table 8-43 Sample output for different values of ProcessColorModel, ColorantParams, ColorantOrder, ColorantControlLink and DeviceColorantOrder Elements .....	565
Table 8-44 DeviceNSpace Element .....	566
Table 8-45 ColorCorrectionParams Resource .....	567
Table 8-46 ColorCorrectionOp Element .....	568
Table 8-47 ColorPool Resource .....	570
Table 8-48 ColorSpaceConversionParams Resource .....	570
Table 8-49 ColorSpaceConversionOp Element .....	573
Table 8-50 SourceCS Attribute Values .....	576
Table 8-51 Mapping of SourceCS enumeration values to color spaces in the most common input file formats .....	577
Table 8-52 Glossary – Component .....	579
Table 8-53 Component Resource .....	580
Table 8-54 ProductType Attribute Values .....	585
Table 8-55 Contact Resource .....	587
Table 8-56 ComChannel Element .....	589
Table 8-57 Company Element.....	590
Table 8-58 Person Element .....	590
Table 8-59 ContactCopyParams Resource .....	591
Table 8-60 ContentList Content Resource .....	592
Table 8-61 ContentData Resource Element .....	592
Table 8-62 ContentType Attribute Values .....	594
Table 8-63 BarcodeProductionParams Element .....	594
Table 8-64 ContentMetadata Element .....	595
Table 8-65 PositionObj Element.....	595

---

Table 8-66 ConventionalPrintingParams Resource .....	599
Table 8-67 CoverApplicationParams Resource .....	602
Table 8-68 Score Element .....	602
Table 8-69 CreasingParams Resource .....	604
Table 8-70 CustomerInfo Resource .....	605
Table 8-71 CutBlock Resource .....	606
Table 8-72 CutMark Resource .....	607
Table 8-73 Cut mark types as specified by CutMark/@MarkType .....	608
Table 8-74 CuttingParams Resource .....	609
Table 8-75 CutBlock Element .....	609
Table 8-76 CylinderLayout Resource .....	610
Table 8-77 CylinderPosition Element .....	610
Table 8-78 CylinderLayoutPreparationParams Resource .....	614
Table 8-79 DeliveryParams Resource .....	615
Table 8-80 Drop Element .....	618
Table 8-81 Dropltem Element .....	620
Table 8-82 DevelopingParams Resource .....	621
Table 8-83 Device Resource .....	622
Table 8-84 IconList Element .....	625
Table 8-85 Icon Element .....	625
Table 8-86 Module Element .....	626
Table 8-87 DieLayout Resource .....	627
Table 8-88 RuleLength Element .....	627
Table 8-89 Station Element .....	628
Table 8-90 DieLayoutProductionParams Resource .....	628
Table 8-91 RepeatDesc Element .....	629
Table 8-92 DigitalDeliveryParams Resource .....	633
Table 8-93 DigitalMedia Resource .....	634
Table 8-94 DigitalPrintingParams Resource .....	636
Table 8-95 ElementColorParams Resource .....	640
Table 8-96 EmbossingParams Resource .....	642
Table 8-97 Emboss Element .....	642
Table 8-98 Employee Resource .....	644
Table 8-99 EndSheetGluingParams Resource .....	645
Table 8-100 EndSheet Element .....	645
Table 8-101 ExposedMedia Resource .....	647
Table 8-102 ExternalImpositionTemplate Resource .....	648
Table 8-103 FeedingParams Resource .....	648
Table 8-104 Feeder Element .....	649
Table 8-105 FeederQualityParams Element .....	650
Table 8-106 CollatingItem Element .....	651
Table 8-107 FileSpec Resource .....	653
Table 8-108 ResourceUsage Attribute Values .....	658
Table 8-109 Container Element .....	659
Table 8-110 Disposition Element .....	660
Table 8-111 FileAlias Element .....	660
Table 8-112 FoldingParams Resource .....	662
Table 8-113 FontParams Resource .....	666
Table 8-114 FontPolicy Resource .....	667
Table 8-115 GatheringParams Resource .....	668

---

Table 8-116 GlueApplication Resource .....	669
Table 8-117 GluingParams Resource .....	670
Table 8-118 Glue Element .....	670
Table 8-119 HeadBandApplicationParams Resource .....	670
Table 8-120 HoleList Resource .....	672
Table 8-121 HoleMakingParams Resource .....	673
Table 8-122 IdentificationField Resource .....	675
Table 8-123 EncodingDetails Attribute Values .....	677
Table 8-124 BarcodeDetails Element .....	678
Table 8-125 ExtraValues Element .....	679
Table 8-126 Usage of Barcode Attributes for Certain Barcode Types .....	680
Table 8-127 BarcodeVersion Values – for HIBC_DATAMATRIX .....	680
Table 8-128 BarcodeVersion Values – for QR barcodes .....	681
Table 8-129 ImageCompressionParams Resource .....	682
Table 8-130 ImageCompression Element .....	682
Table 8-131 CCITTFaxParams Element .....	685
Table 8-132 DCTParams Element .....	685
Table 8-133 SourceCSs Attribute Values .....	686
Table 8-134 FlateParams Element .....	687
Table 8-135 JBIG2Params Element .....	687
Table 8-136 JPEG2000Params Element .....	688
Table 8-137 LZWParams Element .....	688
Table 8-138 ImageEnhancementParams Resource .....	689
Table 8-139 ImageEnhancementOp Element .....	689
Table 8-140 ImageReplacementParams Resource .....	690
Table 8-141 ImageSetterParams Resource .....	692
Table 8-142 Sides Attribute Values .....	694
Table 8-143 Ink Resource .....	694
Table 8-144 InkZoneCalculationParams Resource .....	696
Table 8-145 InkZoneProfile Resource .....	697
Table 8-146 InsertingParams Resource .....	698
Table 8-147 Location of Inserts .....	699
Table 8-148 InterpretingParams Resource .....	700
Table 8-149 InterpretingDetails Element .....	703
Table 8-150 PDFInterpretingParams Element .....	703
Table 8-151 OCGControl Element .....	705
Table 8-152 ReferenceXObjParams Element .....	705
Table 8-153 PDLResourceAlias Element .....	706
Table 8-154 JacketingParams Resource .....	707
Table 8-155 LabelingParams Resource .....	708
Table 8-156 LaminatingParams Resource .....	708
Table 8-157 Layout Resource .....	709
Table 8-158 ColorControlStrip Element .....	716
Table 8-159 CIELABMeasuringField Element .....	716
Table 8-160 DensityMeasuringField Resource .....	718
Table 8-161 DeviceMark Element .....	719
Table 8-162 LayerList Element .....	722
Table 8-163 LayerDetails Element .....	723
Table 8-164 LogicalStackParams Element .....	723
Table 8-165 Stack Element .....	723

