Content Manager OnDemand for Multiplatforms
Version 8 Release 5

Installation and Configuration Guide

SC19-2939-00

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Note
Before using this information and the product it supports, read the information in "Notices" on page 409.

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This edition applies to Version 8 Release 5 of Content Manager OnDemand for Multiplatforms (product number 5724-J33) and to all subsequent releases and modifications until otherwise indicated in new editions.

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Contents

About this publication xiii
Who should use this publication xiii
How this publication is organized xiii
ibm.com and related resources xiii
Support and assistance xiii
Information Center xiii
PDF publications xiii
Accessibility information for OnDemand . . . xiv
How to send your comments xiv
What's new in Version 8.5 xiv

Part 1. Before you begin 1

Chapter 1. What you should know first . 3

Chapter 2. Choosing a configuration . . 5
Library server 5
Planning for capacity 5
Installation considerations for the library server . 6
LDAP server 6
Object server 6
Planning for capacity 6
Tivoli Storage Manager considerations for object servers 7

Part 2. Installing Content Manager OnDemand on AIX servers 9

Chapter 3. Checklist for installation on AIX 11

Chapter 4. AIX server requirements . . 17

Chapter 5. Saving configuration files on AIX 19
Content Manager OnDemand files. 19
Tivoli Storage Manager files 20

Chapter 6. Creating a user for the Content Manager OnDemand instance owner on AIX 21
Configuring the library server 21
Configuring an object server. 22

Chapter 7. Installing the database manager on AIX 23
Installing DB2 23
Installation notes 23
Configuration notes 23
Setting the DB2 operating environment 24
Installing Oracle 24
Configuration notes 25

Chapter 8. Installing and configuring Tivoli Storage Manager on AIX 27
Prerequisites 27
Procedure 28
Tivoli Storage Manager objects created during a typical installation 28
Defining the Tivoli Storage Manager server options 29
Defining the Tivoli Storage Manager client system options 29
Defining the Tivoli Storage Manager client options 30
Registering Tivoli Storage Manager licenses . . . 30
Registering Tivoli Storage Manager administrators 30
Defining other Tivoli Storage Manager server options 31
Starting, halting, and restarting Tivoli Storage Manager the server 31
Starting the server 31
Starting the Tivoli Storage Manager server command line interface 31
Halting the server 32
Restarting the server 32
Increasing Tivoli Storage Manager database and recovery log sizes 32
Defining a storage library 33
Define the library 33
Define the drives 33
Define the device class 33
Define the storage pool 34
Defining policy domains 34
Registering client nodes 35
Preparing storage pool volumes 36
Configuring Tivoli Storage Manager to maintain DB2 files 36
Defining server options 37
Defining client options 37
Defining storage objects 38
Registering the DB2 client node 40
Setting the client node password in DB2. . . . 40
Space requirements 41
Backup considerations 41
Defining a backup device for the Tivoli Storage Manager database 41
Defining a disk device class 41
Defining a tape device. 42
Backing up the Tivoli Storage Manager database and critical files 42
Backing up the database 43
Saving critical files 43
Protecting data with the data retention protection (DRP) protocol 44

Chapter 9. Installing the Content Manager OnDemand software on AIX . 47

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Installing optional Content Manager OnDemand software 48

Chapter 10. Configuring instances on AIX 49
Overview 49
Procedure 49
Specifying the instance in the ARS.INI file 50
Overview 50
Procedure 51
Specifying the ARS.CFG file for the instance . . . 52
Procedure 52
ARS_CODEPAGE 54
ARS_DB_ENGINE parameter 54
ARS_DB_IMPORT parameter 54
ARS_DB_PARTITION parameter 54
ARS_DB_TABLESPACE parameter. 55
ARS_DB_TABLESPACE_USEREXIT parameter. . 55
ARS_DB2_ARCHIVE_LOGPATH parameter . . 55
ARS_DB2_DATABASE_PATH parameter. . . . 55
ARS_DB2_LOG_NUMBER parameter. 56
ARS_DB2_LOGFILE_SIZE parameter 56
ARS_DB2_PRIMARY_LOGPATH parameter . . 56
ARS_DB2_TSM_CONFIG parameter 56
ARS_LANGUAGE parameter 57
ARS_LDAP_ALLOW_ANONYMOUS parameter 57
ARS_LDAP_BASE_DN parameter 57
ARS_LDAP_BIND_ATTRIBUTE parameter . . . 57
ARS_LDAP_BIND_DN parameter 57
ARS_LDAP_BIND_DN_PWD parameter. . . . 57
ARS_LDAP_BIND_MESSAGES_FILE parameter 57
ARS_LDAP_MAPPED_ATTRIBUTE parameter . 58
ARS_LDAP_PORT parameter 58
ARS_LDAP_SERVER parameter 58
ARS_LOCAL_SRVR parameter 58
ARS_MESSAGE_OF_THE_DAY parameter . . . 58
ARS_NUM_DBSRVR parameter 58
ARS_NUM_LICENSE parameter 59
ARS_ORACLE_HOME parameter 59
ARS_ORACLE_PASSWORD parameter 59
ARS_ORACLE_USERID parameter 60
ARS_PRINT_PATH parameter 60
ARS_SRVR parameter 60
ARS_STORAGE_MANAGER parameter 60
ARS_SUPPORT_CFSOD parameter 61
ARS_TMP parameter 61
DB_ENGINE parameter 61
DB2INSTANCE parameter 61
DSM_CONFIG parameter 61
DSM_DIR parameter 61
DSM_LOG parameter 61
DSMG_CONFIG parameter 62
DSMG_DIR parameter. 62
DSMG_LOG parameter 62
DSMI_CONFIG parameter 62
DSMI_DIR. 62
DSMI_LOG parameter. 62
DSMSERV_CONFIG parameter. 62
DSMSERV_DIR parameter 63
Specifying the ARS.DBFS file for the instance . . . 63
Overview 63
Procedure 63
Specifying the ARS.CACHE file for the instance . . 64
Procedure 64
The ARSLDAP.INI file 65

Chapter 11. Creating an instance of Content Manager OnDemand on AIX . . 67
Prerequisites 67
Procedure 67
Specifying permissions for the database directories 67
Procedure 68
Creating the instance 68
Overview 68
Procedure 68
Initializing the system logging facility 69
Initialize the system load logging facility 70
Initializing the system migration facility 70

Chapter 12. Automating instance operations on AIX 73
Starting the database 73
Starting the instance on the library server 73
Starting the instance on an object server 74
Starting the data loading programs 74
ARSJESD 74
ARSLOAD 75
Scheduling application group maintenance on the library server 76
Scheduling application group maintenance on an object server 77
Scheduling system table maintenance. 77
Scheduling the Content Manager OnDemand database backup. 77

Chapter 13. Your next step on AIX . . . 79

Part 3. Installing Content Manager OnDemand on HP-UX Itanium servers 81

Chapter 14. Checklist for installation on HP-UX Itanium 83

Chapter 15. HP-UX Itanium server requirements 89

Chapter 16. Saving configuration files on HP-UX Itanium 91
Content Manager OnDemand files. 91
Tivoli Storage Manager files 92

Chapter 17. Creating a user for the Content Manager OnDemand instance owner on HP-UX Itanium 93
Configuring the library server 93
Configuring an object server. 94

Chapter 18. Installing the database manager on HP-UX Itanium 95
Installing DB2 95
Installation notes 95
Configuration notes 96
Setting the DB2 operating environment 96
Installing Oracle 97
Configuration notes 97

Chapter 19. Installing and configuring Tivoli Storage Manager on HP-UX Itanium 99
Prerequisites 99
Procedure 100
Tivoli Storage Manager objects created during a typical installation 100
Defining the Tivoli Storage Manager server options 101
Defining the Tivoli Storage Manager client system options 101
Defining the Tivoli Storage Manager client options 102
Registering Tivoli Storage Manager licenses . . . 102
Registering Tivoli Storage Manager administrators 102
Defining other Tivoli Storage Manager server options 103
Starting, halting, and restarting Tivoli Storage Manager the server 103
Starting the server 103
Starting the Tivoli Storage Manager server command line interface 103
Halting the server 104
Restarting the server 104
Increasing Tivoli Storage Manager database and recovery log sizes 104
Defining a storage library 105
Define the library 105
Define the drives 105
Define the device class 105
Define the storage pool 106
Defining policy domains 106
Registering client nodes 107
Preparing storage pool volumes 108
Configuring Tivoli Storage Manager to maintain DB2 files 108
Defining server options 109
Defining client options 110
Defining storage objects 110
Registering the DB2 client node 112
Setting the client node password in DB2 . . . 112
Space requirements 113
Backup considerations 113
Defining a backup device for the Tivoli Storage Manager database 113
Defining a disk device class 113
Defining a tape device 114
Backing up the Tivoli Storage Manager database and critical files 115
Backing up the database 115
Saving critical files 115
Protecting data with the data retention protection (DRP) protocol 116

Chapter 20. Installing the Content Manager OnDemand software on HP-UX Itanium 119
Installing optional Content Manager OnDemand software 120

Chapter 21. Configuring instances on HP-UX Itanium 121
Overview. 121
Procedure 121
Specifying the instance in the ARS.INI file. . . . 122
Overview. 122
Procedure 123
Specifying the ARS.CFG file for the instance . . . 124
Procedure 124
ARS_CODEPAGE 126
ARS_DB_ENGINE parameter 126
ARS_DB_IMPORT parameter 126
ARS_DB_PARTITION parameter 126
ARS_DB_TABLESPACE parameter 127
ARS_DB_TABLESPACE_USEREXIT parameter 127
ARS_DB2_ARCHIVE_LOGPATH parameter . . 127
ARS_DB2_DATABASE_PATH parameter . . . 127
ARS_DB2_LOG_NUMBER parameter 128
ARS_DB2_LOGFILE_SIZE parameter 128
ARS_DB2_PRIMARY_LOGPATH parameter . . 128
ARS_DB2_TSM_CONFIG parameter. 128
ARS_LANGUAGE parameter 129
ARS_LDAP_ALLOW_ANONYMOUS parameter 129
ARS_LDAP_BASE_DN parameter 129
ARS_LDAP_BIND_ATTRIBUTE parameter . . 129
ARS_LDAP_BIND_DN parameter 129
ARS_LDAP_BIND_DN_PWD parameter . . . 129
ARS_LDAP_BIND_MESSAGES_FILE parameter 129
ARS_LDAP_MAPPED_ATTRIBUTE parameter 130
ARS_LDAP_PORT parameter 130
ARS_LDAP_SERVER parameter 130
ARS_LOCAL_SRVR parameter 130
ARS_MESSAGE_OF_THE_DAY parameter . . 130
ARS_NUM_DBSRVR parameter 130
ARS_NUM_LICENSE parameter 131
ARS_ORACLE_HOME parameter 131
ARS_ORACLE_PASSWORD parameter. . . . 131
ARS_ORACLE_USERID parameter 132
ARS_PRINT_PATH parameter. 132
ARS_SRVR parameter 132
ARS_STORAGE_MANAGER parameter . . . 132
ARS_SUPPORT_CFSOD parameter 133
ARS_TMP parameter 133
DB_ENGINE parameter 133
DB2INSTANCE parameter 133
DSM_CONFIG parameter 133
DSM_DIR parameter 133
DSM_LOG parameter 133
DSMG_CONFIG parameter. 134
DSMG_DIR parameter 134
DSMG_LOG parameter 134
DSMI_CONFIG parameter 134
DSMI_DIR 134
DSMI_LOG parameter 134

DSMSERV_CONFIG parameter 134
DSMSERV_DIR parameter 135
Specifying the ARS.DBFS file for the instance. . . 135
Overview. 135
Procedure 135
Specifying the ARS.CACHE file for the instance 136
Procedure 136
The ARSLDAP.INI file 137

Chapter 22. Creating an instance of Content Manager OnDemand on HP-UX Itanium 139
Prerequisites. 139
Procedure 139
Specifying permissions for the database directories 139
Procedure 139
Creating the instance 140
Overview. 140
Procedure 140
Initializing the system logging facility 141
Initialize the system load logging facility 142
Initializing the system migration facility 142

Chapter 23. Automating instance operations on HP-UX Itanium 145
Starting the database 145
Starting the instance on the library server 145
Starting the instance on an object server 146
Starting the data loading programs 146
ARSJESD 146
ARSLOAD 147
Scheduling application group maintenance on the library server 149
Scheduling application group maintenance on an object server. 149
Scheduling system table maintenance 149
Scheduling the Content Manager OnDemand database backup 150

Chapter 24. Your next step on HP-UX Itanium 151

Part 4. Installing Content Manager OnDemand on Solaris servers. . . 153

Chapter 25. Checklist for installation on Solaris 155

Chapter 26. Solaris server requirements 161

Chapter 27. Saving configuration files on Solaris 163
Content Manager OnDemand files 163
Tivoli Storage Manager files 164

Chapter 28. Creating a user for the Content Manager OnDemand instance owner on Solaris 165
Configuring the library server 165
Configuring an object server 166

Chapter 29. Installing the database manager on Solaris. 167
Installing DB2 167
Installation notes 167
Configuration notes 168
Setting the DB2 operating environment. . . . 168
Installing Oracle 169
Configuration notes 169

Chapter 30. Installing and configuring Tivoli Storage Manager on Solaris . . 171
Prerequisites. 171
Procedure 172
Tivoli Storage Manager objects created during a typical installation. 172
Defining the Tivoli Storage Manager server options 173
Defining the Tivoli Storage Manager server . . . 173
Defining the Tivoli Storage Manager client options 174
Registering Tivoli Storage Manager licenses . . . 174
Registering Tivoli Storage Manager administrators 174
Defining other Tivoli Storage Manager server options 175
Starting, halting, and restarting Tivoli Storage Manager the server 175
Starting the server. 175
Starting the Tivoli Storage Manager server command line interface 175
Halting the server 176
Restarting the server 176
Increasing Tivoli Storage Manager database and recovery log sizes 176
Defining a storage library 177
Define the library 177
Define the drives 177
Define the device class 177
Define the storage pool 178
Defining policy domains 178
Registering client nodes 179
Preparing storage pool volumes 180
Configuring Tivoli Storage Manager to maintain DB2 files 180
Defining server options 181
Defining client options 182
Defining storage objects 182
Registering the DB2 client node 184
Setting the client node password in DB2 . . . 184
Space requirements 185
Backup considerations 185
Defining a backup device for the Tivoli Storage Manager database 185
Defining a disk device class 185
Defining a tape device 186
Backing up the Tivoli Storage Manager database and critical files 187

Backing up the database 187
Saving critical files 187
Protecting data with the data retention protection (DRP) protocol 188

Chapter 31. Installing the Content Manager OnDemand software on Solaris 191
Installing optional Content Manager OnDemand software 192

Chapter 32. Configuring instances on Solaris 193
Overview. 193
Procedure 193
Specifying the instance in the ARS.INI file. . . . 194
Overview. 194
Procedure 195
Specifying the ARS.CFG file for the instance . . . 196
Procedure 196
ARS_CODEPAGE 198
ARS_DB_ENGINE parameter 198
ARS_DB_IMPORT parameter 198
ARS_DB_PARTITION parameter 198
ARS_DB_TABLESPACE parameter 199
ARS_DB_TABLESPACE_USEREXIT parameter 199
ARS_DB2_ARCHIVE_LOGPATH parameter . . 199
ARS_DB2_DATABASE_PATH parameter . . . 199
ARS_DB2_LOG_NUMBER parameter 200
ARS_DB2_LOGFILE_SIZE parameter 200
ARS_DB2_PRIMARY_LOGPATH parameter . . 200
ARS_DB2_TSM_CONFIG parameter. 200
ARS_LANGUAGE parameter 201
ARS_LDAP_ALLOW_ANONYMOUS parameter 201
ARS_LDAP_BASE_DN parameter 201
ARS_LDAP_BIND_ATTRIBUTE parameter . . 201
ARS_LDAP_BIND_DN parameter 201
ARS_LDAP_BIND_DN_PWD parameter . . . 201
ARS_LDAP_BIND_MESSAGES_FILE parameter 201
ARS_LDAP_MAPPED_ATTRIBUTE parameter 202
ARS_LDAP_PORT parameter 202
ARS_LDAP_SERVER parameter 202
ARS_LOCAL_SRVR parameter 202
ARS_MESSAGE_OF_THE_DAY parameter . . 202
ARS_NUM_DBSRVR parameter 202
ARS_NUM_LICENSE parameter 203
ARS_ORACLE_HOME parameter 203
ARS_ORACLE_PASSWORD parameter. . . . 203
ARS_ORACLE_USERID parameter 204
ARS_PRINT_PATH parameter. 204
ARS_SRVR parameter 204
ARS_STORAGE_MANAGER parameter . . . 204
ARS_SUPPORT_CFSOD parameter 205
ARS_TMP parameter. 205
DB_ENGINE parameter 205
DB2INSTANCE parameter 205
DSM_CONFIG parameter 205
DSM_DIR parameter 205
DSM_LOG parameter 205
DSMG_CONFIG parameter. 206
DSMG_DIR parameter 206
DSMG_LOG parameter 206
DSMI_CONFIG parameter 206
DSMI_DIR 206
DSMI_LOG parameter 206
DSMSERV_CONFIG parameter 206
DSMSERV_DIR parameter 207
Specifying the ARS.DBFS file for the instance. . . 207
Overview. 207
Procedure 207
Specifying the ARS.CACHE file for the instance 208
Procedure 208
The ARSLDAP.INI file 209