---

Table 8-166 PageCondition Element .....	724
Table 8-167 SheetCondition Element .....	726
Table 8-168 Abstract PlacedObject Element.....	727
Table 8-169 ContentObject Element .....	731
Table 8-170 MarkObject Element .....	736
Table 8-171 CutMark Resource .....	741
Table 8-172 Cut mark types as specified by CutMark/@MarkType .....	742
Table 8-173 FillMark Element .....	742
Table 8-174 MarkActivation Element .....	743
Table 8-175 DynamicField Element .....	744
Table 8-176 Example (1) of Ord Attribute in PlacedObject Elements .....	748
Table 8-177 Example (2) of Ord Attribute in PlacedObject Elements .....	749
Table 8-178 LayoutElement Resource.....	750
Table 8-179 ElementType Attribute Values .....	753
Table 8-180 Dependencies Element.....	754
Table 8-181 LayoutElementProductionParams Resource .....	754
Table 8-182 LayoutElementPart Element .....	756
Table 8-183 BarcodeProductionParams Element .....	757
Table 8-184 PositionObj Element.....	758
Table 8-185 LayoutPreparationParams Resource .....	764
Table 8-186 FrontMarkList Attribute Values .....	772
Table 8-187 PageDistributionScheme Attribute Values .....	772
Table 8-188 PageCell Element .....	773
Table 8-189 ImageShift Element.....	775
Table 8-190 LayoutShift Resource .....	779
Table 8-191 ShiftPoint Element .....	779
Table 8-192 LooseBindingParams Resource .....	781
Table 8-193 ChannelBindingDetails Element .....	783
Table 8-194 CoilBindingDetails Element .....	783
Table 8-195 CombBindingDetails Element .....	784
Table 8-196 RingBindingDetails Element .....	784
Table 8-197 ManualLaborParams Resource .....	785
Table 8-198 Media Resource .....	786
Table 8-199 MediaTypeDetails Attribute Values .....	796
Table 8-200 TabDimensions Element .....	799
Table 8-201 MiscConsumable Resource .....	804
Table 8-202 NodeInfo Resource .....	805
Table 8-203 NodeStatus Attribute Values .....	808
Table 8-204 PageAssignParams Resource .....	809
Table 8-205 PageList Resource .....	810
Table 8-206 PageData Element .....	812
Table 8-207 PageElement Element .....	814
Table 8-208 Pallet Resource .....	815
Table 8-209 PalletizingParams Resource .....	816
Table 8-210 PDFToPSConversionParams Resource .....	817
Table 8-211 PDLCreationParams Resource .....	820
Table 8-212 FontParams Element .....	820
Table 8-213 PDFToPSConversionParams ResourcePSCreationDetails Element .....	821
Table 8-214 PSToPDFConversionParams ResourcePDFCreationDetails Element .....	824
Table 8-215 AdvancedParams Element .....	826

Table 8-216 PDFXParams Element .....	828
Table 8-217 ThinPDFParams Element .....	830
Table 8-218 PDLResourceAlias Resource .....	830
Table 8-219 PerforatingParams Resource .....	831
Table 8-220 PlasticCombBindingParams Resource .....	831
Table 8-221 PreflightParams Resource .....	833
Table 8-222 PreflightTest Element .....	833
Table 8-223 PreflightAction Element .....	834
Table 8-224 BasicPreflightTest Element .....	834
Table 8-225 PreflightArgument Element .....	835
Table 8-226 BoxArgument Element .....	836
Table 8-227 Box Attribute Values .....	836
Table 8-228 BoxToBoxDifference Element .....	837
Table 8-229 PreflightReport Resource .....	838
Table 8-230 PreflightCheck Element .....	838
Table 8-231 PRItem Element .....	839
Table 8-232 PRError Element .....	840
Table 8-233 PRGroup Element .....	840
Table 8-234 Abstract PRGroupOccurrenceBase Element .....	842
Table 8-235 List of PRGroupOccurrenceBase Elements .....	842
Table 8-236 ArgumentValue Element .....	842
Table 8-237 PRGroupOccurrence Element .....	843
Table 8-238 StringListValue Element .....	843
Table 8-239 PROccurrence Element .....	843
Table 8-240 PreflightReportRulePool Resource .....	844
Table 8-241 PRRule Element .....	844
Table 8-242 PRRuleAttr Element .....	844
Table 8-243 ReportAttr Attribute Values .....	845
Table 8-244 Contingent Report Behavior .....	845
Table 8-245 Preview Resource .....	846
Table 8-246 PreviewGenerationParams Resource .....	849
Table 8-247 PrintCondition Resource .....	850
Table 8-248 PrintRollingParams Resource .....	851
Table 8-249 ProductionPath Resource .....	852
Table 8-250 FolderSuperstructureWebPath Element .....	853
Table 8-251 PostPressComponentPath Element .....	853
Table 8-252 PrintingUnitWebPath Element .....	853
Table 8-253 PSToPDFConversionParams Resource .....	854
Table 8-254 AdvancedParams Element .....	856
Table 8-255 PDFXParams Element .....	858
Table 8-256 PDFXOutputIntentProfile Attribute Values .....	860
Table 8-257 ThinPDFParams Element .....	860
Table 8-258 QualityControlParams Resource .....	861
Table 8-259 BindingQualityParams Element .....	861
Table 8-260 QualityControlResult Resource .....	862
Table 8-261 QualityMeasurement Element .....	862
Table 8-262 BindingQualityMeasurement Element .....	862
Table 8-263 RasterReadingParams Resource .....	863
Table 8-264 RegisterMark Resource .....	864
Table 8-265 RenderingParams Resource .....	865

---

Table 8-266 TIFFFormatParams Element .....	866
Table 8-267 TIFFtag Element .....	868
Table 8-268 TIFFEmbeddedFile Element .....	868
Table 8-269 ResourceDefinitionParams Resource .....	869
Table 8-270 ResourceParam Element .....	869
Table 8-271 RingBindingParams Resource .....	870
Table 8-272 RollStand Resource .....	871
Table 8-273 RunList Resource .....	873
Table 8-274 ByteMap Element .....	882
Table 8-275 Band Element .....	882
Table 8-276 ElementType Attribute Values .....	883
Table 8-277 ScanParams Resource .....	886
Table 8-278 ScavengerArea Resource .....	887
Table 8-279 ScreeningParams Resource .....	888
Table 8-280 SeparationControlParams Resource .....	888
Table 8-281 Shape Resource .....	889
Table 8-282 ShapeCuttingParams Resource .....	890
Table 8-283 ShapeDef Resource .....	891
Table 8-284 CutLines Element .....	892
Table 8-285 ShapeDefProductionParams Resource .....	892
Table 8-286 ObjectModel Element .....	893
Table 8-287 ShapeTemplate Element .....	893
Table 8-288 ShapeDimension Element .....	893
Table 8-289 SheetOptimizingParams Resource .....	896
Table 8-290 GangElement Element .....	896
Table 8-291 SeparationListBack Element .....	899
Table 8-292 SeparationListFront Element .....	899
Table 8-293 ShrinkingParams Resource .....	900
Table 8-294 SpinePreparationParams Resource .....	900
Table 8-295 Operations Attribute Values .....	901
Table 8-296 SpineTapingParams Resource .....	902
Table 8-297 Parameters in Stacking .....	904
Table 8-298 StackingParams Resource .....	906
Table 8-299 StaticBlockingParams Resource .....	907
Table 8-300 StitchingParams Resource .....	910
Table 8-301 Strap Resource .....	912
Table 8-302 StrappingParams Resource .....	912
Table 8-303 StripBindingParams Resource .....	913
Table 8-304 StrippingParams Resource .....	914
Table 8-305 ExternalImpositionTemplate Element .....	918
Table 8-306 Position Element .....	919
Table 8-307 StripCellParams Element .....	920
Table 8-308 StripMark Element .....	923
Table 8-309 MarkName Attribute Values .....	926
Table 8-310 MarkSide Attribute Values .....	927
Table 8-311 ThreadSealingParams Resource .....	928
Table 8-312 ThreadSewingParams Resource .....	929
Table 8-313 Tile Resource .....	931
Table 8-314 Tool Resource .....	932
Table 8-315 TransferCurve Resource .....	933

Table 8-316 TransferCurvePool Resource .....	933
Table 8-317 TransferCurveSet Element .....	934
Table 8-318 TransferFunctionControl Resource .....	934
Table 8-319 TrappingDetails Resource .....	935
Table 8-320 TrappingOrder Element.....	936
Table 8-321 TrappingParams Resource .....	936
Table 8-322 ColorantZoneDetails Element .....	940
Table 8-323 TrapRegion Resource .....	941
Table 8-324 TrimmingParams Resource .....	942
Table 8-325 UsageCounter Resource .....	942
Table 8-326 VarnishingParams Resource .....	944
Table 8-327 VerificationParams Resource .....	945
Table 8-328 WebInlineFinishingParams Resource .....	946
Table 8-329 FolderProduction Element .....	946
Table 8-330 WindingParams Resource .....	946
Table 8-331 WireCombBindingParams Resource .....	947
Table 8-332 WrappingParams Resource .....	948
Table 9-1 DeviceCap Element .....	951
Table 9-2 ActionPool Element .....	953
Table 9-3 Action Element .....	954
Table 9-4 DevCapPool Element .....	954
Table 9-5 ModulePool Element .....	954
Table 9-6 ModuleCap Element .....	955
Table 9-7 DevCaps Element .....	956
Table 9-8 Loc Element .....	958
Table 9-9 DevCap Element .....	959
Table 9-10 Abstract State Element.....	962
Table 9-11 ListType Attribute Values .....	964
Table 9-12 List of State Elements .....	964
Table 9-13 BooleanState Element .....	965
Table 9-14 ValueLoc Element .....	967
Table 9-15 DateTimeState Element .....	967
Table 9-16 DurationState Element .....	968
Table 9-17 EnumerationState Element .....	970
Table 9-18 IntegerState Element .....	971
Table 9-19 MatrixState Element .....	974
Table 9-20 MatrixState/Value Element .....	975
Table 9-21 NameState Element .....	976
Table 9-22 NumberState Element .....	977
Table 9-23 PDFPathState Element.....	979
Table 9-24 PDFPathState/Value Element .....	979
Table 9-25 RectangleState Element .....	980
Table 9-26 ShapeState Element .....	981
Table 9-27 StringState Element .....	983
Table 9-28 StringState/Value Element .....	985
Table 9-29 XYPairState Element .....	985
Table 9-30 DisplayGroupPool Element.....	987
Table 9-31 DisplayGroup Element .....	988
Table 9-32 FeaturePool Element .....	988
Table 9-33 MacroPool Element.....	989

---

Table 9-34 macro Element .....	990
Table 9-35 choice Element.....	990
Table 9-36 otherwise Element.....	990
Table 9-37 when Element .....	991
Table 9-38 set Element .....	991
Table 9-39 FeatureAttribute Element .....	991
Table 9-40 call Element.....	991
Table 9-41 Performance Element .....	991
Table 9-42 TestPool Element .....	992
Table 9-43 Test Element .....	992
Table 9-44 List of Term Elements .....	994
Table 9-45 and Element .....	995
Table 9-46 or Element .....	995
Table 9-47 xor Element .....	996
Table 9-48 not Element .....	996
Table 9-49 TestRef Element .....	996
Table 9-50 Abstract Evaluation Element .....	998
Table 9-51 List of Evaluation Elements .....	998
Table 9-52 Mapping of Evaluation Element to State Element .....	999
Table 9-53 BooleanEvaluation Element .....	999
Table 9-54 DateTimeEvaluation Element .....	1000
Table 9-55 DurationEvaluation Element .....	1000
Table 9-56 EnumerationEvaluation Element.....	1000
Table 9-57 IntegerEvaluation Element .....	1000
Table 9-58 IsPresentEvaluation Element .....	1001
Table 9-59 MatrixEvaluation Element .....	1001
Table 9-60 MatrixEvaluation/Value Element .....	1002
Table 9-61 NameEvaluation Element.....	1002
Table 9-62 NumberEvaluation Element .....	1002
Table 9-63 PDFPathEvaluation Element.....	1003
Table 9-64 PDFPathEvaluation/Value Element.....	1003
Table 9-65 RectangleEvaluation Element .....	1003
Table 9-66 ShapeEvaluation Element .....	1004
Table 9-67 StringEvaluation Element .....	1004
Table 9-68 StringEvaluation/Value Element .....	1004
Table 9-69 XYPairEvaluation Element .....	1004
Table 9-70 Object Classes for a Document .....	1014
Table 9-71 Properties Implemented by each Class of Object .....	1015
Table 9-72 Mapping between property types (in the preflight spec) and evaluations .....	1016
Table 9-73 List of Properties Categories.....	1017
Table 9-74 Annotation Properties.....	1017
Table 9-75 AnnotationType Attribute Values .....	1018
Table 9-76 Box Properties.....	1018
Table 9-77 Class Properties.....	1019
Table 9-78 ClassName Attribute Values.....	1019
Table 9-79 PropertyList Attribute Values .....	1019
Table 9-80 Colorant Properties .....	1020
Table 9-81 Document Properties .....	1020
Table 9-82 Fill Properties .....	1024
Table 9-83 FillColorType Attribute Values .....	1024

Table 9-84 Font Properties.....	1025
Table 9-85 FontType Attribute Values .....	1025
Table 9-86 Graphic Properties .....	1026
Table 9-87 Image Properties.....	1028
Table 9-88 Logical Properties .....	1030
Table 9-89 PageBox Properties .....	1030
Table 9-90 Pages Properties.....	1030
Table 9-91 PDLObject Properties .....	1032
Table 9-92 Reference Properties .....	1032
Table 9-93 Shading Properties.....	1033
Table 9-94 Stroke Properties .....	1033
Table 9-95 Text Properties .....	1034
Table 9-96 Vector Properties.....	1034
Table 10-1 Address Element .....	1035
Table 10-2 ApprovalPerson Element .....	1035
Table 10-3 AutomatedOverPrintParams Element .....	1036
Table 10-4 BarcodeCompParams Element .....	1037
Table 10-5 BarcodeReproParams Element .....	1037
Table 10-6 Certification Element .....	1038
Table 10-7 ColorantAlias Element.....	1039
Table 10-8 ColorCorrectionOp Element .....	1039
Table 10-9 ColorMeasurementConditions Resource .....	1041
Table 10-10 ColorSpaceConversionOp Element .....	1042
Table 10-11 SourceCS Attribute Values .....	1046
Table 10-12 Mapping of SourceCS enumeration values to color spaces in the most common input file formats .....	1047
Table 10-13 ComChannel Element .....	1050
Table 10-14 ChannelTypeDetails Attribute – predefined values for certain ChannelType values ..	
1051	
Table 10-15 ConvertingConfig Element .....	1051
Table 10-16 CostCenter Element .....	1052
Table 10-17 Crease Element .....	1052
Table 10-18 Cut Element .....	1053
Table 10-19 DeviceMark Element .....	1055
Table 10-20 DeviceNSpace Element .....	1059
Table 10-21 Disjointing Element .....	1059
Table 10-22 Disposition Element .....	1061
Table 10-23 FitPolicy Element .....	1062
Table 10-24 Fold Element .....	1063
Table 10-25 GlueLine Element .....	1064
Table 10-26 HolePattern Element.....	1066
Table 10-27 HoleLine Element.....	1067
Table 10-28 InsertSheet Element .....	1069
Table 10-29 SheetUsage Attribute Values .....	1071
Table 10-30 JobField Element .....	1072
Table 10-31 MarkColor Element .....	1073
Table 10-32 MediaLayers Element .....	1073
Table 10-33 MetadataMap Element .....	1074
Table 10-34 Expr Element .....	1076
Table 10-35 MetadataMap: Setting Attributes .....	1077