Chapter 33. Creating an instance of Content Manager OnDemand on Solaris 211
Prerequisites. 211
Procedure 211
Specifying permissions for the database directories 211
Procedure 211
Creating the instance 212
Overview. 212
Procedure 212
Initializing the system logging facility 213
Initialize the system load logging facility 214
Initializing the system migration facility 214

Chapter 34. Automating instance operations on Solaris 217
Starting the database 217
Starting the instance on the library server 217
Starting the instance on an object server 218
Starting the data loading programs 218
ARSJESD 218
ARSLOAD 219
Scheduling application group maintenance on the library server 220
Scheduling application group maintenance on an object server. 221
Scheduling system table maintenance 221
Scheduling the Content Manager OnDemand database backup 221

Chapter 35. Your next step on Solaris 223

Part 5. Installing Content Manager OnDemand on Linux servers . . . 225

Chapter 36. Checklist for installation on Linux 227

Chapter 37. Linux server requirements 233

Chapter 38. Saving configuration files on Linux 235
Content Manager OnDemand files 235
Tivoli Storage Manager files 236

Chapter 39. Creating a user for the Content Manager OnDemand instance owner on Linux 237
Configuring the library server 237
Configuring an object server 238

Chapter 40. Installing the database manager on Linux 239
Installing DB2 239
Installation notes 239
Configuration notes 240
Setting the DB2 operating environment 240
Installing Oracle 241
Configuration notes 241

Chapter 41. Installing and configuring Tivoli Storage Manager on Linux . . . 243
Prerequisites 243
Procedure 244
Tivoli Storage Manager objects created during a typical installation 244
Defining the Tivoli Storage Manager server options 245
Defining the Tivoli Storage Manager server . . . 245
Defining the Tivoli Storage Manager client options 246
Registering Tivoli Storage Manager licenses . . . 246
Registering Tivoli Storage Manager administrators 246
Defining other Tivoli Storage Manager server options 247
Starting, halting, and restarting Tivoli Storage Manager the server 247
Starting the server 247
Starting the Tivoli Storage Manager server command line interface 247
Halting the server 248
Restarting the server 248
Increasing Tivoli Storage Manager database and recovery log sizes 248
Defining a storage library 249
Define the library 249
Define the drives 249
Define the device class 249
Define the storage pool 250
Defining policy domains 250
Registering client nodes 251
Preparing storage pool volumes 252
Configuring Tivoli Storage Manager to maintain DB2 files 252
Defining server options 253
Defining client options 254
Defining storage objects 254
Registering the DB2 client node 256
Setting the client node password in DB2 . . . 256
Space requirements 257
Backup considerations 257
Defining a backup device for the Tivoli Storage Manager database 257
Defining a disk device class 257
Defining a tape device 258
Backing up the Tivoli Storage Manager database and critical files 259
Backing up the database 259
Saving critical files 259
Protecting data with the data retention protection (DRP) protocol 260

Chapter 42. Installing the Content Manager OnDemand software on Linux 263
Installing optional Content Manager OnDemand software 264

Chapter 43. Configuring instances on Linux 265
Overview 265
Procedure 265
Specifying the instance in the ARS.INI file 266
Overview 266
Procedure 267
Specifying the ARS.CFG file for the instance . . . 268
Procedure 268
ARS_CODEPAGE 269
ARS_DB_ENGINE parameter 270
ARS_DB_IMPORT parameter 270
ARS_DB_PARTITION parameter 270
ARS_DB_TABLESPACE parameter 271
ARS_DB_TABLESPACE_USEREXIT parameter 271
ARS_DB2_ARCHIVE_LOGPATH parameter . . 271
ARS_DB2_DATABASE_PATH parameter . . . 271
ARS_DB2_LOG_NUMBER parameter 272
ARS_DB2_LOGFILE_SIZE parameter 272
ARS_DB2_PRIMARY_LOGPATH parameter . . 272
ARS_DB2_TSM_CONFIG parameter 272
ARS_LANGUAGE parameter 273
ARS_LDAP_ALLOW_ANONYMOUS parameter 273
ARS_LDAP_BASE_DN parameter 273
ARS_LDAP_BIND_ATTRIBUTE parameter . . 273
ARS_LDAP_BIND_DN parameter 273
ARS_LDAP_BIND_DN_PWD parameter . . . 273
ARS_LDAP_BIND_MESSAGES_FILE parameter 273
ARS_LDAP_MAPPED_ATTRIBUTE parameter 274
ARS_LDAP_PORT parameter 274
ARS_LDAP_SERVER parameter 274
ARS_LOCAL_SRVR parameter 274
ARS_MESSAGE_OF_THE_DAY parameter . . 274
ARS_NUM_DBSRVR parameter 274
ARS_NUM_LICENSE parameter 275
ARS_PRINT_PATH parameter 275
ARS_SRVR parameter 275
ARS_STORAGE_MANAGER parameter . . . 276
ARS_SUPPORT_CFSOD parameter 276
ARS_TMP parameter 276
DB_ENGINE parameter 276
DB2INSTANCE parameter 276
DSM_CONFIG parameter 277
DSM_DIR parameter 277
DSM_LOG parameter 277
DSMG_CONFIG parameter 277
DSMG_DIR parameter 277
DSMG_LOG parameter 277
DSMI_CONFIG parameter 277

DSMI_DIR 278
DSMI_LOG parameter 278
DSMSERV_CONFIG parameter 278
DSMSERV_DIR parameter 278
Specifying the ARS.DBFS file for the instance. . . 278
Overview. 278
Procedure 279
Specifying the ARS.CACHE file for the instance 279
Procedure 280
The ARSLDAP.INI file 280

Chapter 44. Creating an instance of Content Manager OnDemand on Linux 283
Prerequisites. 283
Procedure 283
Specifying permissions for the database directories 283
Procedure 284
Creating the instance 284
Overview. 284
Procedure 284
Initializing the system logging facility 285
Initialize the system load logging facility 286
Initializing the system migration facility 286

Chapter 45. Automating instance operations on Linux 289
Starting the database 289
Starting the instance on the library server 289
Starting the instance on an object server 290
Starting the data loading programs 290
ARSJESD 290
ARSLOAD 291
Scheduling application group maintenance on the library server 292
Scheduling application group maintenance on an object server. 293
Scheduling system table maintenance 293
Scheduling the Content Manager OnDemand database backup 293

Chapter 46. Your next step on Linux 295

Part 6. Installing Content Manager OnDemand on Windows servers. . 297

Chapter 47. Checklist for installation on Windows 299

Chapter 48. Windows server requirements 305

Chapter 49. Accounts and userids on Windows 307
Content Manager OnDemand system administrator account 307
Unified login for user accounts 307
How a user is authenticated 307
How to prepare for unified login 308
Operational notes 308

Chapter 50. Installing the database manager on Windows 309
Installing DB2 309
Installing Oracle 309
Configuration notes 310
Installing SQL Server 311

Chapter 51. Installing and configuring Tivoli Storage Manager on Windows . 313
Prerequisites. 313
Tivoli Storage Manager objects created during a typical installation. 314
Performing initial configuration 314
Defining the environment 315
Configuring performance 315
Configuring services 315
Registering licenses 315
Adding devices. 316
Configuring volumes. 316
Adding client nodes 316
Updating the configuration. 317
Defining server options 317
Defining client options 317
Registering the Content Manager OnDemand administrator 318
Updating the client node 318
Setting the retention period for the activity log 318
Updating device classes 318
Updating storage pools 319
Updating policy information 319
Preparing media 320
Configuring Tivoli Storage Manager to manage DB2 files 321
Configuring the client options. 321
Defining the storage objects 321
Registering the DB2 client node 323
Setting the client node password in DB2 . . . 323
Space requirements 324
Backup considerations 324
Backing up Tivoli Storage Manager information 324
Backing up the database. 325
Saving critical files 325
Protecting data with the data retention protection (DRP) protocol 326
Configuring the Content Manager OnDemand server 328

Chapter 52. Installing the Content Manager OnDemand software on Windows 329
Installing optional Content Manager OnDemand software 329

Chapter 53. Configuring instances on Windows 331
Getting started 331
Important things to remember. 332

Defining a server 333
Defining an instance 333
Specifying properties of an instance 333
Server Type 333
Language. 334
Directory 334
Database 335
Storage 336
Creating an instance 336
Installing services 336
Creating and initializing the database 336
DB2 and SQL Server 336
Oracle 337
Advanced configuration 337
Configuring services 337
Configuring scheduled tasks 338
Managing servers 339
Running more than one instance on a workstation 339
Configuring LDAP 340
The ARSLDAP.INI file 340
Manually creating and initializing the database . . 341
Creating the database 341
Initializing the system log 341
Initializing system migration 342
Initializing the system load logging facility . . 342

Chapter 54. Your next step on Windows 345

Part 7. Preparing the system for use 347

Chapter 55. Verifying the installation 349

Chapter 56. Defining storage sets . . 351

Chapter 57. Configuring the System Log application group 353
Maintaining system log data in archive storage . . 353
Maintaining system log data in cache storage. . . 354
Storing system log data in table spaces 355

Chapter 58. Configuring the System Load application group 357
Maintaining system load data in archive storage 357
Maintaining system load data in cache storage . . 358
Storing system load data in table spaces 359

Chapter 59. Configuring the System Migration application group 361
Assigning the System Migration application group to a storage set 361
Storing system migration data in table spaces . . 362

Chapter 60. Backing up the Content Manager OnDemand database 363

Appendix A. Silently installing Content Manager OnDemand 365

Appendix B. Uninstalling Content Manager OnDemand 367

Appendix C. User exit programming 369

Appendix D. Download user exit . . . 371
Overview. 371
Using Download 371
Invoking the Download user exit 372
Sample Download user exit program 372
ARSJESD processing 372
Sample user exit program 373

Appendix E. Report specifications archive definition exit 377
Interface exit components 377
ARSUUPTD DLL 377
Format 378
General description 378
Returned values 381

Appendix F. Retrieval preview user exit 383
Programming considerations 383
Returned values 384

Appendix G. Security user exit 385
Sample security user exit program 385

Appendix H. System log user exit . . 389
Sample ARSLOG user exit script for UNIX . . . 392
Sample ARSLOG user exit batch file for Windows 392

Appendix I. Table space creation exit 393
Interface exit components 393
Format 393
General description 393
Returned values 395

Appendix J. National Language Support 397
Conversion between different code pages 397
When does character conversion occur? . . . 397
Character mapping 398
How does Content Manager OnDemand determine code page values? 398
Configuring your system for NLS 399
Language settings 399
Creating the database 402
Mapping AFP fonts 403
Creating application groups 404
Creating applications 404
Data Type 405
Indexing considerations 405

Logical Views 406
Running Content Manager OnDemand programs 407
Character data conversion tables 407
Troubleshooting incorrect NLS characters 407

Notices 409

Trademarks 411

Bibliography 413

Index 415

About this publication

The IBM Content Manager OnDemand for Multiplatforms: Installation and Configuration Guide explains how to install and configure IBM Content Manager OnDemand for Multiplatforms (OnDemand) Version 8 Release 5.

Who should use this publication

The *IBM Content Manager OnDemand for Multiplatforms: Installation and Configuration Guide* is intended for Content Manager OnDemand system administrators, planners, and programmers, for database administrators who support the databases that Content Manager OnDemand uses, and for storage administrators who support the archive storage devices that Content Manager OnDemand uses.

How this publication is organized

The *IBM Content Manager OnDemand for Multiplatforms: Installation and Configuration Guide* provides instructions for installing and configuring IBM Content Manager OnDemand for Multiplatforms on AIX®, HP-UX Itanium, Solaris, Linux®, and Windows® servers. The publication is divided into separate sections for each platform, and each section contains complete installation instructions. The *Before you begin* and *Preparing the system for use* parts are common to all platforms. The appendixes, except as indicated, are also common to all operating systems.

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Accessibility information for OnDemand

For complete information about accessibility features that are supported by this product, see your Content Manager OnDemand *Administration Guide*.

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Be sure to include the name of the product, the version number of the product, and the name of the book. If you are commenting on specific text, please include the location of the text (for example, a chapter and section title, a table number, a page number, or a help topic title).

If you would like to help IBM make IBM Content Manager OnDemand for Multiplatforms easier to use, take the consumability survey at http://www.ibm.com/software/data/info/consumability-survey/.

What's new in Version 8.5

Lightweight Directory Access Protocol (LDAP) Secure Sockets Layer (SSL) support
You can now use LDAP with SSL.

Report Distribution enhancements
IBM Content Manager OnDemand Report Distribution for Multiplatforms has been enhanced to allow support for additional data type conversion engines, that is, from line data to PDF.

Enhanced reporting and analysis for managing the Content Manager OnDemand system
Content Manager OnDemand now provides ability to analyze system log data and generate daily activity reports.

Improved capability and productivity for indexing PDF data into Content Manager OnDemand
You can now index PDF documents using metadata values contained within the PDF document.

Expanded security capabilities to better comply with Federal Information Processing Standards (FIPS 140-2)
Content Manager OnDemand has added additional security to better comply with FIPS 140-2.

Additional language support
The Content Manager OnDemand server and ODWEK installation programs are translated into 9 additional languages. The Content Manager OnDemand client installation program is translated into 22 additional languages. The Content Manager OnDemand Configurator is translated into 9 additional languages.

HP-UX Itanium support for DB2 and Oracle databases
Content Manager OnDemand now supports HP-UX Itanium for DB2 and Oracle databases.

ARSXML system administration performance improvement
Performance improvements have been made to the ARSXML system administration command.

Install Anywhere replacing ISMP for servers
InstallAnywhere 2009 SP1 has replaced InstallShield Multiplatform (ISMP) as the installer engine for Content Manager OnDemand server and ODWEK on Windows and Unix platforms.

Part 1. Before you begin

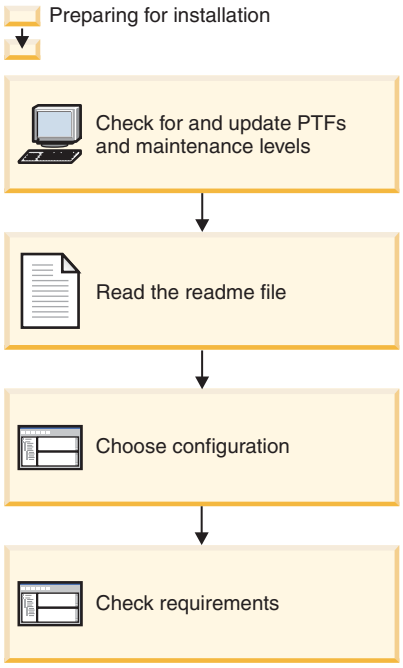

Figure 1. Pre-installation tasks

This section contains important information that is common to all Content Manager OnDemand for Multiplatforms installations. You will find specific information about your platform in the section devoted to it.

You should review the following topics:

- For hardware and software requirements, see http://www.ibm.com/support/docview.wss?rs=129&uid=swg27016455 or search for 7016455 at http://www.ibm.com/.
- For disk storage requirements see the *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide*.

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Chapter 1. What you should know first

Before using the *IBM Content Manager OnDemand for Multiplatforms: Installation and Configuration Guide* and installing and configuring your Content Manager OnDemand system, you should be familiar with:

- Administering the server operating system you plan to install IBM Content Manager OnDemand for Multiplatforms on.
- The networking protocols that will be required for clients and servers to communicate.
- The devices and file systems that will be available to Content Manager OnDemand. Before you begin the installation, you must identify the devices and file systems that will be used for program files, the database, data downloaded from other systems, data indexing and loading, cache storage, temporary storage, and so forth. You must prepare the storage volumes and configure them to support the different components of the system.
- The database management product that you will be using with Content Manager OnDemand. Most customers should have an experienced database administrator available to help with the installation, configuration, and operation of the system.
- (Optional) The devices that will be available to Tivoli® Storage Manager. If you plan to use Tivoli Storage Manager to maintain OnDemand data, you must install and configure the devices that will be used by Tivoli Storage Manager. This publication describes additional configuration required by the Content Manager OnDemand system.
- The operational requirements for the system. For example, you might need to configure maintenance tasks to run automatically on a regular schedule and you need to know what type of database backups should be taken and when.

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Chapter 2. Choosing a configuration

Before you install Content Manager OnDemand, you should learn about the Content Manager OnDemand system configuration and the various components that make up the system. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* provides details about the system configuration and the required and optional components for each type of server. You should also print and read the README file from the Content Manager OnDemand product CD-ROM. After you have that information, you can choose the components that you need to install and prepare to install the components by setting up your environment. Setting up your environment consists of two tasks:

1. Planning for sufficient performance and capacity.
2. Installing the platform-specific prerequisites.

Content Manager OnDemand supports several types of system configurations. However, most customers install the standard library/object server system. A standard library/object server system is a single workstation that includes a complete Content Manager OnDemand system and performs both the library server and object server functions.

In a production environment, you should dedicate each workstation to Content Manager OnDemand work and processes. That is, you should not run other applications on a workstation with an Content Manager OnDemand library or object server.

Library server

The Content Manager OnDemand library server uses a relational database manager to manage objects and provide data integrity by maintaining index information and controlling access to objects stored on one or more object servers. Library servers run on AIX, HP-UX Itanium, Solaris, Linux, and Windows servers, and can use IBM DB2 Universal Database™, Microsoft® SQL Server (on Windows servers), or Oracle to manage the library contents. An Content Manager OnDemand system has one library server.

The library server directs requests from clients to query, retrieve, and print items in the database, which contains object indexes and other information. The library server routes requests to the appropriate object server to store, retrieve, and delete objects.