Table 10-36 MISDetails Element .....	1079
Table 10-37 ObjectResolution Element .....	1080
Table 10-38 OCGControl Element .....	1081
Table 10-39 Perforate Element .....	1082
Table 10-40 Person Element .....	1083
Table 10-41 RefAnchor Element .....	1083
Table 10-42 RegisterRibbon Element .....	1084
Table 10-43 ScreenSelector Element .....	1085
Table 10-44 SeparationSpec Element .....	1088
Table 11-1 Actions generated when a dynamic-pipe buffer passes various levels .....	1093
Table 11-2 Event Sequence in Digital Finishing .....	1094
Table 11-3 XJMF Bootstrapping steps .....	1102
Table 11-4 MIME Types and File Extensions .....	1103
Table 11-5 MIME Content-Types .....	1104
Table 11-6 Modifying Job Parameters.....	1108
Table A-1 Anchor Enumeration Values .....	1125
Table A-2 JDFJMFVersion Enumeration Values .....	1125
Table A-3 NamedColor Enumeration Values.....	1125
Table A-4 Orientation Enumeration Values .....	1126
Table A-5 Sides Enumeration Values.....	1126
Table A-6 Scope Enumeration Values.....	1127
Table A-7 WorkStyle Enumeration Values .....	1127
Table A-8 XYRelation Enumeration Values .....	1127
Table C-1 StatusDetails Mapping for Generic Devices .....	1133
Table C-2 StatusDetails Mapping for Printing Devices .....	1136
Table C-3 StatusDetails Mapping for Postpress Devices .....	1138
Table C-4 ModuleType Attribute Values for Conventional Printing Devices .....	1138
Table C-5 ModuleType Attribute Values for Postpress .....	1139
Table C-6 ModuleType Attribute Values for DigitalPrinting .....	1140
Table C-7 ModuleType Attribute Values for PrintingUnitWebPath Modules of Web Printing Devices .....	1140
Table C-8 ModuleType Attribute Values for FolderSuperstructureWebPath Modules of Web Print- ing Devices .....	1141
Table C-9 ModuleType Attribute Values for PostPressComponentPath Modules of Web Printing Devices .....	1142
Table C-10 Abstract NotificationDetails.....	1142
Table C-11 List of NotificationDetails Elements .....	1143
Table C-12 Barcode Element .....	1143
Table C-13 FCNKey Element .....	1143
Table C-14 SystemTimeSet Element .....	1143
Table C-15 CounterReset Element .....	1143
Table C-16 Error Element .....	1144
Table C-17 ErrorData Element .....	1144
Table C-18 Event Element .....	1144
Table C-19 Milestone Element .....	1145
Table C-20 MessageEvents and MilestoneType Values .....	1146
Table C-21 Input Tray and Output Bin Names .....	1147
Table D-1 Return codes for JMF XJMF .....	1151
Table E-1 Attributes for Color Space Adjustment .....	1155
Table F-1 Conversion Factor from USWeight (lbs) to Weight (g/m2) .....	1157

Table F-2 Grammage Equivalents for Common (US) Basis Weights .....	1157
Table F-3 Japanese Media Weight .....	1159
Table G-1 Media Sizes .....	1161
Table H-1 MimeType Attribute Values (IANA Registered) .....	1165
Table H-2 MimeType and File Type Combinations .....	1167
Table I-1 Predefined variables used in @XXXTemplate and @ShowList .....	1171
Table J-1 Schemes Names for Binding Orientations .....	1177
Table J-2 Transformations for each Scheme .....	1178
Table J-3 Original Diagram .....	1180
Table J-4 Horizontal Binding Edges .....	1180
Table J-5 Original Diagram .....	1181
Table J-6 Vertical Binding Edges .....	1181
Table J-7 Pagination Diagrams .....	1182
Table L-1 References .....	1225
Table M-1 Naming Scheme for Hole Patterns .....	1239
Table M-2 Hole Details for R2 Series .....	1240
Table M-3 Hole Details for R3 and R4 Series .....	1241
Table M-4 Hole Details for R5 and R6 Series .....	1242
Table M-5 Hole Details for R7 and R11 Series .....	1244
Table M-6 Hole Details for P, W, C and S Series .....	1245
Table N-1 Use Cases showing MimeType, URL and Compression Attribute Values .....	1249
Table N-2 AppOS and OSVersion Examples .....	1259
Table P-1 Contents of the Abstract ResourceUpdate Element .....	1308
Table P-2 Contents of the StatusPool Element .....	1308
Table P-3 Contents of the PartStatus Element .....	1308
Table P-4 Added Element .....	1311
Table P-5 ChangedAttribute Element .....	1311
Table P-6 Removed Element .....	1312
Table P-7 Events Message .....	1312
Table P-8 NotificationDef Element .....	1313
Table P-9 KnownControllers Message .....	1313
Table P-10 ControllerFilter Element .....	1314
Table P-11 JDFController Element .....	1314
Table P-12 RepeatMessages Message .....	1315
Table P-13 MsgFilter Element .....	1315
Table P-14 NodeInfo Query Message .....	1317
Table P-15 NodeInfoQuParams Element .....	1317
Table P-16 NodeInfo Command Message .....	1317
Table P-17 NodeInfoCmdParams Element .....	1317
Table P-18 NodeInfoResp Element .....	1318
Table P-19 KnownJDFServices Message .....	1319
Table P-20 JDFService Element .....	1319
Table P-21 Occupation Message .....	1320
Table P-22 EmployeeDef Element .....	1320
Table P-23 Occupation Element .....	1321
Table P-24 Track Message .....	1322
Table P-25 TrackFilter Element .....	1322
Table P-26 TrackResult Element .....	1322
Table P-27 QueueEntryStatus Message .....	1323
Table P-28 QueueEntryDefList Element .....	1323

---

Table P-29 DBDocTemplateLayout – Input Resources.....	1324
Table P-30 DBDocTemplateLayout – Output Resources .....	1324
Table P-31 DBTemplateMerging – Input Resources .....	1324
Table P-32 DBTemplateMerging – Output Resources .....	1324
Table P-33 FormatConversion – Input Resources .....	1325
Table P-34 FormatConversion – Output Resources .....	1325
Table P-35 Ordering – Input Resources .....	1325
Table P-36 Ordering – Output Resources .....	1325
Table P-37 Packing – Input Resources.....	1325
Table P-38 Packing – Output Resources .....	1326
Table P-39 FilmToPlateCopying – Input Resources.....	1326
Table P-40 FilmToPlateCopying – Output Resources.....	1326
Table P-41 PreflightAnalysis Resource .....	1326
Table P-42 PreflightDetail Element .....	1327
Table P-43 PreflightInstance Element.....	1328
Table P-44 PreflightInstanceDetail Element.....	1328
Table P-45 PreflightInventory Resource .....	1329
Table P-46 PreflightProfile Resource .....	1329
Table P-47 PreflightConstraint Element .....	1330
Table P-48 Proofing – Input Resources .....	1331
Table P-49 Proofing – Output Resources .....	1331
Table P-50 SoftProofing – Input Resources.....	1332
Table P-51 SoftProofing – Output Resources .....	1332
Table P-52 IDPrinting – Input Resources .....	1332
Table P-53 IDPrinting – Output Resources .....	1333
Table P-54 Dividing – Input Resources.....	1334
Table P-55 Dividing – Output Resources .....	1334
Table P-56 LongitudinalRibbonOperations – Input Resources .....	1334
Table P-57 LongitudinalRibbonOperations – Output Resources .....	1334
Table P-58 Numbering – Input Resources .....	1335
Table P-59 Numbering – Output Resources .....	1335
Table P-60 SaddleStitching – Input Resources.....	1335
Table P-61 SaddleStitching – Output Resources .....	1335
Table P-62 SideSewing – Input Resources.....	1335
Table P-63 SideSewing – Output Resources .....	1335
Table P-64 AdhesiveBinding Element .....	1336
Table P-65 BookCase Element .....	1336
Table P-66 Pricing Element.....	1337
Table P-67 Payment Element .....	1337
Table P-68 CreditCard Element .....	1337
Table P-69 NumberingIntent Resource Intent Element .....	1338
Table P-70 NumberItem Element .....	1339
Table P-71 SizeIntent Resource .....	1339
Table P-72 AdhesiveBindingParams Resource .....	1340
Table P-73 BoxApplication Element.....	1341
Table P-74 CustomerMessage Element .....	1342
Table P-75 DBMergeParams Resource .....	1342
Table P-76 DBRules Resource .....	1343
Table P-77 DBSchema Resource .....	1343
Table P-78 DBSelection Resource .....	1344