Planning for capacity

The library server workstation is primarily a database machine. It builds search requests and transmits the results of searches to the client. In addition to reserving disk space for prerequisite software and the Content Manager OnDemand program files, you must allocate storage for the database as it grows. Physically separating program directories, the database, and log file directories will improve performance and the time it takes to recover from problems.

Library server machines have high input/output workloads, and they need a powerful processor to accommodate concurrent requests from multiple users.

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Because the database lies at the core of the library server, good database administration is crucial to the efficient operation of the Content Manager OnDemand system.

Installation considerations for the library server

When you create an Content Manager OnDemand instance[1], you specify a single language. For example, on AIX, the default locale is `en_US`, the default code page is `819`, and the default code set is `ISO8859-1`. If you need to change these values, then you must do so before you create the instance. The specific values vary by platform. See Appendix J, "National Language Support," on page 397 for more information.

LDAP server

The Content Manager OnDemand library server supports the following LDAP servers:

Note: The first three LDAP servers in this list support anonymous bind. The Microsoft ADAM and AD servers do not

- Novell eDirectory Version 8.8 SP2
- Sun Java System Directory Server Enterprise Edition 6.3
- IBM Tivoli Directory server (TDS)
- Microsoft Active Directory Application Mode (ADAM) server
- Microsoft Active Directory (AD)

Object server

Content Manager OnDemand stores and retrieves objects that reside on an object server through requests routed by the library server. An object server is the repository for objects stored on the system. The object server manages storage resources that are defined through the Content Manager OnDemand administrative programs. The object server supports attachment of disk and storage managed by Tivoli Storage Manager devices. An Content Manager OnDemand system can have many object servers distributed across networks to provide convenient user access. Object servers run on AIX, HP-UX Itanium, Solaris, Linux, and Windows servers.

Object servers work with the Content Manager OnDemand administrative programs to efficiently manage storage resources. This allows the Content Manager OnDemand administrator to specify how long documents reside on one media type before migrating them to another and how long Content Manager OnDemand maintains documents on the system.

Planning for capacity

To plan the capacity requirements for storing documents in your environment, you must consider a number of factors:

- Prerequisite software and Content Manager OnDemand program files
- Staging areas for data download and indexing data
- Temporary spaces for loading and printing
- Cache (short-term) storage for documents

1. An Content Manager OnDemand instance is a logical Content Manager OnDemand server environment, with one library server (and database) and one or more object servers. Each Content Manager OnDemand instance (the servers and the database) must run in a single code page.

- Archive (long-term) storage for documents

The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* provides details, examples, and worksheets to help you estimate the amount of storage needed to support your environment.

Physically separating program directories, staging areas, temporary spaces, cache storage, and archive storage will improve performance and the time it takes to recover from problems.

Tivoli Storage Manager considerations for object servers

Content Manager OnDemand uses Tivoli Storage Manager to maintain object storage on media other than fixed disks. To store the primary copy of a document, the object server writes to Tivoli Storage Manager using a Tivoli Storage Manager archive copy group. Because there is no need for multiple generations of the object server's objects, IBM recommends that you set the maximum number of backup copies to one. You can choose to maintain more than one copy of data in a storage pool. However, you must define the backup copy to Tivoli Storage Manager and define a schedule to automate the backup copy. Physically separating the primary copy and backup copy can improve the time it takes to recover from problems.

Part 2. Installing Content Manager OnDemand on AIX servers

This part of the *IBM Content Manager OnDemand for Multiplatforms: Installation and Configuration Guide* explains how to install and configure Content Manager OnDemand on an AIX server and how to install and configure related software to work with Content Manager OnDemand. There are five basic phases to the installation, which are illustrated in Figure 2:

- Preparing for the installation
- Installing and configuring Content Manager OnDemand and related software
- Verifying the installation
- Preparing the system for use
- Adding optional software

You will find checklists for each of these phases in Chapter 3, "Checklist for installation on AIX," on page 11.

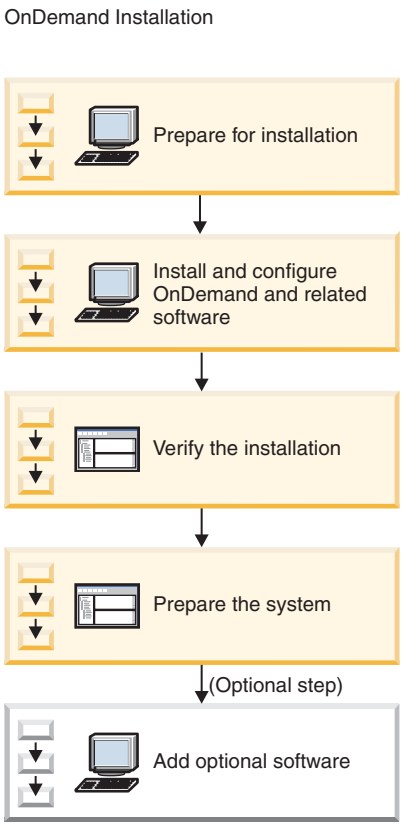

Figure 2. Installing Content Manager OnDemand on an AIX server

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Chapter 3. Checklist for installation on AIX

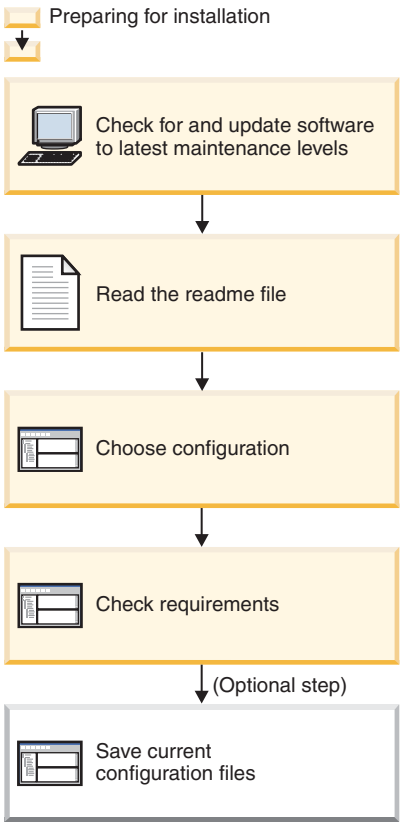

Figure 3. Pre-installation tasks

Before beginning the installation, you should complete the following tasks:

__ 1. Contact the IBM Support Center for the latest maintenance levels of DB2, Content Manager OnDemand, and optionally, Tivoli Storage Manager and IBM Infoprint Manager (Infoprint). If you are using Oracle instead of DB2, contact Oracle for information about the latest maintenance level of Oracle.

__ 2. Obtain a copy of the latest Content Manager OnDemand README file. Print and read the entire file before you begin.

__ 3. Check the Content Manager OnDemand prerequisites and verify the required and optional hardware and software products (see Chapter 4, "AIX server requirements," on page 17).

__ 4. Check the hardware and software requirements for all system components and features. See http://www.ibm.com/support/docview.wss?rs=129 &uid=swg27016455 or search for 7016455 at http://www.ibm.com/.

__ 5. Determine the type of system configuration that you need to install (see Chapter 2, "Choosing a configuration," on page 5).

__ 6. If you are upgrading to a new release of Content Manager OnDemand, save the configuration files used by the system (see Chapter 5, "Saving configuration files on AIX," on page 19).

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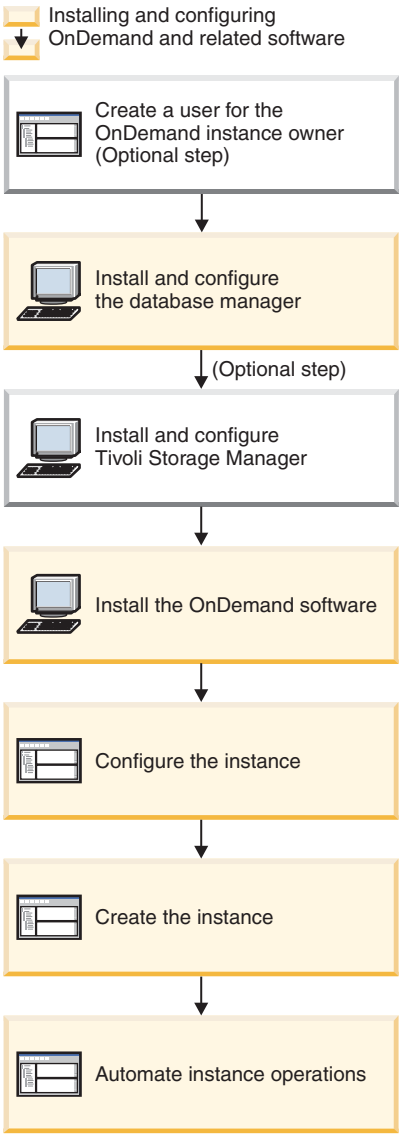

Figure 4. Installing Content Manager OnDemand and related software

Configuring an Content Manager OnDemand system typically requires that you do the following:

__ 1. (Optional) Create a user account for the Content Manager OnDemand instance owner (see Chapter 6, "Creating a user for the Content Manager OnDemand instance owner on AIX," on page 21).

__ 2. Install and configure the database manager product on the library server (see Chapter 7, "Installing the database manager on AIX," on page 23).

__ 3. If you plan to maintain data in archive storage, install and configure Tivoli Storage Manager on the library server or on each object server that will be used to maintain data in archive storage (see Chapter 8, "Installing and configuring Tivoli Storage Manager on AIX," on page 27).

__ 4. Install the Content Manager OnDemand software on each workstation that is part of the Content Manager OnDemand system (see Chapter 9, "Installing the Content Manager OnDemand software on AIX," on page 47).

__ 5. Configure an instance of Content Manager OnDemand on each workstation that is part of the Content Manager OnDemand system (see Chapter 10, “Configuring instances on AIX,” on page 49). This step includes the following:

   __ a. Specify the instance in the ARS.INI file (see “Specifying the instance in the ARS.INI file” on page 50)

   __ b. Specify the ARS.CFG file for the instance (see “Specifying the ARS.CFG file for the instance” on page 52)

   __ c. Specify the ARS.DBFS file for the instance (see “Specifying the ARS.DBFS file for the instance” on page 63)

   __ d. Specify the ARS.CACHE file for the instance (see “Specifying the ARS.CACHE file for the instance” on page 64)

__ 6. Create the instance of Content Manager OnDemand (see Chapter 11, “Creating an instance of Content Manager OnDemand on AIX,” on page 67). This step includes the following:

   __ a. Specify permissions for the database directories (see “Specifying permissions for the database directories” on page 67)

   __ b. Create the instance by running the ARSDB program (see “Creating the instance” on page 68)

   __ c. Initialize the system logging facility by running the ARSSYSCR program (see “Initializing the system logging facility” on page 69)

   __ d. (Optional) Initialize the system migration facility by running the ARSSYSCR program (see “Initializing the system migration facility” on page 70)

__ 7. Automate instance operations (see Chapter 12, “Automating instance operations on AIX,” on page 73). This step includes the following:

   __ a. Start the database on the library server (see “Starting the database” on page 73)

   __ b. Start the instance on the library server (see “Starting the instance on the library server” on page 73)

   __ c. Start the instance on an object server (see “Starting the instance on an object server” on page 74)

   __ d. Start the data loading programs (see “Starting the data loading programs” on page 74)

   __ e. Schedule application group maintenance on the library server (see “Scheduling application group maintenance on the library server” on page 76)

   __ f. Schedule application group maintenance on an object server (see “Scheduling application group maintenance on an object server” on page 77)

   __ g. Schedule system table maintenance (see “Scheduling system table maintenance” on page 77)

   __ h. Schedule a backup of the Content Manager OnDemand database (see “Scheduling the Content Manager OnDemand database backup” on page 77)

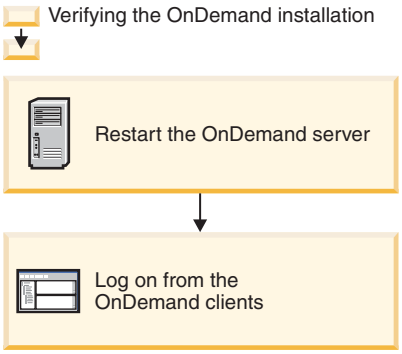

Figure 5. Verifying the installation

Verify the installation of Content Manager OnDemand (see Chapter 55, "Verifying the installation," on page 349):

__ 1. After installing and configuring each Content Manager OnDemand server, restart the system. The operating system reinitializes and starts the services required by Content Manager OnDemand.

__ 2. Log on to the library server with an Content Manager OnDemand client program. To access the system, you must install at least one of the Content Manager OnDemand client programs on a PC running Microsoft Windows. See *IBM Content Manager OnDemand: Client Installation Guide* for installation information about the Content Manager OnDemand client. See *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for installation information about the Content Manager OnDemand administrative client.

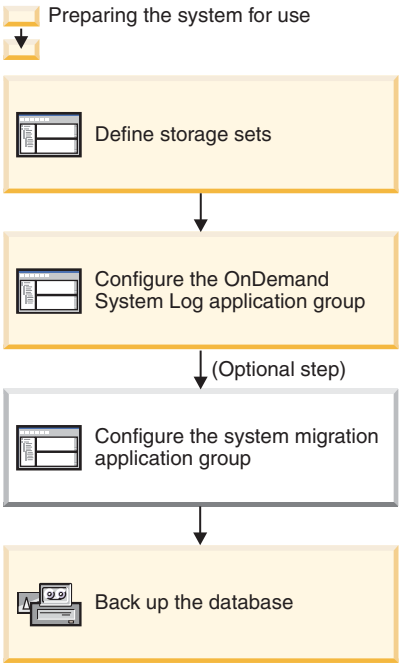

Figure 6. Preparing the system for use

Prepare the system for use:

__ 1. Define storage sets (see Chapter 56, "Defining storage sets," on page 351). Before you add application groups or load data into the system, you must define storage sets.

__ 2. Configure the System Log application group (see Chapter 57, “Configuring the System Log application group,” on page 353). Before you define reports to the system, load data, or let users access the system, you should configure the System Log application group.

__ 3. **Optional** Configure the System Load application group as described in Chapter 58, “Configuring the System Load application group,” on page 357.

__ 4. If you plan to migrate index data to archive storage, configure the System Migration application group (see Chapter 59, “Configuring the System Migration application group,” on page 361).

__ 5. Back up the databases (see Chapter 60, “Backing up the Content Manager OnDemand database,” on page 363 and “Backing up the Tivoli Storage Manager database and critical files” on page 42). After configuring the system, you should create a full backup image of the Content Manager OnDemand database and the Tivoli Storage Manager database.

Installing and configuring optional software:

1. If you plan to use Download for the z/OS feature (Download) to transmit data from z/OS systems to Content Manager OnDemand servers, you must install and configure Download. Follow the instructions in *PSF for z/OS: Download for z/OS* to plan, install, configure, and verify the installation of the Download software. Then configure Download on each Content Manager OnDemand server. Complete the following tasks:
   __ a. Obtain a copy of *PSF for z/OS: Download for z/OS*.
   __ b. Check the prerequisites and verify the z/OS and TCP/IP software levels for Download.
   __ c. Install and configure the Download software.
   __ d. Configure Download on each Content Manager OnDemand server that will receive datasets from an z/OS system. (see “Starting the data loading programs” on page 74).
2. If you plan to reprint documents using the Content Manager OnDemand server print function, you must install Infoprint on a workstation that belongs to the same network as the Content Manager OnDemand library server. Follow the instructions in the Infoprint documentation for your operating system to plan, install, configure, and verify the installation of the Infoprint software. Then configure the server print function on the library server. Complete the following tasks:
   __ a. Obtain a copy of the Infoprint documentation for the server operating system.
   __ b. Install and configure Infoprint.
   __ c. Verify that all of the resources and fonts that your organization requires to reprint the reports that you plan to store in Content Manager OnDemand are installed on the Infoprint server.
   __ d. Define the print queues and devices that Infoprint uses to manage the Content Manager OnDemand server print environment.
   __ e. Obtain the TCP/IP host name or IP address of the Infoprint server.
   __ f. On the library server, edit the ARSPRT file and insert the host name or IP address of the Infoprint server. The ARSPRT file can be found in the `/usr/lpp/ars/bin` directory.
   __ g. Define a server printer on the Content Manager OnDemand library server with the administrative client.
3. If you need to customize and enhance the standard functionality within the product, see the user exit documentation in the Appendix of this publication. A

user exit is a point during processing that enables you to run a user-written program and return control of processing after your user-written program ends. OnDemand provides the following user exit points:

__ a. Download user exit

__ b. Report specifications archive definition user exit

__ c. Retrieval preview user exit

__ d. Security user exit

__ e. System log user exit

__ f. Table space creation user exit

Chapter 4. AIX server requirements

The exact hardware and software configuration that you need for Content Manager OnDemand to support your organization depends on the volume of data that you plan to maintain on the system, the number of concurrent users that the system must support, the backup and recovery requirements of your organization, and the performance levels that the system must meet. At a minimum, you need one processor for a standard Content Manager OnDemand library/object server.

For all AIX server requirements, see http://www.ibm.com/support/docview.wss?rs=129&uid=swg27016455 or search for 7016455 at http://www.ibm.com/.

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Chapter 5. Saving configuration files on AIX

When you install software on an Content Manager OnDemand server, the installation programs copy program files, configuration files, and other types of files from the distribution media to directories on the server. When you configure a server to meet the specific requirements of your environment, you make changes to configuration files and you might customize other files, such as user-defined files and font initialization files.

Before you upgrade to a new version of Content Manager OnDemand or upgrade the database manager software or other software related to Content Manager OnDemand, you should save a copy of the files listed in this section. You can save a copy of the files in a temporary directory, such as `/tmp`.

After you upgrade the software, you will probably need to reconfigure the files for your environment. To reconfigure the files, you can restore the copies of the files that you saved or make changes to the updated files, using the configuration information in the files that you saved as a guide.

Content Manager OnDemand files

Save a copy of the Content Manager OnDemand configuration files listed in Table 1.

Table 1. Content Manager OnDemand configuration files to save

File	Location	Purpose
ars.cache	/usr/lpp/ars/config	Define cache storage file systems. Changes described in “Specifying the ARS.CACHE file for the instance” on page 64.
ars.cfg	/usr/lpp/ars/config	Content Manager OnDemand server configuration file. Changes described in “Specifying the ARS.CFG file for the instance” on page 52.
ars.dbfs	/usr/lpp/ars/config	Define DB2 table space file systems. Changes described in “Specifying the ARS.DBFS file for the instance” on page 63.
ars.ini	/usr/lpp/ars/config	Configure Content Manager OnDemand instances. Changes described in “Specifying the instance in the ARS.INI file” on page 50.
arsload.cfg	/usr/lpp/ars/config	Define a default Content Manager OnDemand system administrator userid and password for the ARSLOAD program. Changes described in “Configuring the ARSLOAD.CFG file” on page 75.

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Table 1. Content Manager OnDemand configuration files to save (continued)

File	Location	Purpose
arslog	/usr/lpp/ars/bin	The System Log user exit program. Described in Appendix H, "System log user exit," on page 389.
arsprt	/usr/lpp/ars/bin	Server print program.

Tivoli Storage Manager files

If you use Tivoli Storage Manager to maintain OnDemand data in archive storage, save a copy of the Tivoli Storage Manager configuration files listed in Table 2.

Table 2. Tivoli Storage Manager configuration files to save

File	Location	Purpose
dsmserv.dsk	/usr/tivoli/tsm/server/bin	Locations of the Tivoli Storage Manager database and recovery logs
history.dev	/usr/tivoli/tsm/server/bin	Tivoli Storage Manager device history file
history.vol	/usr/tivoli/tsm/server/bin	Tivoli Storage Manager storage volume history file
dsmserv.opt	/usr/tivoli/tsm/server/bin	Tivoli Storage Manager server options file
dsm.sys	/usr/tivoli/tsm/server/bin	Tivoli Storage Manager servers file
dsm.opt	/usr/tivoli/tsm/client/ba/bin	Tivoli Storage Manager client options file
dsm.db2.opt	The location for this file is user-defined and specified by the ARS_DB2_TSM_CONFIG parameter in ars.cfg.	Tivoli Storage Manager client options file for maintaining DB2 archived log files and backup image files
dsm.sys	/usr/tivoli/tsm/client/api/bin64	Tivoli Storage Manager client system options file

Chapter 6. Creating a user for the Content Manager OnDemand instance owner on AIX

Note: This publication was written assuming that OnDemand instances will be run under the root user. The information in this section is provided for customers who need to run instances of Content Manager OnDemand under a user other than the root user. Those customers should print the information in this section and have it available to assist them as they continue with the installation and configuration process.

New installations (instances) of Content Manager OnDemand can be configured to run under a user other than the root user. If you plan to run an instance under a user other than root, you must do the following:

- Create the user for the Content Manager OnDemand instance owner
- Set permissions for the cache storage file systems
- Set permissions for the Content Manager OnDemand configuration and script files
- Give the instance owner permission to write to the system console
- Specify the instance owner in the ARS.INI file

If you plan to run a distributed library/object server system, with one or more object servers on different workstations or nodes than the library server, then you should also configure Content Manager OnDemand on the object servers.

Configuring the library server

Create a user that is a member of the database owner's group. This group has administrator authority for the database and the database file systems. Give the Content Manager OnDemand instance owner the following authorities and permissions:

- Administrator authority for the database. You can do this by adding the Content Manager OnDemand instance owner to the database owner's group.
- Ownership of the cache storage file systems that are listed in the ARS.CACHE file. You can do this by running the Change Owner command for each file system that is listed in the ARS.CACHE file and specifying the user and group for the Content Manager OnDemand instance owner.
- Permission to read the Content Manager OnDemand configuration files. Make sure that the Content Manager OnDemand instance owner has permission to read the following files:
  - ARS.CACHE
  - ARS.CFG
  - ARS.DBFS
  - ARS.INI
- Permission to read and execute the Content Manager OnDemand script files. Make sure that the Content Manager OnDemand instance owner has permission to read and execute the following files:
  - ARSLOG
  - ARSPRT

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- Permission to write to the console. Make sure that the Content Manager OnDemand instance owner has permission to write to the system console.

You should specify a different user for each instance that you create. This allows for easier error recovery if a system error occurs.

Important: You cannot set the permissions to read and execute OnDemand files until you complete installation of the Content Manager OnDemand software. See Chapter 42, "Installing the Content Manager OnDemand software on Linux," on page 263 for instructions on installing the Content Manager OnDemand software on Linux.

Configuring an object server

If you plan to run a distributed library/object server system, with one or more object servers on different workstations or nodes than the library server, then you should also configure Content Manager OnDemand on each of the object servers.

To configure Content Manager OnDemand on the object servers, do the following:

- Create a group and user for the Content Manager OnDemand instance owner.
- Give ownership of the cache storage file systems listed in the ARS.CACHE file to the group and user for the Content Manager OnDemand instance owner.
- Give permission to read the following files to the Content Manager OnDemand instance owner:
  - ARS.CACHE
  - ARS.CFG
  - ARS.INI
- Give permission to write to the console to the Content Manager OnDemand instance owner.

Chapter 7. Installing the database manager on AIX

This section provides installation and configuration information specific to Content Manager OnDemand for both DB2 and Oracle.

Installing DB2

You must install either DB2 or Oracle on the Content Manager OnDemand library server. This section describes how to install DB2. See “Installing Oracle” on page 24 for instructions about installing Oracle.

The DB2 Universal Database Enterprise Edition program CD-ROMs are provided with the Content Manager OnDemand program package. The README file explains how to locate the information that you need. Follow the instructions in *IBM DB2 Universal Database Quick Beginnings for DB2 Servers* to plan, install, configure, and verify the installation of DB2.

Installation notes

To install DB2 on the library server:

1. Install DB2 Universal Database Enterprise Edition.
2. When prompted, select Typical as the installation type, to install all DB2 components required to support Content Manager OnDemand. You can take most default options (unless you have specific requirements of your own).
3. Create the DB2 instance for Content Manager OnDemand when you install DB2. Use the following values:

Parameter	Value
Instance Name or User	archive
Group Name	gname **Note:** The group must have SYSADM authority, and its name must be unique. The group name on your database might be something other than 'gname'. Ask your database administrator if you do not know the group name for your database.
Home Directory	/home/archive
Auto start DB2 instance at boot time	no
Create a sample database for DB2 instance	no

4. After you install the software from the CD-ROM, apply the latest service update for DB2. You can obtain the latest service update from IBM service at ftp://service.software.ibm.com/ps/products/db2/fixes. From the fixes directory, go to the directory for your language. Then go to the directory for your operating system and go to the fix pack directory. Print the README file. Follow the instructions in the README file to apply the service update. **Note:** After installing a service update, you might need to update your database instances (for example, `archive`). See the DB2 README for details.

Configuration notes

After installing DB2 on the library server:

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1. Add the user that owns the Content Manager OnDemand instance to the DB2 instance owner's group.

   For example, if the DB2 instance owner's group is `sysadm1` and the Content Manager OnDemand instance owner is `root`, specified by the SRVR_INSTANCE_OWNER parameter in the ARS.INI, add the `root` user to the sysadm1 group.
2. Create links for the DB2 files. For example:

   ```
   /opt/IBM/db2/V9.5/cfg
   ```

   See the instructions in *IBM DB2 Universal Database Quick Beginnings for DB2 Servers* to create links to the DB2 files.
3. Optionally create a table space for the Content Manager OnDemand system tables. If you plan to store the system tables in their own table space, specify the name of the table space on the ARS_DB_TABLESPACE parameter in the ARS.CFG file. See "Specifying the ARS.CFG file for the instance" on page 52.
4. Verify the value of the DB2INSTANCE parameter in the ARS.CFG file. The value of the DB2INSTANCE parameter is case-sensitive. This value must specify the name of the DB2 instance that you created for Content Manager OnDemand. The default value is `archive`. See "Specifying the ARS.CFG file for the instance" on page 52.

Setting the DB2 operating environment

If you plan to use DB2 commands to work with the Content Manager OnDemand database, you must execute a script file to set the DB2 operating environment before you start the DB2 command line interface. For Bourne or Korn shell users, run the DB2PROFILE script file. For C shell users, run the DB2CSHRC script file.

The script files can be found in the `INSTHOME/sqllib` directory, where `INSTHOME` is the home directory of the instance owner. If you installed and configured the system using the suggested defaults, the instance owner is `archive` and the script files reside in the `sqllib` directory under `/home/archive`.

You should add the script file to your `.profile` or `.login` file. For example:

```
. /home/archive/sqllib/db2profile
```

After executing the script file, you can start the DB2 command line interface and connect to the database. For example:

```
$>db2
  .
  .
  .
```

To stop the DB2 command line interface, enter:

```
db2 =>quit
```

Installing Oracle

You must install either DB2 or Oracle on the Content Manager OnDemand library server. This section describes how to install Oracle. See "Installing DB2" on page 23 for instructions on installing DB2.

See your Oracle documentation for installation instructions. After you have completed installing the Oracle software, continue with "Configuration notes" on page 25.

Configuration notes

After you verify the installation of the Oracle software on the library server, you must configure it to work with Content Manager OnDemand. To configure Oracle to work with Content Manager OnDemand:

1. Configure login processing.

   The Content Manager OnDemand processes run under the UID of the root user. Verify the values of these parameters in the ARS.CFG file (see "Specifying the ARS.CFG file for the instance" on page 52).

   ARS_ORACLE_USERID
   The userid of the Content Manager OnDemand user in Oracle (root).

   ARS_ORACLE_PASSWD
   The password for the Content Manager OnDemand user (root) in Oracle.

2. Create the database.

   Create the Content Manager OnDemand database using the Oracle utilities. The name that you specify for the database should match the value that you specify for the SRVR_INSTANCE parameter in the ARS.INI file. See "Specifying the instance in the ARS.INI file" on page 50.

3. Create the userid of the Content Manager OnDemand instance owner in Oracle.

   All tables created by Content Manager OnDemand will be owned by the user that you create in this step. If you wish to have a default Oracle table space for the user, you should specify the table space when you create the user.

   To create the Content Manager OnDemand user in Oracle:

   ```
   CREATE USER root IDENTIFIED BY xxxxxxxx ;
   GRANT dba to root ;
   ```

   Where `root` is the value of the ARS_ORACLE_USERID parameter in the ARS.CFG file and `xxxxxxxx` is the value of the ARS_ORACLE_PASSWD parameter in the ARS.CFG file (see "Specifying the ARS.CFG file for the instance" on page 52).

4. Specify the base Oracle installation directory on the ARS_ORACLE_HOME parameter in the ARS.CFG file. The default value is `/oracle`. See "Specifying the ARS.CFG file for the instance" on page 52.

5. Specify Oracle as the database manager on the ARS_DB_ENGINE parameter in the ARS.CFG file. See "Specifying the ARS.CFG file for the instance" on page 52.

6. Optionally create a table space for the Content Manager OnDemand system tables. If you plan to store the system tables in their own table space, specify the name of the table space on the ARS_DB_TABLESPACE parameter in the ARS.CFG file. See "Specifying the ARS.CFG file for the instance" on page 52.

Chapter 8. Installing and configuring Tivoli Storage Manager on AIX

This section explains how to set up Tivoli Storage Manager for Content Manager OnDemand on an AIX workstation.

Tivoli Storage Manager can be used with Content Manager OnDemand object servers to store report data on devices that are supported by Tivoli Storage Manager. Devices supported by Tivoli Storage Manager include optical libraries and tape media. The use of Tivoli Storage Manager is optional and is needed only if you want to provide long-term storage for your reports on devices other than the fixed disks attached to the object server. You can also use Tivoli Storage Manager facilities to maintain DB2 archived log files and backup image files.

You will need the *IBM Tivoli Storage Manager for AIX: Quick Start* publication to install and configure Tivoli Storage Manager. HTML and PDF versions of Tivoli Storage Manager publications, including the *Quick Start*, are available at http://publib.boulder.ibm.com/tividd/td/tdprodlist.html.

Prerequisites

OnDemand supports Tivoli Storage Manager in the following configurations:

- Standard library/object server plus Tivoli Storage Manager on one workstation. Install the Server, Clients, 64-bit Client API, Device Support Runtime, Server Runtime, and Licenses packages on the workstation.
- Library server only (where Tivoli Storage Manager resides on some other workstation than the library server). Install the 64-bit Clients and 64-bit API packages on the library server workstation.
- Object server plus Tivoli Storage Manager on some other workstation than the library server. Install the Server, 64-bit Clients, 64-bit API, Device Support Runtime, Server Runtime, and Licenses packages on the object server workstation.

OnDemand uses the Tivoli Storage Manager API client to store data into the Tivoli Storage Manager server. The Tivoli Storage Manager server is managed and administered independently of Content Manager OnDemand. The Tivoli Storage Manager administrator must ensure that the following conditions are met:

- All the normal requirements for Tivoli Storage Manager storage are monitored and managed accordingly
- All required Tivoli Storage Manager policies, management classes, storage pools, and volumes are defined accordingly
- All required Tivoli Storage Manager storage pools and volumes are online
- All Tivoli Storage Manager storage pools and volumes have sufficient storage space to satisfy the needs of Content Manager OnDemand
- The Tivoli Storage Manager server is active when OnDemand needs to read from or write to its storage repository

If your Tivoli Storage Manager configuration cannot support OnDemand, system requests (that require Tivoli Storage Manager services) will fail. The Tivoli Storage

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Manager administrator should examine the system to ensure that it will support the storage and retrieval of data by OnDemand.

Procedure

This section provides general information and examples about how to configure Tivoli Storage Manager to maintain Content Manager OnDemand data in archive storage. Tivoli Storage Manager can maintain the reports that you load into Content Manager OnDemand, can maintain migrated index data, and can maintain DB2 archived log files and backup image files.

Before you begin, you should familiarize yourself with Configuring and Managing Server Storage in the *IBM Tivoli Storage Manager for AIX: Administrator's Guide*. In addition, the *IBM Tivoli Storage Manager for AIX: Administrator's Reference* provides detailed information about all of the commands used in this section and should be your primary reference when you work with Tivoli Storage Manager. See the Tivoli Storage Manager publications if you encounter problems configuring Tivoli Storage Manager or if the examples in this section do not provide the information that you need to define your server storage devices, policies, and operations.

Complete these steps to set up Tivoli Storage Manager for Content Manager OnDemand on an AIX workstation:

__ 1. Define the Tivoli Storage Manager server options
__ 2. Define the Tivoli Storage Manager client system options
__ 3. Define the Tivoli Storage Manager client options
__ 4. Register Tivoli Storage Manager licenses
__ 5. Register Tivoli Storage Manager administrators
__ 6. Define other Tivoli Storage Manager server options
__ 7. Starting, halting, and restarting Tivoli Storage Manager the server
__ 8. Increase Tivoli Storage Manager database and recovery log sizes
__ 9. Define a storage library
__ 10. Define policy domains
__ 11. Register client nodes
__ 12. Prepare storage pool volumes
__ 13. (Optional) Configure Tivoli Storage Manager to maintain DB2 archived log files and backup image files
__ 14. Define a backup device for the Tivoli Storage Manager database
__ 15. Back up the Tivoli Storage Manager database and critical files

Tivoli Storage Manager objects created during a typical installation

Table 3 on page 29 lists the objects that should be defined to the Tivoli Storage Manager server after you update the Tivoli Storage Manager configuration for Content Manager OnDemand in the sections that follow. The objects defined to the Tivoli Storage Manager server will depend on the number and types of devices that you configure on the system. The information in the table assumes that you will configure one automated library on the system (such as an IBM 3995-C68 optical library with four optical drives) and add one client node to hold Content Manager OnDemand data for seven years.

Table 3. Tivoli Storage Manager objects created during a typical installation

Object	Name
Automated Library	archlib0
Drive 1	optdrv0
Drive 2	optdrv1
Drive 3	optdrv2
Drive 4	optdrv3
Storage Pool	odstgp1
Device Class	opt1
Client Node	OD7YRPRI
Policy Domain	OD7YRPD
Policy Set	OD7YRPS
Management Class	OD7YRMG
Copy Group	STANDARD
Administrative Clients	root archive

Defining the Tivoli Storage Manager server options

Update the DSMSERV.OPT server options file from the installed server options file. The installed server options file can be found in the `/usr/tivoli/tsm/server/bin` directory.

Update the server options file to enable TCP/IP as the communications protocol and set the port address of the server, specify a maximum of 255 simultaneous client sessions, establish values for the database and recovery log buffer pools, expire data once a day, keep mount requests from being preempted except by a backup database command, and specify the names of volume and device configuration files. For example:

```
COMMmethod TCPIP
TCPPort 1500
COMMmethod HTTP
HTTPPORT 1580
TCPWindowsize 0
MAXSessions 255
COMMTimeout 30
IDLETimeout 60
BUFPoolsize 512
LOGPoolsize 256
EXPInterval 12
NOPREEMPT
VOLUMEHistory volhist.out
DEVCONFig devcnfg.out
```

Defining the Tivoli Storage Manager client system options

Create a DSM.SYS client system options file by copying the installed sample system options file from /usr/tivoli/tsm/client/api/bin64/dsm.sys.smp. Specify the directory of DSM.SYS in the Content Manager OnDemand ARS.CFG file using the DSMI_DIR parameter. See “Specifying the ARS.CFG file for the instance” on page 52 for more information.