Table P-79 DividingParams Resource .....	1344
Table P-80 FormatConversionParams Resource .....	1345
Table P-81 IDPrintingParams Resource .....	1346
Table P-82 OutputBin Attribute Values.....	1347
Table P-83 Cover Element.....	1347
Table P-84 IDPFinishing Element.....	1348
Table P-85 Finishings Attribute Values.....	1349
Table P-86 IDPFolding Element.....	1349
Table P-87 IDPHoleMaking Element.....	1350
Table P-88 IDPLayout Element.....	1350
Table P-89 IDPStitching Element.....	1352
Table P-90 IDPTrimming Element.....	1353
Table P-91 ImageShift Element .....	1353
Table P-92 JobSheet Element .....	1354
Table P-93 Signature Element .....	1357
Table P-94 LongitudinalRibbonOperationParams Resource .....	1357
Table P-95 LROperation Element .....	1357
Table P-96 LongGlue Element .....	1358
Table P-97 LongPerforate Element.....	1358
Table P-98 MediaSource Resource .....	1359
Table P-99 NumberingParams Resource .....	1359
Table P-100 NumberingParam Element .....	1359
Table P-101 OrderingParams Resource .....	1360
Table P-102 PackingParams Resource .....	1361
Table P-103 PlateCopyParams Resource .....	1362
Table P-104 ProofingParams Resource.....	1363
Table P-105 DynamicInput Element.....	1364
Table P-106 SaddleStitchingParams Resource .....	1364
Table P-107 Sheet Resource .....	1365
Table P-108 SideSewingParams Resource .....	1367
Table P-109 Surface Resource .....	1367

## Appendix S List of Examples

---

Example 1-1 XPath Expression .....	6
Example 3-1 ResourceLink Structure for a ProcessGroup .....	68
Example 3-2 Combined Process Node .....	70
Example 3-3 ResourceLinkPool for Combined Process Node .....	71
Example 3-4 Complex Combined Process Node .....	72
Example 3-5 ExposedMedia with Location Elements .....	86
Example 3-6 Media with Location Elements .....	86
Example 3-7 Versioned Set Of Plates with Multiple Part Elements .....	92
Example 3-8 EmployeeLink .....	109
Example 3-9 PartAmount .....	113
Example 3-10 MediaLink with Lot .....	115
Example 3-11 MediaRef to Partitioned Media .....	117
Example 3-12 Equivalent Inline Media .....	117
Example 3-13 Invalid Inline Partitioned Media .....	117
Example 3-14 MediaLink and MediaRef .....	118
Example 3-15 Inheritance for Subelements of a Partitioned Resource .....	124
Example 3-16 Partitioned ExposedMedia .....	124
Example 3-17 Legal Incomplete Partition .....	125
Example 3-18 Illegal Incomplete Partition .....	125
Example 3-19 Legal Complete Partition .....	125
Example 3-20 Illegal Partition .....	126
Example 3-21 Degenerate Partition .....	126
Example 3-22 Invalid Degenerate Partition .....	126
Example 3-23 Partitioned ExposedMedia with Media Subelements .....	127
Example 3-24 Partitioned ExposedMedia with Incomplete Media Subelements .....	127
Example 3-25 Partitioned ExposedMedia with Invalid Partitioning of Media Subelements .....	127
Example 3-26 Partitioned ExposedMedia with MediaRef Subelements .....	127
Example 3-27 Partitioned ExposedMedia with Invalid MediaRef Subelements .....	128
Example 3-28 Partitioning with the Identical Element .....	128
Example 3-29 ResourceLink with Part Element .....	129
Example 3-30 Partitioning with an Invalid Identical Element .....	129
Example 3-31 ExposedMedia with Location Elements .....	143
Example 3-32 Media with Location Elements .....	143
Example 3-33 Linking to Subsets of Resources .....	144
Example 3-34 @Amount in an ExposedMediaLink to a Partitioned ExposedMedia .....	144
Example 3-35 PartUsage in a Partitioned Resource .....	145
Example 3-36 Explicit Reference of Ordered Partitioned Resources .....	147
Example 3-37 Implicit Reference of Ordered Partitioned Resources .....	147
Example 3-38 ResourceAudit: Before Logging .....	170
Example 3-39 ResourceAudit: Logging of Consumption .....	170
Example 3-40 ResourceAudit: Logging Changes .....	171
Example 3-41 Namespaces in XML .....	173
Example 3-42 Creating Extension Assets .....	174
Example 3-43 Extending Process Types .....	174
Example 3-44 Extending NMOKEN Lists .....	175
Example 4-1 Product Intent Node .....	182
Example 4-2 Family Tree of Spawned Nodes .....	198

Example 5-1 Message Type vs Explicit Message Element.....	206
Example 5-2 Query Message .....	217
Example 5-3 ResumeQueueEntry Command Message .....	219
Example 5-4 ResumeQueueEntry Response Message .....	219
Example 5-5 Signal Message .....	222
Example 5-6 Response Message for Query .....	224
Example 5-7 Acknowledge Message .....	226
Example 5-8 Response with Notification Element .....	232
Example 5-9 KnownDevices Response .....	235
Example 5-10 KnownMessages Response .....	242
Example 5-11 Notification Signal .....	248
Example 5-12 RequestForAuthentication Command.....	256
Example 5-13 RequestForAuthentication Response .....	256
Example 5-14 Follow up RequestForAuthentication Query .....	257
Example 5-15 RequestForAuthentication Response from Follow Up Query .....	257
Example 5-16 Resource Query about Paper .....	270
Example 5-17 Resource Response about Paper.....	270
Example 5-18 Resource Query about Employees.....	271
Example 5-19 Resource Response about Employees .....	271
Example 5-20 Resource Signal about Consumed Resources.....	272
Example 5-21 Resource Command: Single Resource is Available .....	276
Example 5-22 Resource Command: Multiple Resources are Available.....	276
Example 5-23 Resource Query for Consumables .....	281
Example 5-24 Resource Response about Consumables .....	281
Example 5-25 Resource Command for Changing Amount .....	281
Example 5-26 Resource Response for Changing Amount .....	281
Example 5-27 ResourcePull Command .....	284
Example 5-28 Status Signal.....	287
Example 5-29 Status Response to Query.....	296
Example 5-30 UpdateJDF Command .....	300
Example 5-31 AbortQueueEntry Command.....	315
Example 5-32 AbortQueueEntry Response .....	316
Example 5-33 SubmitQueueEntry Command with “file” Scheme .....	332
Example 5-34 SubmitQueueEntry Command with “http” Scheme .....	332
Example 5-35 SubmissionMethods Response .....	341
Example 5-36 Queue Element.....	342
Example 5-37 Custom Query.....	351
Example 5-38 Custom Response .....	351
Example 5-39 Custom Query for IfraTrack .....	352
Example 5-40 Custom Response for IfraTrack .....	352
Example 6-1 DieLayoutProduction: Single Shape and Two Sheet Sizes .....	365
Example 6-2 DieLayoutProduction: Single Shape and Range of Sheet Sizes .....	366
Example 6-3 DieLayoutProduction: Two Shapes and Range of Sheet Sizes .....	367
Example 6-4 Automated Imposition: MarkObject.....	377
Example 6-5 Imposition Template: Layout .....	378
Example 6-6 Output RunList (Surface) .....	378
Example 6-7 Automated Imposition: Ord Values .....	382
Example 6-8 RIPing .....	392
Example 6-9 Stripping: Simple Example.....	396
Example 6-10 Stripping: Complex Example .....	397

---

Example 6-11 Stitching: Combined Process .....	426
Example 7-1 EnumerationSpan .....	444
Example 8-1 Perfect Bound (Gathering).....	527
Example 8-2 Saddle-Stitched Brochure (Collecting).....	527
Example 8-3 Pseudo Code to Generate Page Count from SignatureCell Elements .....	538
Example 8-4 StrippingParams: Foldout Using FaceCells .....	541
Example 8-5 BoxFoldingParams/BoxFoldAction .....	547
Example 8-6 Bundle: Boxing and Palletizing .....	553
Example 8-7 Color .....	572
Example 8-8 ColorantControl: Content-Ignorant MIS .....	572
Example 8-9 ColorantControl: Synchronized with Input .....	572
Example 8-10 ColorantControl: Synchronized with Input with Alias .....	573
Example 8-11 ColorantControl: with ColorantAlias/ReplacementColorantName.....	573
Example 8-12 ColorantControl: with Invalid ColorantAlias/ReplacementColorantName .....	574
Example 8-13 ContentList.....	605
Example 8-14 ContentList: Extended with ISBN, Author, etc.....	606
Example 8-15 CylinderLayout.....	621
Example 8-16 CylinderLayout: Double-Spread-Page Plate.....	623
Example 8-17 Barcode .....	691
Example 8-18 PageCondition .....	735
Example 8-19 Layout: DynamicField Element.....	758
Example 8-20 Invalid MarkObject.....	759
Example 8-21 MarkObject .....	760
Example 8-22 RunList: Simple Multi-File Unseparated RunList .....	761
Example 8-23 RunList: Simple Multi-File Separated RunList .....	761
Example 8-24 OrdExpression .....	762
Example 8-25 DocOrd Usage .....	763
Example 8-26 LayoutElementProductionParams: Page Shape .....	768
Example 8-27 LayoutElementProductionParams: Label Shape .....	769
Example 8-28 LayoutElementProductionParams: Box Shape.....	769
Example 8-29 LayoutElementProductionParams: PositionObj.....	772
Example 8-30 LayoutElementProductionParams: Preflight .....	775
Example 8-31 LayoutPreparationParams: JDF for Figure 8-44 .....	791
Example 8-32 LayoutPreparationParams: JDF for Figure 8-45 .....	792
Example 8-33 LayoutShift.....	793
Example 8-34 Media: Corrugated .....	818
Example 8-35 Media: Self Adhesive .....	819
Example 8-36 Media: Flat Plate .....	819
Example 8-37 Media: Flexo Sleeve .....	819
Example 8-38 Test with InsideBox and a BoxArgument Subelement .....	853
Example 8-39 PRItem.....	858
Example 8-40 PrintCondition .....	867
Example 8-41 ProductionPath: on Path Level: .....	869
Example 8-42 ProductionPath: on Part Path Level:.....	870
Example 8-43 Marks and Reordering of Content using RunList/@IgnoreContext.....	898
Example 8-44 RunList: Unstructured Single-File RunList.....	901
Example 8-45 RunList: Multi-File Unseparated RunList .....	901
Example 8-46 RunList: Multi-File Unseparated RunList with Spawning .....	902
Example 8-47 RunList: Spawns RunList .....	902
Example 8-48 RunList: Multi-File Separated RunList .....	902

Example 8-49 ShapeTemplate for Figure 8-55 .....	912
Example 9-1 DisplayGroupPool .....	1014
Example 9-2 FeaturePool .....	1015
Example 9-3 ActionPool and TestPool .....	1021
Example 9-4 KnownDevices Query for a Scanner .....	1033
Example 9-5 KnownDevices Response for a Scanner .....	1034
Example 9-6 KnownDevices Query for a Scanner #2 .....	1037
Example 9-7 KnownDevices Response for a Scanner #2 .....	1037
Example 9-8 JDF Accepted by Previous Scanner .....	1041
Example 9-9 JDF Rejected by Previous Scanner .....	1041
Example 9-10 Test for Existence of TrappedKey .....	1044
Example 9-11 Test for TrappedKey Equal to "Unknown" .....	1044
Example 9-12 Test with BoxToBoxDifference Element .....	1060
Example 10-1 ColorantAlias/@RawNames .....	1069
Example 10-2 ComChannel for Telephone .....	1081
Example 10-3 ComChannel for Instant Messaging .....	1081
Example 10-4 MetadataMap: Setting Attributes .....	1108
Example 10-5 RunList/MetadataMap .....	1108
Example 11-1 Response with Notification Element .....	1134
Example 11-2 Packaging of Individual JDF/JMF files in MIME .....	1139
Example 11-3 CID URL Scheme .....	1139
Example 11-4 MIME Multipart/Related .....	1140
Example A-1 boolean .....	1145
Example A-2 CMYKColor .....	1146
Example A-3 date .....	1146
Example A-4 dateTime .....	1146
Example A-5 DateTimeRange .....	1146
Example A-6 DateTimeRangeList .....	1147
Example A-7 double .....	1147
Example A-8 DoubleList .....	1147
Example A-9 DoubleRange .....	1147
Example A-10 DoubleRangeList .....	1148
Example A-11 duration .....	1148
Example A-12 DurationRange .....	1148
Example A-13 DurationRangeList .....	1148
Example A-14 gYearMonth .....	1149
Example A-15 hexBinary .....	1149
Example A-16 ID .....	1149
Example A-17 IDREF .....	1149
Example A-18 IDREFS .....	1150
Example A-19 integer .....	1150
Example A-20 IntegerList .....	1150
Example A-21 IntegerRange .....	1150
Example A-22 IntegerRangeList .....	1150
Example A-23 LabColor .....	1151
Example A-24 language .....	1151
Example A-25 languages .....	1151
Example A-26 matrix .....	1151
Example A-27 NameRange .....	1152
Example A-28 NameRangeList .....	1152