Update the servers file to identify the name of the server and the fully qualified TCP/IP host name of the workstation on which the Tivoli Storage Manager server runs, enable TCP/IP as the communications protocol, set the TCP/IP port address of the server, and turn off compression. For example:

```
SErvername         archive
TCPServeraddress   fully.qualified.tcpip.host.name
COMMmethod         TCPip
TCPPort            1500
COMPRESSION OFF
```

Defining the Tivoli Storage Manager client options

Create a DSM.OPT client options file from the installed options file. The installed options file can be found in the `/usr/tivoli/tsm/client/ba/bin` directory.

Update the client options file to identify the name of the server and set the processing mode. The name that you specify must be the same as the name of the server that you specified in the DSM.SYS file (see "Defining the Tivoli Storage Manager client system options" on page 29). for example:

```
SErvername         archive
QUIET
```

Registering Tivoli Storage Manager licenses

Register your Tivoli Storage Manager licenses. When you install Tivoli Storage Manager, your system is licensed for the base Tivoli Storage Manager support, which provides the following:

- An unlimited number of administrative clients
- One backup-archive client
- Certain types of removable media devices

License certificate files are included with your server package in the server installation directory. Each license certificate file licenses the server for a single option or feature. For current information about devices supported by Tivoli Storage Manager, contact the IBM Support Center. To register any Tivoli Storage Manager licenses beyond the base support, issue the REGISTER LICENSE command to read in a license certificate file. For example, to license the TSM server for Data Retention Protection functionality, run the following commands from the Tivoli Storage Manager Server command line interface:

```
register license file=tsmee.lic
register license file=dataret.lic
```

Registering Tivoli Storage Manager administrators

Register additional Tivoli Storage Manager administrators. The administrative user can start and stop the server and use the administrative client to do other Tivoli Storage Manager administrative tasks. You should also register the `root` user as an administrative user. The following example shows how to register users from the Tivoli Storage Manager Server command line interface. (In the example, the password for the `archive` user is `archive1`; the password for the `root` user is `xxxxxxxx`.) See the *Tivoli Storage Manager Administrator's Reference* for help with the commands, including the parameters and options you can specify.

```
register admin root xxxxxxxx
grant authority root classes=system
```

Defining other Tivoli Storage Manager server options

Define other Tivoli Storage Manager server options. Set the password expiration to the maximum permitted value and set the activity log retention period to one year by running the following commands from the Tivoli Storage Manager Server command line interface:

```
set passexp 9999
set actlogretention 365
```

Starting, halting, and restarting Tivoli Storage Manager the server

Tivoli Storage Manager administrators can manage server operations. These operations include such tasks as starting and halting the server, adding or updating server options, defining devices and policies, managing removable media, and monitoring server information.

Starting the server

To start the server:

1. Change to the `/opt/tivoli/tsm/server/bin` directory.
2. Start the server:

   ```
   dsmserv
   ```

   When the server is started, Tivoli Storage Manager displays information about product licensing, server options, the database and recovery log, storage pools, and progress messages and any errors encountered during server initialization.

You can capture Tivoli Storage Manager server console messages to a user log file with the Tivoli Storage Manager `dsmulog` program. See the Tivoli Storage Manager documentation for more information.

Starting the Tivoli Storage Manager server command line interface

In this section, most examples illustrate how to perform tasks by using the Tivoli Storage Manager server command line interface. To start the Tivoli Storage Manager server command line interface, enter:

```
dsmadmc
```

Tivoli Storage Manager provides you with a number of methods to monitor processes and messages:

- Use the console mode from an administrative client to monitor processes and messages:

  ```
  dsmadmc -console
  ```

  While the system is running in console mode, you cannot enter any administrative commands from the client session. You can, however, start another administrative client session for entering commands.
- Specify the OUTFILE option to write all terminal output to a file. For example:

  ```
  dsmadmc -console -outfile=adsm.out
  ```
- From the command line interface, query the activity log for status information and possible error messages:

  ```
  query actlog
  ```

See the Tivoli Storage Manager documentation for more information about managing client sessions.

Halting the server

When you halt the server, all processes are abruptly stopped and client sessions are canceled, even if they are not completed. Any in-progress transactions are rolled back when the server is restarted. When the server is halted, administrator activity is not possible. If possible, halt the server only after current administrative and client node sessions have completed or canceled. To shut down the server without severely impacting administrative and client node activity with the server, follow the instructions in the Tivoli Storage Manager documentation.

To halt the server and shut down all server operations, enter `halt` at the Tivoli Storage Manager server command line interface.

Restarting the server

To start the server after it has been halted, follow the instructions in "Starting, halting, and restarting Tivoli Storage Manager the server" on page 31.

When you restart the server after it has been halted, Tivoli Storage Manager rolls back any operations that had been in process to ensure that the database remains in a consistent state.

Increasing Tivoli Storage Manager database and recovery log sizes

When you initially install Tivoli Storage Manager, the installation procedure creates a default 17 MB database volume (`db.dsm`) and a default 9 MB recovery log volume (`log.dsm`).

The database size is determined by the amount of data that you plan to store on the system. The recovery log might need to be increased depending on the current utilization. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* provides formulas that you can use to estimate the database and recovery log sizes. You should start by increasing the database by 256 MB and the recovery log by 72 MB. As you load data on the system, you can monitor the utilization and increase or decrease the database and recovery log sizes accordingly.

To increase the size of the database or recovery log, do the following:

1. Select storage volumes with sufficient free space to hold the database and recovery log.
2. Format and define a 256 MB database volume and a 72 MB recovery log volume and extend the database and recovery log, by entering the following at the Tivoli Storage Manager server command line interface:

```
define dbvolume db2.dsm formatsize=256
define logvolume log2.dsm formatsize=72

extend db 256
extend log 72
```

Defining a storage library

When you add an optical or tape library to the system, you must define it to Tivoli Storage Manager. When you define a library to Tivoli Storage Manager, you define a device class for the library and define the library and the drives contained in the library. You also define a storage pool for the collection of storage volumes that belong to the library.

The following example shows how to define an optical library, device class, and storage pool as the destination for files archived from the &odShort; system. You can use this example as a guide when defining other libraries and storage pools. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation.

Define the library

The following example shows how to define a SCSI-attached library:

```
def library archlib0 libtype=scsi
def path archive archlib0 srctype=server desttype=library device=/dev/lb0
```

The string `archlib0` is an arbitrary name that you assign to the library. Make sure that the name is not already defined to Tivoli Storage Manager. The `device` parameter gives the device name for the library.

Define the drives

The following example shows how to define the drives in a library that contains four drives, such as an IBM 3995-C68 optical storage library:

```
def drive archlib0 optdrv0 element=1
def drive archlib0 optdrv1 element=2
def drive archlib0 optdrv2 element=3
def drive archlib0 optdrv3 element=4
def path archive optdrv0 srctype=server desttype=drive -
         library=archlib0 device=/dev/rop0
def path archive optdrv1 srctype=server desttype=drive -
         library=archlib0 device=/dev/rop1
def path archive optdrv2 srctype=server desttype=drive -
         library=archlib0 device=/dev/rop2
def path archive optdrv3 srctype=server desttype=drive -
         library=archlib0 device=/dev/rop3
```

The drives belong to the `archlib0` library. The strings `optdrv1`, `optdrv2`, `optdrv3`, and `optdrv4` are arbitrary names you assign to the optical disk drives. Make sure that the names are not already defined to Tivoli Storage Manager. The `device` parameter gives the device name for the drive. The `element` parameter identifies the physical location of the drive within the library.

Define the device class

The following example shows how to define a device class for optical devices that use the 2600 recording format. The library contains four drives. Tivoli Storage Manager keeps idle optical platters in the drives for ten minutes before dismounting them:

```
    def devclass opt1 devtype=optical format=2600MB   -
                 mountlimit=4 library=archlib9        -
                 estcapacity=2600M mountretention=10
```

The string `opt1` is an arbitrary name that you assign to the optical device class. Make sure that the name is not already defined to Tivoli Storage Manager.

Define the storage pool

The following example shows how to define a storage pool to use the devices in the opt1 device class.

```
define stgpool ODSTGP1 opt1                          -
               desc='Storage pool for OnDemand data' -
               collocate=no reclaim=60               -
               maxscratch=1 reusedelay=30
```

The string ODSTGP1 is an arbitrary name that you assign to the storage pool. Make sure that the name is not already defined to Tivoli Storage Manager.

Defining policy domains

The Tivoli Storage Manager policy domain links data with media in a storage pool. A policy domain supports a single storage pool, which in turn supports a single library.

The following example shows how to define a policy domain to maintain data for a period of seven years (2557 days). You can use this example as a guide when defining other policy domains. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation. Enter the commands at the Tivoli Storage Manager server command line interface.

1. Define the domain:

   ```
   define domain OD7YRPD desc='OnDemand Policy Domain'
   ```

   Replace the string OD7YRPD with the name of a Tivoli Storage Manager domain that you plan to use to manage storage for Content Manager OnDemand. Make sure that the name is not already defined to Tivoli Storage Manager.

2. Define the policy set:

   ```
   define policyset OD7YRPD OD7YRPS desc='OnDemand Policy Set'
   ```

   Replace the string OD7YRPD with the name of the domain. Replace the string OD7YRPS with the name of the policy set. Make sure that the name is not already defined to Tivoli Storage Manager.

3. Define the management class:

   ```
   define mgmtclass OD7YRPD OD7YRPS OD7YRMG -
                    desc='OnDemand Management Class'
   ```

   Replace the string OD7YRPD with the name of the policy domain. Replace the string OD7YRPS with the name of the policy set. Replace the string OD7YRMG with the name of the management class. Make sure that the name is not already defined to Tivoli Storage Manager.

4. Define an archive copy group. The archive copy group identifies the name of the storage pool where Tivoli Storage Manager stores the data and the length of time that Tivoli Storage Manager maintains the data:

   ```
   define copygroup OD7YRPD OD7YRPS OD7YRMG standard -
                    type=archive dest=odstgp1 retver=2557
   ```

   Replace the string OD7YRPD with the name of the policy domain. Replace the string OD7YRPS with the name of the policy set . Replace the string OD7YRMG with the name of the management class. Replace the string odstgp1 with the name of a storage pool. Replace the string 2557 with the length of time (in days) that you want Tivoli Storage Manager to maintain data in the storage pool.

Important: When you create an application group, you specify the length of time that Content Manager OnDemand maintains data stored in the application group. If you plan to store application group data in Tivoli Storage Manager, then you must make sure that the retention period in Tivoli Storage Manager (the value of the `retver` parameter in the archive copy group) is equal to or greater than the Life of Data and Indexes value that you specify for the application group.

5. To check what you have defined, enter the following commands:

```
query domain
query policyset
query mgmtclass
query copygroup
```

6. After you define your policy sets and the management classes they contain, you must assign a default management class for each policy set. To assign the `OD7YMG` management class as the default management class for the `OD7YRPS` policy set in the `OD7YRPD` policy domain, enter:

```
assign defmgmtclass OD7YRPD OD7YRPS OD7YRMG
```

   Replace the string `OD7YRPD` with the name of the policy domain. Replace the string `OD7YRPS` with the name of the policy set. Replace the string `OD7YRMG` with the name of the management class.

7. After you define a default management class for the policy set, validate and activate the policy set:

```
validate policyset OD7YRPD OD7YRPS
activate policyset OD7YRPD OD7YRPS
```

   Replace the string `OD7YRPD` with the name of the policy domain. Replace the string `OD7YRPS` with the name of the policy set.

Registering client nodes

A client node links clients and their data with storage volumes and devices. Before Content Manager OnDemand can store data in Tivoli Storage Manager storage, you must register at least one client node. You must register at least one client node in each policy domain that will contain Content Manager OnDemand data. You can use the example that follows as a guide when registering client nodes. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation. Enter the command at the Tivoli Storage Manager server command line interface.

To register the client node `PRI7YR` and password `password`, assign the client node to the `OD7YPD` policy domain, and specify that the client node should be able to delete its own archive files from the server, enter:

```
register node PRI7YR password domain=OD7YRPD archdel=yes contact='your name'
```

The `archdel=yes` parameter is required for Content Manager OnDemand processing.

Note: When you define an Content Manager OnDemand storage node (by using the Content Manager OnDemand facilities), specify a Tivoli Storage Manager client node and client node password to “link” the Content Manager OnDemand storage node to archive storage.

Preparing storage pool volumes

You need to perform some steps to prepare removable media for initial use by Tivoli Storage Manager. This section provides general information and examples showing how to label storage pool volumes and check them into an automated library. For details about these tasks and important information about managing removable media operations, see the Tivoli Storage Manager documentation.

In general, to prepare a storage volume you:

- Label the volume. Any volumes associated with optical or tape devices must be labeled before Tivoli Storage Manager can use them.
- For storage pools in automated libraries, check the volume into the library.

You can use the LABEL LIBVOL command to label and check in a volume in one operation:

- To label storage volumes and check them into a library that is filled with blank storage volumes, use the following format of the command:

  ```
  label libvol archlib0 search=yes overwrite=yes checkin=scratch     -
       labelsource=prompt
  ```

  The label command will search all of the storage slots in the `archlib0` library for volumes and try to label each one that it finds. After labeling a storage volume, Tivoli Storage Manager keeps it in a storage slot inside the library. Because the example assumes new storage volumes, it is acceptable to overwrite an existing volume label.
- To label storage volumes and check them into a library by manually inserting each new storage volume when prompted, use the following format of the command:

  ```
  label libvol archlib0 search=bulk overwrite=yes checkin=scratch     -
       labelsource=prompt
  ```

  The label command will prompt you to insert a new storage volume into the `archlib0` library and then prompt you for the label of the volume. After labeling the storage volume, Tivoli Storage Manager keeps it in a storage slot inside the library and prompts you to insert the next storage volume to be labeled. Because the example assumes new storage volumes, it is acceptable to overwrite an existing volume label.

Wait for the LABEL LIBVOL operation to complete. Because the label and check in commands involve device access, it might take a long time to complete.

When you have completed labeling and checking in all the storage volumes, enter the following command to list the storage volumes in the `archlib0` library:

```
query libvol archlib0
```

Configuring Tivoli Storage Manager to maintain DB2 files

You can use Tivoli Storage Manager to maintain DB2 archived log files and backup image files. This capability means that you do not have to manually maintain these files on disk. The tasks in this section are optional, and are only recommended for customers who need to use Tivoli Storage Manager facilities to backup the Content Manager OnDemand database in DB2. For more information about using Tivoli Storage Manager to manage DB2 files, see *IBM DB2 Universal Database: Data Recovery and High Availability Guide and Reference*, SC09-4831.

The following topics describe how to configure Tivoli Storage Manager to maintain DB2 files:

- Defining server options
- Defining client options
- Defining storage objects
- Registering the client node
- Setting the client node password
- Space requirements
- Backup considerations

Defining server options

The DSM.SYS file on the Content Manager OnDemand library server identifies Tivoli Storage Manager servers and specifies server options.

If you installed and configured Tivoli Storage Manager to maintain report data, then you defined at least one Tivoli Storage Manager server (see "Defining the Tivoli Storage Manager client system options" on page 29). Most customers usually define one Tivoli Storage Manager server to maintain report data and a different server to maintain the DB2 files.

The following example shows a DSM.SYS file that identifies two Tivoli Storage Manager servers on the same workstation:

```
* The following server manages Content Manager OnDemand report data
SERVERNAME archive
COMMmethod tcpip
TCPPORT 1500
TCPSERVERADDRESS server1.company.xyz.com
COMPRESSION no

* The following server manages DB2 log files and backup images
SERVERNAME dbbackup
COMMmethod tcpip
TCPPORT 1500
TCPSERVERADDRESS server1.company.xyz.com
COMPRESSION yes
PASSWORDACCESS generate
```

- The first section identifies the server that maintains the Content Manager OnDemand report data.
- The second section identifies the server that maintains the DB2 files. The `SERVERNAME` parameter identifies the Tivoli Storage Manager server. The `TCPSERVERADDRESS` identifies the fully qualified TCP/IP host name of the workstation on which the Tivoli Storage Manager server is running. When defining a Tivoli Storage Manager server to maintain DB2 files, you must set the `COMPRESSION` parameter to `YES` and the `PASSWORDACCESS` parameter to `GENERATE`.

After you finish making your changes, save the DSM.SYS file in the directory named by the `DSMI_DIR` parameter in the ARS.CFG file. See "Specifying the ARS.CFG file for the instance" on page 52 for more information.

Defining client options

The DSM.DB2.OPT file on the Content Manager OnDemand library server identifies the Tivoli Storage Manager server that maintains the DB2 files. The `SERVERNAME` parameter identifies the Tivoli Storage Manager server you defined in "Defining server options." For example:

```
* The following server manages DB2 log files and backup images
SERVERNAME dbbackup
quiet
```

After you create the DSM.DB2.OPT file, save it in the directory named by the ARS_DB2_TSM_CONFIG parameter in the ARS.CFG file. See "Specifying the ARS.CFG file for the instance" on page 52 for more information.