---

Example A-29 NMTOKEN.....	1152
Example A-30 NMTOKENS .....	1152
Example A-31 PDFPath .....	1153
Example A-32 rectangle.....	1153
Example A-33 RectangleRange .....	1153
Example A-34 RectangleRangeList .....	1154
Example A-35 regExp .....	1154
Example A-36 shape.....	1154
Example A-37 ShapeRange.....	1154
Example A-38 ShapeRangeList .....	1154
Example A-39 sRGBColor .....	1155
Example A-40 string.....	1155
Example A-41 TransferFunction.....	1155
Example A-42 URI .....	1156
Example A-43 URL .....	1156
Example A-44 URL: UTF-8 .....	1156
Example A-45 URL: Windows Locale 1252 .....	1156
Example A-46 URL: Escaped Characters.....	1156
Example A-47 XPath.....	1157
Example A-48 XYPair .....	1157
Example A-49 XYPairRange .....	1157
Example A-50 XYPairRangeList .....	1157
Example A-51 enumeration.....	1158
Example A-52 enumerations .....	1158
Example B-1 JDF Nodes: xsi:type .....	1163
Example B-2 JDF XJDF Nodes: xsi:type (not in Default Namespace) .....	1164
Example B-3 JMF XJMF: xsi:type .....	1164
Example C-1 Milestone in JMF .....	1179
Example I-1 @FileTemplate and @FileFormat .....	1208
Example N-1 FileSpec #1 .....	1284
Example N-2 FileSpec #2 .....	1284
Example N-3 FileSpec #3 .....	1284
Example N-4 FileSpec #4 .....	1285
Example N-5 FileSpec #5 .....	1285
Example N-6 FileSpec #6 .....	1285
Example N-7 FileSpec #7 .....	1285
Example N-8 FileSpec #8 .....	1286
Example N-9 FileSpec #9 .....	1286
Example N-10 FileSpec #10 .....	1286
Example N-11 FileSpec #11 .....	1287
Example N-12 FileSpec #11.1 — No Partitioning .....	1287
Example N-13 FileSpec #11.2 — Intermediate container Partitioned .....	1288
Example N-14 FileSpec #11.3 — the pdf is Partitioned .....	1289
Example N-15 FileSpec #11.3a — the pdf is Partitioned, Different File Layout.....	1290
Example N-16 FileSpec #11.4 — Both Partitioned .....	1291
Example N-17 FileSpec #12 .....	1291
Example N-18 Intent Job Ticket .....	1292
Example O-1 Before Processing.....	1295
Example O-2 After Processing.....	1296
Example O-3 Product JDF XJDF .....	1297

Example O-4 2-Component JDF XJDF before Spawning.....	1299
Example O-5 2-Component JDF Parent after Spawning the Cover Node .....	1300
Example O-6 2-Component JDF Spawned Node .....	1301
Example O-7 2-Component JDF XJDF after Merging .....	1302
Example O-8 Partitioned ImageSetting Node before Spawning .....	1303
Example O-9 Spawnd Cyan Partition of the ImageSetting Node.....	1303
Example O-10 Root Partitioned ImageSetting Node after Spawning .....	1304
Example O-11 Merged ImageSetting Node .....	1305
Example O-12 RunList.....	1306
Example O-13 KnownMessages Query .....	1308
Example O-14 KnownMessages Response .....	1308
Example O-15 Status Query .....	1309
Example O-16 Status Response.....	1309
Example O-17 Status Signal #1 .....	1309
Example O-18 Status Signal #2 .....	1309
Example O-19 Status Signal #3 .....	1310
Example O-20 Using Position .....	1318
Example O-21 Multiple Bindery Signatures .....	1319
Example O-22 Multisection Bindery Signatures.....	1319
Example O-23 Multiple Job Parts in One Imposition .....	1320
Example O-24 FoldOuts .....	1321
Example O-25 Multiple Web Layout .....	1322
Example O-26 Stripping Process.....	1323
Example O-27 DigitalDelivery: Before the Delivery .....	1325
Example O-28 DigitalDelivery: After the Delivery.....	1326
Example O-29 Delivery and DigitalDelivery Processes .....	1326
Example O-30 Full Example of Digital Delivery through Central Server.....	1329
Example O-31 Algorithm for Processing an Imposition Template .....	1332
Example O-32 Format of Variable Data Structured Content.....	1333
Example O-33 Page Pools.....	1334
Example O-34 Booklet Using Automated Imposition .....	1336
Example P-1 Query with Subscription to All Events.....	1344
Example P-2 Response for Subscription to All Events .....	1344
Example P-3 KnownControllers Query .....	1346
Example P-4 KnownControllers Response.....	1346
Example P-5 RepeatMessages Response .....	1348
Example P-6 Occupation Response .....	1353
Example P-7 Track Response .....	1355
XPath Expression 5	
ResourceLink Structure for a ProcessGroup 67	
Combined Process Node 69	
ResourceLinkPool for Combined Process Node 70	
Complex Combined Process Node 71	
ExposedMedia with Location Elements 85	
Media with Location Elements 85	
Versioned Set Of Plates with Multiple Part Elements 90	
EmployeeLink 106	
PartAmount 110	
MediaLink with Lot 112	

---

MediaRef to Partitioned Media 114  
Equivalent Inline Media 114  
Invalid Inline Partitioned Media 114  
MediaLink and MediaRef 115  
Inheritance for Subelements of a Partitioned Resource 120  
Partitioned ExposedMedia 121  
Legal Incomplete Partition 122  
Illegal Incomplete Partition 122  
Legal Complete Partition 122  
Illegal Partition 122  
Degenerate Partition 123  
Invalid Degenerate Partition 123  
Partitioned ExposedMedia with Media Subelements 123  
Partitioned ExposedMedia with Incomplete Media Subelements 123  
Partitioned ExposedMedia with Invalid Partitioning of Media Subelements 124  
Partitioned ExposedMedia with MediaRef Subelements 124  
Partitioned ExposedMedia with Invalid MediaRef Subelements 124  
Partitioning with the Identical Element 125  
ResourceLink with Part Element 126  
Partitioning with an Invalid Identical Element 126  
ExposedMedia with Location Elements 140  
Media with Location Elements 140  
Linking to Subsets of Resources 141  
@Amount in an ExposedMediaLink to a Partitioned ExposedMedia 141  
PartUsage in a Partitioned Resource 142  
Explicit Reference of Ordered Partitioned Resources 144  
Implicit Reference of Ordered Partitioned Resources 144  
ResourceAudit: Before Logging 165  
ResourceAudit: Logging of Consumption 165  
ResourceAudit: Logging Changes 166  
Namespaces in XML 168  
Creating Extension Assets 168  
Extending Process Types 169  
Extending NMTOKEN Lists 170  
Product Intent Node 176  
Family Tree of Spawns Nodes 191  
Message Type vs Explicit Message Element 200  
Query Message 212  
ResumeQueueEntry Command Message 213  
ResumeQueueEntry Response Message 213  
Signal Message 216  
Response Message for Query 218  
Acknowledge Message 220  
Response with Notification Element 225  
KnownDevices Response 228  
KnownMessages Response 235

Notification Signal 241  
RequestForAuthentication Command 249  
RequestForAuthentication Response 249  
Follow up RequestForAuthentication Query 249  
RequestForAuthentication Response from Follow Up Query 249  
Resource Query about Paper 263  
Resource Response about Paper 263  
Resource Query about Employees 264  
Resource Response about Employees 264  
Resource Signal about Consumed Resources 265  
Resource Command: Single Resource is Available 269  
Resource Command: Multiple Resources are Available 269  
Resource Query for Consumables 274  
Resource Response about Consumables 274  
Resource Command for Changing Amount 274  
Resource Response for Changing Amount 274  
ResourcePull Command 277  
Status Signal 280  
Status Response to Query 289  
UpdateJDF Command 293  
AbortQueueEntry Command 308  
AbortQueueEntry Response 309  
SubmitQueueEntry Command with “file” Scheme 324  
SubmitQueueEntry Command with “http” Scheme 324  
SubmissionMethods Response 333  
Queue Element 334  
Custom Query 343  
Custom Response 343  
Custom Query for IfraTrack 344  
Custom Response for IfraTrack 344  
DieLayoutProduction: Single Shape and Two Sheet Sizes 357  
DieLayoutProduction: Single Shape and Range of Sheet Sizes 358  
DieLayoutProduction: Two Shapes and Range of Sheet Sizes 359  
Automated Imposition: MarkObject 368  
Imposition Template: Layout 369  
Output RunList (Surface) 370  
Automated Imposition: Ord Values 374  
RIPing 384  
Stripping: Simple Example 388  
Stripping: Complex Example 389  
Stitching: Combined Process 417  
EnumerationSpan 434  
Perfect Bound (Gathering) 511  
Saddle-Stitched Brochure (Collecting) 511  
Pseudo Code to Generate Page Count from SignatureCell Elements 522  
StrippingParams: Foldout Using FaceCells 525