Defining storage objects

You must define the storage objects that Tivoli Storage Manager uses to maintain the DB2 files. The storage objects include a storage library, device class, storage pool, and policy domain:

- If you plan to use an existing storage pool to maintain the DB2 files, you do not need to define a storage library or device class. You should use dedicated hardware and storage objects to maintain the DB2 files.
- If you plan to use an existing policy domain to maintain the DB2 files, the domain must include an archive copy group and a backup copy group. See "Define the archive copy group" on page 39 and "Define the backup copy group" on page 39 for details.
- If you plan to define new storage objects to maintain the DB2 files, you must define a storage library, device class, storage pool, and policy domain, including the archive and backup copy groups. See "Defining a storage library" on page 33 for an example of how to define a storage library, device class, and storage pool. See "Define the domain" for an example of how to define a domain. See "Define the archive copy group" on page 39 and "Define the backup copy group" on page 39 for an example of how to define an archive copy group and a backup copy group.

Important: The storage pool in which Tivoli Storage Manager maintains the DB2 files must use rewriteable optical media (not WORM) or tape.

Define the storage objects on the object server on which you installed Tivoli Storage Manager to maintain the DB2 files. Define the storage objects to the Tivoli Storage Manager server that maintains the DB2 files (this is the server that you identified in "Defining client options" on page 37).

Define the domain

The following example shows how to define a policy domain to Tivoli Storage Manager. You must provide a name that is unique to Tivoli Storage Manager. The name in the example implies that Tivoli Storage Manager will maintain the files for one year. The length of time that Tivoli Storage Manager actually maintains the files depends on how you define the archive and backup copy groups.

```
define domain 1YRPD -
              desc='Domain for DB2 file storage'
```

The following example shows how to define a policy set to Tivoli Storage Manager. You must provide a name that is unique to Tivoli Storage Manager. The policy set identifies the policy domain.

```
define policyset 1YRPD 1YRPS -
                 desc='Policy set for DB2 file storage'
```

The following example shows how to define a management class to Tivoli Storage Manager. You must provide a name that is unique to Tivoli Storage Manager. The management class identifies the policy domain and the policy set.

```
define mgmtclass 1YRPD 1YRPS 1YRMG -
                 desc='Management class for DB2 file storage'
```

Define the archive copy group

The archive copy group determines several Tivoli Storage Manager options for the DB2 archived log files, including the number of days that Tivoli Storage Manager maintains the files. The DB2 archived log files must be maintained until they are no longer needed for database or table space recovery. Log files are valid between full, offline backup images of the database. When you create a full, offline backup image of the database, the log files created prior to the backup image can be deleted. For example, if you create a full, offline backup image of the database every thirty days, then you must keep log files for at least thirty days. If you do not create full, online backup images of the database, you should maintain the log files indefinitely.

The following example shows how to define an archive copy group. The archive copy group identifies the policy domain, policy set, and management class. The archive copy group also identifies the storage pool where Tivoli Storage Manager maintains the DB2 archived log files and the length of time that Tivoli Storage Manager maintains them. In the example, Tivoli Storage Manager maintains each log file stored in the storage pool for 366 days:

```
define copygroup 1YRPD 1YRPS 1YRMG standard -
                 type=archive dest=ODSTGP2 retver=366
```

Define the backup copy group

The backup copy group determines Tivoli Storage Manager options for the DB2 backup images, including the number of versions of each backup image maintained and the length of time that Tivoli Storage Manager maintains them. You should plan to save one version of each backup image. By default, Tivoli Storage Manager maintains files in a backup copy group until they are deleted by an administrator.

The following example shows how to define a backup copy group. The backup copy group identifies the policy domain, policy set, and management class. The backup copy group also identifies the storage pool where Tivoli Storage Manager manages the DB2 backup images and the number of versions of each backup image that Tivoli Storage Manager maintains. In the example, Tivoli Storage Manager maintains one version of each DB2 backup image file indefinitely:

```
define copygroup 1YRPD 1YRPS 1YRMG standard -
                 type=backup dest=ODSTGP2 verexists=1
```

Assign a default management class

After you define the policy set, the management classes it contains, and the copy groups, you must assign a default management class for the policy set. The following example shows how to assign a default management class:

```
assign defmgmtclass 1YRPD 1YRPS 1YRMG
```

Validate the policy set

After you define a default management class, validate the policy set:

```
validate policyset 1YRPD 1YRPS
```

Activate the policy set

Finally, you must activate the policy set to make the definitions available to Tivoli Storage Manager:

```
activate policyset 1YRPD 1YRPS
```

Registering the DB2 client node

You must register a client node in Tivoli Storage Manager for DB2 to use when it archives log files and creates backup image files. When you register the client node, you identify the policy used by Tivoli Storage Manager to maintain the files. The client node name must be unique to Tivoli Storage Manager. You must also supply a password for the client node.

You must register the client node on the object server on which you installed Tivoli Storage Manager to maintain the DB2 files. Register the client node to the Tivoli Storage Manager server that maintains the DB2 files (this is the server that you identified in "Defining client options" on page 37).

The following example shows how to register the client node `dbbackup` and assign it to the `1YRPD` policy domain. The node password is `password`. You must specify the `archdel=yes` and `backdel=yes` parameters so that the client node is permitted to delete its own archive and backup files from the server.

```
register node dbbackup password domain=1YRPD      -
         archdel=yes backdel=yes contact='your name'
```

Setting the client node password in DB2

Before DB2 can use Tivoli Storage Manager to maintain archived log files and backup image files, you must set the Tivoli Storage Manager client node password in DB2 on the library server. You established the client node password when you registered the client node in Tivoli Storage Manager (see "Registering the DB2 client node").

Use the `dsmapipw` command to set the client node password in DB2. The `dsmapipw` command is provided with the DB2 software. The `dsmapipw` command is installed in the `INSTHOME/sqllib/adsm` directory of the instance owner. By default, the instance owner is `archive`.

To set the client node password:

1. On the library server, log on as the `root` user.
2. Open a terminal window.
3. Set the DSMI_DIR and DSMI_CONFIG parameters. These parameters identify the user-defined directory that contains the API trusted agent file and the full path name of the options file that Tivoli Storage Manager uses to identify the server that maintains the DB2 files. You defined the options file in "Defining client options" on page 37.

   For example:

   ```
   export DSMI_DIR=/usr/tivoli/tsm/client/api/bin64
   export DSMI_CONFIG=/usr/tivoli/tsm/client/api/bin64/dsm.db2.opt
   ```

4. Run the `dsmapipw` command. For example:

   ```
   /home/archive/sqllib/adsm/dsmapipw
   ```

5. The `dsmapipw` command prompts you for the following information:

   `old password`, which is the current password for the client node. This is the password that you specified when you registered the client node in Tivoli Storage Manager (see "Registering the DB2 client node").

   `new password`, which is the password that will be stored in DB2. You will be prompted twice for the password.

   Note: Unless you have a good reason for **not** doing so, specify the `old password` when prompted.

6. Close the terminal window.
7. If DB2 is running, you should stop and restart DB2.

Important: If you change the client node password in Tivoli Storage Manager, remember to run the `dsmapipw` command to set the new password in DB2.

Space requirements

The storage pool where Tivoli Storage Manager maintains the DB2 files must contain enough storage to hold the files needed to recover the database. Because you should maintain the files indefinitely, you must plan to allocate a sufficient number of storage volumes to meet these needs. For example, a single log file requires approximately 1.3 MB of storage space. Depending on the amount of data that you store in Content Manager OnDemand and the frequency of full database backups, you might need to maintain hundreds of log files in storage managed by Tivoli Storage Manager. Depending on the frequency and type of backup images that you create, you might need to maintain several database and table space backup images. Depending on the size of your database and tables, each backup image may require several storage volumes. Finally, if you plan to migrate large tables of application group data to their own table spaces, DB2 requires storage for a backup image of each table that you migrate.

Backup considerations

Depending on the size of the database and the frequency of backups, you might need to regularly initialize and load scratch storage volumes into the storage library. If Tivoli Storage Manager determines that there is not enough space available in the storage pool, then it can request a mount for a scratch storage volume. However, the backup command cannot complete until the mount request is satisfied. If you operate in an unattended environment, this could have an adverse affect on system availability, especially when running an offline backup.

In addition to storing the DB2 files in Tivoli Storage Manager, you should regularly back up the Tivoli Storage Manager database and the Tivoli Storage Manager control files. Doing so can help prevent prolonged system outages in the event that you need to recover the database. You can schedule a task in Tivoli Storage Manager that automatically starts the backup process. See the Tivoli Storage Manager documentation for help with defining a schedule to Tivoli Storage Manager.

Defining a backup device for the Tivoli Storage Manager database

You can back up the Tivoli Storage Manager database to a file on disk or to tape. If you choose to back up the database to a file on disk, Tivoli Storage Manager supports the use of disk storage as volumes (files) that store data sequentially (as on tape volumes). These volumes are useful when you need to transfer the data for purposes such as electronic vaulting.

Defining a disk device class

The following example shows how to define a disk device class to Tivoli Storage Manager. You can use this example as a guide when you define your disk device class. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation. Enter the command at the Tivoli Storage Manager server command line interface.

To define a disk device class for database backup:

```
define devclass DUMPFILEDEV devtype=file directory=/dsmdump mountlimit=2
```

The `directory` parameter identifies an existing directory where Tivoli Storage Manager stores database backup files. The directory must contain enough space to hold at least one copy of the database backup.

Defining a tape device

The following example shows how to define a manual tape drive to Tivoli Storage Manager. You can use this example as a guide when you define your manual tape device. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation. Enter the commands at the Tivoli Storage Manager server command line interface.

1. Define the manual library:

   ```
   def library dumplib libtype=manual
   ```

   The string `dumplib` is an arbitrary name that you assign to the library. Make sure that the name is not already defined to Tivoli Storage Manager. The library type is `manual` because an operator must mount the tapes.

2. Define the drive. For example:

   ```
   def drive dumplib dumpdrive device=/dev/rmt/mt0
   ```

   In the example, the drive belongs to the `dumplib` library. The string `dumpdrive` is an arbitrary name that you assign to the drive. Make sure that the name is not already defined to Tivoli Storage Manager. The `device` parameter gives the special device name for the drive.

3. Classify the drive according to type by defining the Tivoli Storage Manager device class. For example, the following command shows how to define a device class named `DUMPTAPEDEV` for the `dumplib` library:

   ```
   def devclass DUMPTAPEDEV devtype=generictape library=dumplib
   ```

4. Create a storage pool to use the devices in the device class you just defined:

   ```
   def stgpool dumppool DUMPTAPEDEV maxscratch=20
   ```

   The string `dumppool` is an arbitrary name that you assign to the storage pool. Make sure that the name is not already defined to Tivoli Storage Manager.

   Note: The `maxscratch` parameter can be used to allow Tivoli Storage Manager to choose from the scratch volumes available in a library, without further action on your part. If you do not allow scratch volumes, you must perform the extra step of explicitly defining each volume to be used in a storage pool. Refer to the Tivoli Storage Manager documentation for more information.

5. To check what you have defined, enter the following commands:

   ```
   query library
   query drive
   query devclass
   query stgpool
   ```

Backing up the Tivoli Storage Manager database and critical files

After you configure Tivoli Storage Manager, you should backup the database and save the server files that contain important information. The backup copy of the database can be used if you need to recover the database. You should save the backup copy until the next time that you create a full backup of the database. The

server files contain important information that you must have if you need to recover the database. **Note:** You should backup the database and save the server files whenever you make changes to the database. The database is modified whenever the system stores data in storage managed by Tivoli Storage Manager and whenever you make changes to the Tivoli Storage Manager environment, such as defining new devices and managing removable media operations.

Backing up the database

Before you backup the database, you must define the backup storage objects to Tivoli Storage Manager and label at least one tape storage volume. You can define one device class for full backups and a different device class for incremental backups. For example, you can write full backups to a tape device and incremental backups to a disk device. At a minimum, you should define a tape backup device, device class, library, and storage pool. See "Defining a backup device for the Tivoli Storage Manager database" on page 41 for information about defining backup storage objects to Tivoli Storage Manager.

After you have defined the backup storage objects, label a tape storage volume. See the Tivoli Storage Manager documentation for help with labeling storage volumes.

After you have defined the backup storage objects to Tivoli Storage Manager and labeled a tape storage volume, you can backup the database. First, place a labeled tape storage volume in the drive. Then enter the backup command at the Tivoli Storage Manager server command line interface. For example:

```
backup db type=full devclass=dumptapedev
```

Replace the string `dumptapedev` with the name of the device class that you defined for tape backup. The backup command issues several messages, concluding with "Database dump process completed", after successfully creating the database backup.

Make a record of the information about the database backup, including the date and time that the backup was taken and the label of the storage volume label. Keep the backup copy of the database in a safe location, preferably offsite. Save the backup copy at least until the next time that you create another full backup copy of the database.

Saving critical files

The following files contain important information that you must have if you need to recover the Tivoli Storage Manager database:

- The server options file (DSMSERV.OPT)
- The volume history file (VOLHIST.OUT)
- The device configuration file (DEVCNFG.OUT)
- The Tivoli Storage Manager database and recovery log location file (DSMSERV.DSK)

Save a copy of the files on removable media and keep the copy in a safe location, preferably offsite. Save the copy at least until the next time that you create another backup copy of the files.

Protecting data with the data retention protection (DRP) protocol

To avoid the accidental erasure or overwriting of critical data, Content Manager OnDemand supports the Tivoli Storage Manager APIs related to data retention.

Data retention protection (DRP)
Prohibits the explicit deletion of documents until their specified retention criterion is met. Although documents can no longer be explicitly deleted, they can still expire.

Important: DRP is permanent. After it is turned on, it cannot be turned off.

Event-based retention policy
Retention based on an external event other than the storage of data. For Content Manager OnDemand, the retention event is the call to delete the data. A load, unload, application group delete, or expiration of data triggers the retention event.

Restriction: Content Manager OnDemand does not support *deletion hold*, which is a feature that prevents stored data from being deleted until the hold is released.

If you decide to use these policies in Tivoli Storage Manager, then the following scenarios result:

Table 4. Scenarios of using data retention protection

	Creation-based object expiration policy	**Event-based retention object expiration policy**
Data retention protection off	Content Manager OnDemand issues a delete object command through the Tivoli Storage Manager API. Objects are deleted during the next inventory expiration. If an Content Manager OnDemand application group is being deleted, a `delete filespace` command is issued, and the object file space is immediately deleted with the file space.	Content Manager OnDemand issues an event trigger command through the Tivoli Storage Manager API. The status of the objects that are affected are changed from PENDING to STARTED, and the objects are expired by Tivoli Storage Manager based on their retention parameters. If the retention parameters are set to `NOLIMIT`, then the objects never expire. If an Content Manager OnDemand application group is being deleted, a `delete filespace` command is issued instead, and the objects are immediately deleted along with the file space.

Table 4. Scenarios of using data retention protection (continued)

	Creation-based object expiration policy	**Event-based retention object expiration policy**
Data retention protection on	Content Manager OnDemand issues no commands to Tivoli Storage Manager. The objects are effectively orphaned by Content Manager OnDemand and are expired by Tivoli Storage Manager based on their retention parameters. If the retention parameters are set to `NOLIMIT`, then the objects never expire.	Content Manager OnDemand issues an event trigger command through the Tivoli Storage Manager API. The event status of the objects that are affected are changed from PENDING to STARTED and the objects will be expired by Tivoli Storage Manager based on their retention parameters. If the retention parameters are set to `NOLIMIT`, then the objects never expire. If an Content Manager OnDemand application group is being deleted, then a `delete filespace` cannot be used with DRP enabled, therefore, the operation is treated the same as if a delete were indicated. The status of all the affected objects is changed from PENDING to STARTED, and they will be expired by Tivoli Storage Manager based on their retention parameters. Because this leaves the file space entries in TSM, you must manually delete these entries when the file space is empty (even with DRP enabled).

Recommendations:

- Set up the application groups to expire by load.
- Define the Tivoli Storage Manager archive copy groups to be event-based, and retain data for 0 days.
- Run the Tivoli Storage Manager inventory expiration regularly to ensure that expired data is removed.

Additionally, Content Manager OnDemand supports the following devices:

IBM DR450 and DR550
Disk-based system that contains a Tivoli Storage Manager that runs DRP.

EMC Centera
Disk-based system that is treated as a device by Tivoli Storage Manager. Tivoli Storage Manager must run DRP.

Chapter 9. Installing the Content Manager OnDemand software on AIX

You must install a copy of the Content Manager OnDemand software on each workstation or node that is part of the Content Manager OnDemand system.

Prerequisite:

1. You need approximately 200 MB of free space in the /usr file system to install the software.
2. By default, the installation is carried out in the GUI mode, therefore, the X windows support is required for the GUI install.

Complete the following steps to install the Content Manager OnDemand product files on an AIX workstation:

1. Insert the Content Manager OnDemand for AIX server CD-ROM into the drive. The steps that follow assume that the CD-ROM is mounted on directory /cdrom.
2. Log in as the root user.
3. Go to the /cdrom/server/aix directory.
4. Enter this command:

   ```
   ./odaix
   ```
5. Read the Welcome screen and then click **Next**. The License Agreement window appears.
6. Select **I accept the terms in the license agreement** to accept the license agreement. Click **Next**.
7. Accept the default directory name. Click **Next**.
8. When the process completes, this question **Would you like to display the product ReadMe file?** appears. The location of the product readme file is displayed also. On AIX, the readme file is located in the /usr/lpp/ars directory.
9. If you want to view the readme file now, click **Yes**. Otherwise, click **No**. Click **Next**.
10. Read the information in the window, and click **Next**.
11. Click **Finish**.
12. After installing the software from the CD-ROM, apply the latest service update for Content Manager OnDemand. You can obtain the latest service update from IBM service at http://www.ibm.com/eserver/support/fixes/.
13. After the installation completes successfully, eject the CD-ROM from the drive.

Optionally, the install can be performed in the character based console mode. To install the Content Manager OnDemand for AIX server in the console mode, enter the following command from the directory which contains the installer:

```
./odaix -i console
```

and follow the instructions on the installation panels.

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Installing optional Content Manager OnDemand software

The command to install the Content Manager OnDemand Web Enablement Kit is:

```
./odwekaix
```

or

```
./odwekaix -i console
```

The command to install the Content Manager OnDemand Advanced Function Presentation Transformations for Multiplatforms feature is:

```
./afp2web
```

or

```
./afp2web -i console
```

The command to install the Content Manager OnDemand Enhanced Retention Management feature is:

```
./oderm
```

or

```
./oderm -i console
```

The command to install the Content Manager OnDemand PDF Indexing feature is:

```
./odpdf
```

or

```
./odpdf -i console
```

The command to install the IBM Content Manager OnDemand Report Distribution for Multiplatforms feature is:

```
./odrdf
```

or

```
./odrdf -i console
```

Chapter 10. Configuring instances on AIX

Overview

An Content Manager OnDemand instance is a logical server environment made up of a database, a library server, and one or more object servers. An instance is defined in the ARS.INI file by naming the instance, identifying the name of the database used by the instance, and identifying the library server on which the database will be maintained. When you configure an object server, you identify its library server in the ARS.CFG file on the object server. An instance has its own table space file systems for the database and cache file systems. The table space file systems are defined in the ARS.DBFS file on the library server. The cache file systems are defined in the ARS.CACHE file on each object server. All of the servers that belong to an instance run in a single code page and on the same TCP/IP port number.

You can run multiple instances on the same workstation, with each instance configured differently:

- To have separate test and production environments
- To have databases using different code pages

Each instance has different security from other instances on the same workstation. You must define users and groups to each instance and set application group and folder permissions for users of each instance. Each instance has its own system log.

Each additional instance requires additional system resources, such as virtual storage and disk space, and more administration.

If you plan to run more than one instance on the same workstation:

- The ARS.INI file must contain one section for each instance. Each section identifies the ARS.CFG file, ARS.DBFS file, and ARS.CACHE file used by the instance.
- You must create a unique copy of the ARS.CFG file for each instance.
- You should maintain separate table space file systems and cache storage file systems for each instance, as in a ARS.DBFS file and ARS.CACHE file for each instance.
- Each instance must run on its own unique TCP/IP port number. The port for each instance is configured in the ARS.INI file.

Procedure

To configure an instance, follow these steps:

__ 1. Specify the instance in the ARS.INI file.
__ 2. Specify the ARS.CFG file for the instance.
__ 3. Specify the ARS.DBFS file for the instance.
__ 4. Specify the ARS.CACHE file for the instance.

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Specifying the instance in the ARS.INI file

Overview

The ARS.INI file contains information about Content Manager OnDemand instances. When you install the Content Manager OnDemand software, the ARS.INI file contains information about a default instance named archive. Most customers will use the default instance for their first or only instance of Content Manager OnDemand.

The information in the ARS.INI file is organized in sections with a header line that identifies each section. The header line can be identified by the brackets [ ] that delimit the beginning and end of the line.

The first section in the ARS.INI file contains information about the default instance. The following shows the default instance as provided by IBM:

```
[@SRV@_ARCHIVE]
HOST=platte
PROTOCOL=2
PORT=0
SRVR_INSTANCE=archive
SRVR_INSTANCE_OWNER=root
SRVR_OD_CFG=/usr/lpp/ars/config/ars.cfg
SRVR_DB_CFG=/usr/lpp/ars/config/ars.dbfs
SRVR_SM_CFG=/usr/lpp/ars/config/ars.cache
```

The HOST parameter identifies the host name alias, IP address, or fully qualified host name of the workstation on which the library server is running. The PROTOCOL parameter identifies the communications protocol used by the instance. The PORT parameter identifies the TCP/IP port number that the instance monitors for client requests. The stanza name (`[@SRV@_ARCHIVE]`) identifies the name of the Content Manager OnDemand instance. The SRVR_INSTANCE parameter identifies the name of the Content Manager OnDemand database. The SRVR_INSTANCE_OWNER parameter identifies the userid of the Content Manager OnDemand instance owner. The SRVR_OD_CFG parameter identifies the ARS.CFG file used by the instance. The SRVR_DB_CFG parameter identifies the ARS.DBFS file used by the instance. The SRVR_SM_CFG parameter identifies the ARS.CACHE file used by the instance.

When adding an instance to the ARS.INI file, remember that each instance must specify a unique instance name. For example, to add an instance for testing new applications, you might add an instance named *test*. When you work with more than one instance, you must identify the instance name when you run Content Manager OnDemand programs (such as ARSDB, ARSLOAD, and ARSSOCKD) and database commands (such as connecting to the database). The following shows an example of a second instance in the ARS.INI file:

```
[@SRV@_TEST]
HOST=rhone
PROTOCOL=2
PORT=1444
SRVR_INSTANCE=test
SRVR_INSTANCE_OWNER=root
SRVR_OD_CFG=/usr/lpp/ars/config/ars.test.cfg
SRVR_DB_CFG=/usr/lpp/ars/config/ars.test.dbfs
SRVR_SM_CFG=/usr/lpp/ars/config/ars.test.cache
```

The header line for the definition of the instance is `TEST`. The HOST Change to the /usr/lpp/ars/config directory.. The instance communicates over TCP/IP port

number 1444. The name of the Content Manager OnDemand database is test. The name of the Content Manager OnDemand instance is test. The userid of the Content Manager OnDemand instance owner is root. The instance identifies its server configuration file (ARS.TEST.CFG), table space file systems file (ARS.TEST.DBFS), and cache file systems file (ARS.TEST.CACHE).

Procedure

To specify the instance in the ARS.INI file, follow these steps:

1. Log in to the server as the root user.
2. Change to the /usr/lpp/ars/config directory.
3. Make a backup copy of the ARS.INI file provided by IBM.
4. Edit the ARS.INI file with a standard text editor such as vi.
5. Most customers will use the default instance named ARCHIVE for their first or only instance of Content Manager OnDemand. Verify the following parameters and values.
   __ a. The header line contains a string that identifies the name of the instance. Unless you specify otherwise, the first or only instance is named ARCHIVE.
   __ b. The HOST parameter identifies the host name alias, IP address, or fully qualified host name of the library server.
   __ c. The PROTOCOL parameter identifies the communications protocol used by the instance. The number 2 identifies TCP/IP, and is the only valid value.
   __ d. The PORT parameter identifies the TCP/IP port number that the instance monitors for client requests (the number 0 means that the instance monitors port number 1445). If you use a port number other than 1445 on the library server, enter that number instead of 0 (zero). **For customers running more than one instance:** Each instance that runs on the same workstation must specify a different port number. If you configure a separate object server, ensure that the port number of the object server matches the port number of the library server.
   __ e. The stanza name ([@SRV@_ARCHIVE]) identifies the name of the Content Manager OnDemand instance. This value should match the name of the Content Manager OnDemand database (see “Installing DB2” on page 23 or “Installing Oracle” on page 24). The instance name can be from one to eight characters in length, and can include the A through Z and 0 through 9 characters.
   __ f. The SRVR_INSTANCE_OWNER parameter identifies the userid of the Content Manager OnDemand instance owner. This is the userid that is permitted to run the Content Manager OnDemand server programs, such as ARSSOCKD, ARSLOAD, and ARSMAINT. **For customers configuring the system to run under a user other than root:** See Chapter 6, “Creating a user for the Content Manager OnDemand instance owner on AIX,” on page 21.
   __ g. The SRVR_OD_CFG parameter identifies the ARS.CFG configuration file used by the instance. See “Specifying the ARS.CFG file for the instance” on page 52.
   __ h. The SRVR_DB_CFG parameter identifies the ARS.DBFS table space file system file used by the instance. See “Specifying the ARS.DBFS file for the instance” on page 63.

__ i. The SRVR_SM_CFG parameter identifies the ARS.CACHE cache file system file used by the instance. See “Specifying the ARS.CACHE file for the instance” on page 64.

6. **Note for distributed library/object servers:** Configure one copy of the ARS.INI file on each workstation that is part of the Content Manager OnDemand system. Verify that the information specified in the ARS.INI file is consistent on all workstations that are part of the instance. In addition:
   a. Ensure that the port number of the object server matches the port number of the library server.
   b. Verify that the HOST parameter on the object server must specify the host name alias, IP address, or fully qualified host name of the library server.
7. Save the file and exit the text editor.
8. You should control access to the ARS.INI file by changing the file permissions so that only the Content Manager OnDemand instance owner has read or write access to the file.

Specifying the ARS.CFG file for the instance

The ARS.CFG file contains information about the instance, such as identifying the object servers that belong to the instance, the language settings for the instance, and information that is used by database, storage, and print manager programs.

Before you create the Content Manager OnDemand database, start Content Manager OnDemand, use archive storage, use the server print function, migrate tables to table spaces, or import tables from archive storage to the database, you should review the parameters in the ARS.CFG file. The values that IBM provides are sufficient for most customers. However, you might need to change some of the values for your environment.

Procedure

To specify the ARS.CFG file for the instance, follow these steps:

1. Log in to the server as the `root` user.
2. Change to the `/usr/lpp/ars/config` directory.
3. Make a backup copy of the file provided by IBM.
4. Edit the ARS.CFG file with a standard text editor such as vi.
5. **Note for distributed library/object servers:** Some parameters in the ARS.CFG file are not used on object servers. For example, an object server does not use the license parameters, server print parameters, and database parameters. See the sections that follow for more information. Configure one copy of the ARS.CFG file on each workstation that is part of the Content Manager OnDemand system. Set the ARS_SRVR parameter to the TCP/IP host name alias, fully qualified host name, or IP address of the library server and set the ARS_ARS_LOCAL_SRVR parameter to the TCP/IP host name alias, fully qualified host name, or IP address of the object server. Some parameters in the ARS.CFG file are not used on object servers. For example, an object server does not use the license parameters, server print parameters, and database parameters. See the sections that follow for more information.
6. Save the file and exit the text editor.
7. You should control access to the ARS.CFG file by changing the file permissions so that only the Content Manager OnDemand instance owner has read or write access to the file.

See the following topics for more information:

- ARS_CODEPAGE
- ARS_DB_ENGINE
- ARS_DB_IMPORT
- ARS_DB_PARTITION
- ARS_DB_TABLESPACE
- ARS_DB_TABLESPACE_USEREXIT
- ARS_DB2_ARCHIVE_LOGPATH
- ARS_DB2_DATABASE_PATH
- ARS_DB2_LOG_NUMBER
- ARS_DB2_LOGFILE_SIZE
- ARS_DB2_PRIMARY_LOGPATH
- ARS_DB2_TSM_CONFIG
- ARS_LANGUAGE
- ARS_LDAP_ALLOW_ANONYMOUS
- ARS_LDAP_BASE_DN
- ARS_LDAP_BIND_ATTRIBUTE
- ARS_LDAP_BIND_DN
- ARS_LDAP_BIND_DN_PWD
- ARS_LDAP_BIND_MESSAGES_FILE
- ARS_LDAP_MAPPED_ATTRIBUTE
- ARS_LDAP_PORT
- ARS_LDAP_SERVER
- ARS_LOCAL_SRVR
- ARS_MESSAGE_OF_THE_DAY
- ARS_NUM_DBSRVR
- ARS_NUM_LICENSE
- ARS_ORACLE_HOME
- ARS_ORACLE_PASSWORD
- ARS_ORACLE_USERID
- ARS_PRINT_PATH
- ARS_SRVR
- ARS_STORAGE_MANAGER
- ARS_TMP
- DB_ENGINE
- DB2INSTANCE
- DSM_CONFIG
- DSM_DIR
- DSM_LOG
- DSMG_CONFIG
- DSMG_DIR
- DSMG_LOG
- DSMI_CONFIG
- DSMI_DIR
- DSMI_LOG

- DSMSERV_CONFIG
- DSMSERV_DIR

ARS_CODEPAGE

The ARS_CODEPAGE parameter identifies the code page of the Content Manager OnDemand database. The ARS_CODEPAGE parameter need be specified only if the locale of the system on which the Content Manager OnDemand server is running is different than the code page of the Content Manager OnDemand database. Content Manager OnDemand uses the locale of the system on which the Content Manager OnDemand server is running as the default value. This parameter may be specified on the library server and on object servers.

ARS_DB_ENGINE parameter

The database manager product that you installed on the library server. You can specify DB2 or ORACLE. The default value is DB2. The ARS_DB_ENGINE parameter is ignored on object servers.

ARS_DB_IMPORT parameter

The method that Content Manager OnDemand uses to migrate index data to table spaces and import tables from archive storage to the database. The default value is `0` (zero). The ARS_DB_IMPORT parameter is ignored on object servers.

If you are configuring a library server, then you must set the ARS_DB_IMPORT parameter to one of the following values:

0 Content Manager OnDemand uses the EXPORT and IMPORT commands to migrate table data. This method requires disk space to hold log records generated when exporting existing table data and importing data to the new table space. This is the default migration method.

1 Content Manager OnDemand uses the EXPORT and LOAD commands to migrate table data. This method requires disk space to hold log records generated when exporting existing table data. The LOAD command generates a backup image of the new table space. The image file is stored in Tivoli Storage Manager-managed storage. This is the recommended migration method.

Note: Before you can use Tivoli Storage Manager to manage DB2 backup image files, you must install and configure Tivoli Storage Manager. See Chapter 8, “Installing and configuring Tivoli Storage Manager on AIX,” on page 27 for details.

2 Content Manager OnDemand uses the EXPORT and LOAD commands to migrate the table data. This method requires disk space to hold log records generated when exporting existing table data. The LOAD command generates a backup image of the new table space. The image file is stored in the file system identified by the ARS_TMP parameter (see “ARS_TMP parameter” on page 61).

ARS_DB_PARTITION parameter

Determines whether you can partition the database across nodes or systems. By default, you cannot partition the database. If the database manager product that you are using with Content Manager OnDemand supports partitioning, then you can specify that you want to partition the database by changing the value of this parameter to 1 (one). Currently, partitioning is supported only by DB2 Universal

Database Extended Enterprise Edition. To store application group index data in partitions, your application groups must specify a *partition field*. The ARS_DB_PARTITION parameter is ignored on object servers.

ARS_DB_TABLESPACE parameter

The name of the table space for the Content Manager OnDemand system tables. The value of this parameter must match an existing table space name in the database. You must have created the table space in DB2 or Oracle.

ARS_DB_TABLESPACE_USEREXIT parameter

Determines if the Content Manager OnDemand table space creation exit will be invoked. The Content Manager OnDemand table space creation exit allows an installation to take action when Content Manager OnDemand creates a table space, table, or index tables that will be used to store application index data. The exit is not called for the Content Manager OnDemand system tables.

The following statement must exist in the ARS.CFG file that is associated with the instance so that the ARSUTBL DLL can be invoked:

```
ARS_DB_TABLESPACE_USEREXIT=absolute path name
```

For the sample ARSUTBL, you would specify the following statement in the ARS.CFG file:

```
ARS_DB_TABLESPACE_USEREXIT=/usr/lpp/ars/bin/exits/arsutbl
```

Appendix I, “Table space creation exit,” on page 393 provides information about the exit point that gets invoked when Content Manager OnDemand creates table spaces, tables, and indexes for the Content Manager OnDemand data tables.

ARS_DB2_ARCHIVE_LOGPATH parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see “ARS_DB_ENGINE parameter” on page 54) to DB2 (the default), the location that will hold the offline archived log files. The default value is `/arsdb_archivelog`. The ARS_DB2_ARCHIVE_LOGPATH is ignored if you use Tivoli Storage Manager to maintain the DB2 archived log files. The ARS_DB2_ARCHIVE_LOGPATH parameter is ignored on object servers.

The DB2UEXIT.DISK program copies the online archived log files from the primary log file directory to the archive log file directory. An archived log file becomes *offline* when it is no longer stored in the primary log file directory. After creating a backup image of the database, the ARSDB program deletes the offline archived log files. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* can help you estimate the amount of space required to hold the offline archived log files.

ARS_DB2_DATABASE_PATH parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see “ARS_DB_ENGINE parameter” on page 54) to DB2 (the default), the base file system in which the Content Manager OnDemand database will reside. You must make sure that the specified location contains enough space to hold the system tables, the USERSPACE1 table space, and any application group tables that are not stored in their own table spaces. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* can help you estimate the amount of space required to hold the database. The default value is `/arsdb`. The ARS_DB2_DATABASE_PATH parameter is ignored on object servers.

ARS_DB2_LOG_NUMBER parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 54) to DB2 (the default), the number of primary log files. The default value is `40`. The ARS_DB2_LOG_NUMBER parameter is ignored on object servers.

The values of the ARS_DB2_LOGFILE_SIZE and ARS_DB2_LOG_NUMBER parameters determine the total amount of space available for DB2 to log changes to the database. The values that you specify must support the largest single report that you plan to load (or unload). DB2 will fail if there is not enough log file space available to hold the changes to the database. The default values allocate 160 MB of space. See the *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* for information about estimating the amount of storage space required to hold the DB2 log files.