BoxFoldingParams/BoxFoldAction 530  
Bundle: Boxing and Palletizing 537  
Color 555  
ColorantControl: Content-Ignorant MIS 555  
ColorantControl: Synchronized with Input 555  
ColorantControl: Synchronized with Input with Alias 556  
ColorantControl: with ColorantAlias/ReplacementColorantName 557  
ColorantControl: with Invalid ColorantAlias/ReplacementColorantName 557  
ColorantAlias/@RawName 563  
ContentList 596  
ContentList: Extended with ISBN, Author, etc. 597  
CylinderLayout 612  
CylinderLayout: Double-Spread-Page Plate 613  
Barcode 681  
PageCondition 725  
Layout: DynamicField Element 745  
Invalid MarkObject 746  
MarkObject 747  
RunList: Simple Multi-File Unseparated RunList 748  
RunList: Simple Multi-File Separated RunList 748  
OrdExpression 749  
DocOrd Usage 750  
LayoutElementProductionParams: Page Shape 755  
LayoutElementProductionParams: Label Shape 755  
LayoutElementProductionParams: Box Shape 756  
LayoutElementProductionParams: PositionObj 759  
LayoutElementProductionParams: Preflight 761  
LayoutPreparationParams: JDF for Figure 8-44 777  
LayoutPreparationParams: JDF for Figure 8-45 778  
LayoutShift 779  
Media: Corrugated 802  
Media: Self Adhesive 803  
Media: Flat Plate 803  
Media: Flexo Sleeve 803  
Test with InsideBox and a BoxArgument Subelement 837  
PRItem 841  
PrintCondition 851  
ProductionPath: on Path Level: 853  
ProductionPath: on Part Path Level: 853  
Filtering Parts of a **RunList** 872  
Marks and Reordering of Content using RunList/@IgnoreContext 881  
RunList: Unstructured Single-File RunList 883  
RunList: Multi-File Unseparated RunList 884  
RunList: Multi-File Unseparated RunList with Spawning 884  
RunList: Spawning RunList 884  
RunList: Multi-File Separated RunList 884

ShapeTemplate for Figure 8-55 893  
DisplayGroupPool 987  
FeaturePool 989  
ActionPool and TestPool 994  
KnownDevices Query for a Scanner 1005  
KnownDevices Response for a Scanner 1005  
KnownDevices Query for a Scanner #2 1008  
KnownDevices Response for a Scanner #2 1008  
JDF Accepted by Previous Scanner 1012  
JDF Rejected by Previous Scanner 1013  
Test for Existence of TrappedKey 1015  
Test for TrappedKey Equal to “Unknown” 1016  
Test with BoxToBoxDifference Element 1031  
ColorantAlias/@RawNames 1039  
ComChannel for Telephone 1051  
ComChannel for Instant Messaging 1051  
MetadataMap: Setting Attributes 1077  
RunList/MetadataMap 1077  
Response with Notification Element 1100  
Packaging of Individual JDF/JMF files in MIME 1105  
CID URL Scheme 1105  
MIME Multipart/Related 1106  
boolean 1111  
CMYKColor 1112  
date 1112  
dateTime 1112  
DateTimeRange 1112  
DateTimeRangeList 1113  
double 1113  
DoubleList 1113  
DoubleRange 1113  
DoubleRangeList 1114  
duration 1114  
DurationRange 1114  
DurationRangeList 1114  
gYearMonth 1115  
hexBinary 1115  
ID 1115  
IDREF 1115  
IDREFS 1116  
integer 1116  
IntegerList 1116  
IntegerRange 1117  
IntegerRangeList 1117  
LabColor 1117  
language 1117

languages 1118  
matrix 1118  
NameRange 1118  
NameRangeList 1118  
NMOKEN 1119  
NMOKENS 1119  
PDFPath 1119  
rectangle 1119  
RectangleRange 1120  
RectangleRangeList 1120  
regExp 1120  
shape 1120  
ShapeRange 1121  
ShapeRangeList 1121  
sRGBColor 1121  
string 1121  
TransferFunction 1122  
URI 1122  
URL 1122  
URL: UTF-8 1123  
URL: Windows Locale 1252 1123  
URL: Escaped Characters 1123  
XPath 1123  
XYPair 1123  
XYPairRange 1124  
XYPairRangeList 1124  
enumeration 1124  
enumerations 1124  
JDF Nodes: xsi:type 1129  
JDF XJDF Nodes: xsi:type (not in Default Namespace) 1130  
JMF XJMF: xsi:type 1130  
Milestone in JMF 1145  
@FileTemplate and @FileFormat 1174  
FileSpec #1 1250  
FileSpec #2 1250  
FileSpec #3 1250  
FileSpec #4 1251  
FileSpec #5 1251  
FileSpec #6 1251  
FileSpec #7 1251  
FileSpec #8 1252  
FileSpec #9 1252  
FileSpec #10 1252  
FileSpec #11 1253  
FileSpec #11.1 — No Partitioning 1253  
FileSpec #11.2 — Intermediate container Partitioned 1254

- FileSpec #11.3 — the pdf is Partitioned 1255
- FileSpec #11.3a — the pdf is Partitioned, Different File Layout 1256
- FileSpec #11.4 — Both Partitioned 1257
- FileSpec #12 1257
- Intent Job Ticket 1258
- Before Processing 1261
- After Processing 1262
- Product JDF XJDF 1263
- 2-Component JDF XJDF before Spawning 1265
- 2-Component JDF Parent after Spawning the Cover Node 1266
- 2-Component JDF Spawned Node 1267
- 2-Component JDF XJDF after Merging 1268
- Partitioned ImageSetting Node before Spawning 1269
- Spawned Cyan Partition of the ImageSetting Node 1269
- Root Partitioned ImageSetting Node after Spawning 1270
- Merged ImageSetting Node 1271
- RunList 1272
- KnownMessages Query 1274
- KnownMessages Response 1274
- Status Query 1275
- Status Response 1275
- Status Signal #1 1275
- Status Signal #2 1275
- Status Signal #3 1276
- Using Position 1283
- Multiple Bindery Signatures 1284
- Multisection Bindery Signatures 1285
- Multiple Job Parts in One Imposition 1286
- FoldOuts 1286
- Multiple Web Layout 1287
- Stripping Process 1289
- DigitalDelivery: Before the Delivery 1291
- DigitalDelivery: After the Delivery 1292
- Delivery and DigitalDelivery Processes 1292
- Full Example of Digital Delivery through Central Server 1295
- Algorithm for Processing an Imposition Template 1298
- Format of Variable Data Structured Content 1299
- Page Pools 1300
- Booklet Using Automated Imposition 1302
- Test Example for IN-190 Issue 1304
- Query with Subscription to All Events 1312
- Response for Subscription to All Events 1312
- KnownControllers Query 1314
- KnownControllers Response 1314
- RepeatMessages Response 1316
- Occupation Response 1321

Track Response 1323

Appendix S List of Examples



CIP4 THANKS ITS PARTNER LEVEL MEMBERS



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