ARS_DB2_LOGFILE_SIZE parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 54) to DB2 (the default), the size of a log file, in 4 KB blocks. The default value is `1000`. The ARS_DB2_LOGFILE_SIZE parameter is ignored on object servers.

The values of the ARS_DB2_LOGFILE_SIZE and ARS_DB2_LOG_NUMBER parameters determine the total amount of space available for DB2 to log changes to the database. The values that you specify must support the largest single report that you plan to load (or unload). DB2 will fail if there is not enough log file space available to hold the changes to the database. The default values allocate 160 MB of space. See the *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* for information about estimating the amount of storage space required to hold the DB2 log files.

ARS_DB2_PRIMARY_LOGPATH parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 54) to DB2 (the default), the location that will hold the active archived log files. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* can help you estimate the amount of space required to hold the active archived log files. The default value is `/arsdb_primarylog`. The ARS_DB2_PRIMARY_LOGPATH parameter is ignored on object servers.

ARS_DB2_TSM_CONFIG parameter

If you are configuring the Content Manager OnDemand library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 54) to DB2 (the default) and you plan to use Tivoli Storage Manager to maintain DB2 archived log files and backup image files, the full path name of the Tivoli Storage Manager options file that identifies the Tivoli Storage Manager server that will maintain the DB2 files. For example: `/usr/tivoli/tsm/client/api/bin64/dsm.db2.opt`.

The ARS_DB2_TSM_CONFIG parameter is ignored on object servers. "Configuring Tivoli Storage Manager to maintain DB2 files" on page 36 provides information to help you configure Tivoli Storage Manager to maintain DB2 files.

ARS_LANGUAGE parameter

The national language environment used to create the database. Content Manager OnDemand uses a three-character *language code* to derive the locale and code set for the server operating system. The default value is ENU (US English). See Appendix J, "National Language Support," on page 397 for a list of the language codes and information about configuring the system for national language character support. The ARS_LANGUAGE parameter is ignored on object servers.

Important: You must provide the correct language code for your operating environment **before** you create the Content Manager OnDemand database.

ARS_LDAP_ALLOW_ANONYMOUS parameter

Specifies whether or not anonymous bind connections are allowed on this LDAP server. Valid values are TRUE and FALSE. If FALSE, you must also specify ARS_LDAP_BIND_DN and ARS_LDAP_BIND_DN_PWD.

ARS_LDAP_BASE_DN parameter

Specifies the base distinguished name to use. This parameter is required for LDAP authentication.

Example 1:

```
ARS_LDAP_BASE_DN=ou=mycity,o=xyzcompany
```

Example 2:

```
ARS_LDAP_BASE_DN=dc=ondemand,dc=xyzcompany
```

ARS_LDAP_BIND_ATTRIBUTE parameter

Specifies the attribute being bound and is the attribute name to be searched on the LDAP server. This parameter is required for LDAP authentication.

Example:

```
ARS_LDAP_BIND_ATTRIBUTE=mail
```

ARS_LDAP_BIND_DN parameter

Specifies the distinguished name to use if anonymous connections are not allowed for binding. Used with ARS_LDAP_ALLOW_ANONYMOUS set to FALSE.

ARS_LDAP_BIND_DN_PWD parameter

Specifies the distinguished name password to use if anonymous connections are not allowed for binding. Used with ARS_LDAP_ALLOW_ANONYMOUS set to FALSE.

ARS_LDAP_BIND_MESSAGES_FILE parameter

Specifies the location of a file containing the LDAP message strings the Content Manager OnDemand server looks for during login. This is used for issuing messages when the user's password is about to expire, or their LDAP account is locked. ARS_LDAP_BIND_MESSAGES_FILE is used in conjunction with the ARSLDAP.INI file to implement this functionality.

ARS_LDAP_MAPPED_ATTRIBUTE parameter

Specifies the attribute being returned to Content Manager OnDemand as a user ID. This is the attribute name to be returned from the LDAP server once the bind attribute name is found. It can be the same as the bind attribute or different. This parameter is required for LDAP authentication.

Example:

```
ARS_LDAP_MAPPED_ATTRIBUTE=sAMAccountName
```

ARS_LDAP_PORT parameter

Specifies the port on which LDAP is listening. The default value is 389. This parameter is optional.

ARS_LDAP_SERVER parameter

Specifies the IP address or the fully-qualified hostname of the LDAP server. This parameter is required for LDAP authentication.

ARS_LOCAL_SRVR parameter

The name of the object server. The ARS_LOCAL_SRVR parameter is ignored on library servers. However, if you are configuring a library server, you must either omit this parameter from the ARS.CFG file or set this parameter to a blank value, that is: `ARS_LOCAL_SRVR=` .

If you are configuring an object server, set this parameter to the TCP/IP host name alias, fully qualified host name, or IP address of the object server. If the object server is running on a node of a multi-processor workstation, then set this parameter to the external IP address of the node on which you installed the object server.

When you add an Content Manager OnDemand storage node to an object server, you must use the value of the ARS_LOCAL_SRVR parameter to name the storage node.

ARS_MESSAGE_OF_THE_DAY parameter

Use to show the message of the day. Set to the full path name of a file that contains the message that you want to show. For example:

```
ARS_MESSAGE_OF_THE_DAY=/usr/lpp/ars/tmp/message.txt
```

The contents of the message file can contain a maximum of 1024 characters of text. The administrative client and the Windows client show the message after the user logs on to the server. To close the message box and continue, the user must click OK. If you do not specify a message file, then the normal client processing occurs.

ARS_NUM_DBSRVR parameter

Determines the number of processes that Content Manager OnDemand starts on the library server to handle connections to the database. The ARS_NUM_DBSRVR parameter is ignored on object servers.

In addition to database connections by Content Manager OnDemand client programs, the value that you specify must support the number of active Content Manager OnDemand commands and daemons such as ARSLOAD, ARSDOC, ARSDB, ARSMAINT, and ARSADMIN.

Each connection to the database requires a database agent. Content Manager OnDemand can start a database agent for each connection. However, each agent requires its own private memory and some portion of application shared memory. You can use the ARS_NUM_DBSRVR parameter to optimize the way that Content Manager OnDemand handles the database load. For example, you can define ARS_NUM_DBSRVR so that Content Manager OnDemand starts a fixed number of database agents, regardless of the number of concurrent database requests. While this might appear restrictive, database requests typically process very quickly. For example, ten database agents can handle a heavy database request load, while balancing the impact on system resources.

You should specify a value for the ARS_NUM_DBSRVR parameter that supports the peak number of concurrent database connections that you expect the library server to handle. A low value limits access to the database during periods of high database activity. A high value requires more system resources during periods of high database activity. The value that you choose also depends on the characteristics of the queries. For example, general queries typically keep a connection open longer than a more specific query.

ARS_NUM_LICENSE parameter

The maximum number of concurrent users allowed on the system. The default value is 1 (one). The ARS_NUM_LICENSE parameter is ignored on object servers.

You must acquire an authorization for each concurrent user. See the license information provided with the Content Manager OnDemand product package for more information.

To monitor the number of users on your system, search the System Log folder for message numbers 201 and 202. To determine whether your system has exceeded the allowed number of users, search the System Log for messages that indicate that the number of users accessing the system exceeds the maximum allowed (as specified by the ARS_NUM_LICENSE parameter).

ARS_ORACLE_HOME parameter

Use to specify the base installation directory for Oracle. The default value is:

```
ARS_ORACLE_HOME=/oracle
```

Replace the string `/oracle` with the name of the directory in which Oracle was installed.

ARS_ORACLE_PASSWORD parameter

Specifies the password of the Content Manager OnDemand user in Oracle (root). This value must match the userid of the Content Manager OnDemand user in Oracle that was specified in “Installing Oracle” on page 24.

Example:

```
ARS_ORACLE_PASSWORD=xxxxxxxxxx
```

Replace the string `xxxxxxxxxx` with the password of the Content Manager OnDemand user in Oracle.

ARS_ORACLE_USERID parameter

Specifies the userid of the Content Manager OnDemand user in Oracle (root). This value must match the userid of the Content Manager OnDemand user in Oracle that was specified in "Installing Oracle" on page 24.

Example:

```
ARS_ORACLE_USERID=root
```

Replace the string `root` with the userid of the Content Manager OnDemand user in Oracle.

ARS_PRINT_PATH parameter

The location where the Content Manager OnDemand server print function temporarily stores print data. You must make sure that there is enough space in the specified location to hold the print files for the maximum number of concurrent print requests that the server will handle. The default value is `/tmp`. The ARS_PRINT_PATH parameter is ignored on object servers.

You should dedicate a file system to hold the print files. The file system contain at least 500 MB of free space at all times. If your storage configuration permits, you should allocate 1 GB or more of free space to the specified file system.

The permissions for the file system must be `drwxrwxrwt`. You can use the CHMOD command to set the permissions. For example, the command `chmod 1777 /tmp` sets the permissions for the `/tmp` file system.

ARS_SRVR parameter

The name of the library server. The ARS_SRVR parameter is ignored on library servers. However, if you are configuring a library server, you must either omit this parameter from the ARS.CFG file or set this parameter to a blank value, that is: `ARS_SRVR= .`

If you are configuring an object server, set the ARS_SRVR parameter to the TCP/IP host name alias, fully qualified host name, or IP address of the library server. If the library server is running on a node of a multi-processor workstation, then set this parameter to the external IP address of the node on which you installed the library server.

ARS_STORAGE_MANAGER parameter

Determines whether the server program is linked to a cache-only storage manager or an archive storage manager. You must specify this parameter on library and object servers.

You can specify one of the following values:

CACHE_ONLY
Link the server program to a cache-only storage manager.

TSM Link the server program to an archive storage manager. This is the default value in the ARS.CFG file that is provided by IBM.

Note: Before Content Manager OnDemand can work with an archive storage manager to maintain data, you must install and configure the archive storage manager software.

ADSM

Deprecated. This option has been replaced by TSM. ADSM is still supported for existing customers.

ARS_SUPPORT_CFSOD parameter

If you plan to use Content Federation Services for Content Manager OnDemand, you must set this parameter equal to 1.

ARS_TMP parameter

The location where Content Manager OnDemand programs temporarily store data. You must allocate sufficient free space in the specified file system to support tasks such as migrating and importing index data. The default value is: `/tmp`. You must specify the ARS_TMP parameter on the library server and on all object servers.

You should dedicate a file system to temporary storage. The file system should contain at least 500 MB of free space at all times. If your storage configuration permits, you should allocate 1 GB or more of free space to the specified file system.

The permissions for the file system must be `drwxrwxrwt`. You can use the CHMOD command to set the permissions. For example, the command `chmod 1777 /tmp` sets the permissions for the `/tmp` file system.

DB_ENGINE parameter

Deprecated. This parameter has been replaced by ARS_DB_ENGINE. However, the DB_ENGINE parameter is still supported for existing customers.

DB2INSTANCE parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 54) to DB2 (the default), the name of the database instance owner that you created when you installed DB2 (see "Installing DB2" on page 23). The default value is `archive`. The DB2INSTANCE parameter is ignored on object servers.

DSM_CONFIG parameter

If you plan to use Tivoli Storage Manager, the full path name of the Tivoli Storage Manager client options file. For example: /usr/tivoli/tsm/client/api/bin/dsm.opt

You must set the DSM_CONFIG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSM_DIR parameter

If you plan to use Tivoli Storage Manager, the directory that contains the Tivoli Storage Manager client files. For example: `/usr/tivoli/tsm/client/api/bin`.

You must set the DSM_DIR parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSM_LOG parameter

If you plan to use Tivoli Storage Manager, the directory in which Tivoli Storage Manager stores the space management client error log. The default value is `/tmp`.

You must set the DSM_LOG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMG_CONFIG parameter

If you plan to use Tivoli Storage Manager, the full path name of the Tivoli Storage Manager administrative client options file. For example: `/usr/tivoli/tsm/client/api/bin/dsm.opt`.

You must set the DSMG_CONFIG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMG_DIR parameter

If you plan to use Tivoli Storage Manager, the directory that contains the Tivoli Storage Manager administrative client files. For example: `/usr/tivoli/tsm/client/api/bin`.

You must set the DSMG_DIR parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMG_LOG parameter

If you plan to use Tivoli Storage Manager, the directory in which Tivoli Storage Manager stores the administrative client error log. The default value is `/tmp`. You must set the DSMG_LOG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMI_CONFIG parameter

If you plan to use Tivoli Storage Manager, the full path name of the Tivoli Storage Manager API options file. For example: `/usr/tivoli/tsm/client/api/bin64/dsm.opt`.

You must set the DSMI_CONFIG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMI_DIR

If you plan to use Tivoli Storage Manager, the directory that contains the Tivoli Storage Manager API files. For example: `/usr/tivoli/tsm/client/api/bin64`.

You must set the DSMI_DIR parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMI_LOG parameter

If you plan to use Tivoli Storage Manager, the directory in which Tivoli Storage Manager stores the Tivoli Storage Manager API error log. The default value is `/tmp`. You must set the DSMI_LOG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMSERV_CONFIG parameter

If you plan to use Tivoli Storage Manager, the full path name of the Tivoli Storage Manager server options file. For example: `/usr/tivoli/tsm/server/bin/dsmserv.opt`.

You must set the DSMSERV_CONFIG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMSERV_DIR parameter

If you plan to use Tivoli Storage Manager, the directory that contains the Tivoli Storage Manager server files. For example: `/usr/tivoli/tsm/server/bin`.

You must set the DSMSERV_DIR parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

Specifying the ARS.DBFS file for the instance

Overview

The ARS.DBFS file lists the file systems on the library server that can be used by the database manager to maintain index data in table spaces. The rules for using table space file systems are:

- You should store only Content Manager OnDemand application group data in the table space file systems.
- You should define a minimum of two table space file systems. (In general, the more table space file systems that you define, the better for performance and recovery.)
- You should allocate equal amounts of disk space to each table space file system. If you increase the amount of space in one table space file system, you should increase the amount of space in the other table space file systems by an equal amount.

Each line in the ARS.DBFS file identifies the name of a file system that Content Manager OnDemand can use to store table spaces and specifies the type of table spaces created in the file system.

When naming table space file systems, you should use the following convention:

```
/filesystem SMS
```

Where `filesystem` is the name of the file system and `SMS` indicates the type of table spaces created in the file system. The name of the file system should identify the type of table spaces that can be created in the file system. For example, the following line identifies an SMS table space file system:

```
/arsdb/db1/SMS SMS
```

The following shows an example of an ARS.DBFS file that defines three SMS table space file systems:

```
/arsdb/db1/SMS SMS
/arsdb/db2/SMS SMS
/arsdb/db3/SMS SMS
```

Procedure

To create (or edit) the ARS.DBFS file for the instance:

1. Log in to the server as the `root` user.
2. Change to the `/usr/lpp/ars/config` directory.
3. Create (or edit) the ARS.DBFS file using a standard text editor such as vi.
4. Add one line for each file system that Content Manager OnDemand can use for table spaces.

5. Save the file and exit the editor.
6. A table space file system must be owned by the database instance owner and group. The suggested defaults are `archive` (instance owner) and `sysadm1` (group). You specified the instance owner and group when you installed the database manager product (see Chapter 7, "Installing the database manager on AIX," on page 23). Make sure that the user and group file permissions are set correctly. For example:

   ```
   drwxrws---  3 archive sysadm1  512 May 17 12:58 /arsdb/db1/SMS
   ```

   You can use the CHOWN command to set the ownership permissions. For example, the following command changes the owner of all file systems in the `/arsdb` tree to the `archive` user and the `sysadm1` group:

   ```
   chown -R archive:sysadm1 /arsdb*
   ```

7. You can use the CHMOD command to set the file permissions. For example, the following commands set the correct permissions for the `/arsdb/db1/SMS` filesystem:

   ```
   chmod 2770 /arsdb/db1/SMS
   chmod g+s /arsdb/db1/SMS
   ```

Specifying the ARS.CACHE file for the instance

The ARS.CACHE file lists the file systems on the object server that can be used by Content Manager OnDemand for cache storage.

If there are multiple file systems in the ARS.CACHE file, OnDemand uses the file system with the greatest amount of space free to store the objects.

The following example shows an ARS.CACHE file that defines five cache storage file systems:

```
/arscache/cache1
/arscache/cache2
/arscache/cache3
/arscache/cache4
/arscache/cache5
```

Procedure

To create the ARS.CACHE file for the instance:

1. Log in to the server as the `root` user.
2. Change to the `/usr/lpp/ars/config` directory.
3. Create (or edit) the ARS.CACHE file using a standard text editor such as vi.
4. Insert one line in the file for each file system on the server that Content Manager OnDemand can use for cache storage. **Important:** The first entry in the ARS.CACHE file identifies the base cache storage file system. Content Manager OnDemand stores control information in the base cache storage file system. After you define the base cache storage file system to Content Manager OnDemand, you cannot add or remove it from Content Manager OnDemand. It must remain as the first entry.
5. Save the file and exit the editor.
6. Cache file systems must be owned by the Content Manager OnDemand instance owner and the `system` group. Make sure that only the user file permissions are set, not the group or other file permissions. For example:

   ```
   drwx------  3 root system  512 Sep 22 13:08 /arscache/cache1
   ```

7. Use the CHOWN command to set the ownership permissions. The following example shows how to change the user and group ownership of all file systems in the /arscache tree:

   ```
   chown -R root:system /arscache*
   ```

8. Use the CHMOD command to set the file permissions. For example, the following commands set the correct permissions for the /arscache/cache1 file system:

   ```
   chmod 700 /arscache/cache1
   chmod g-s /arscache/cache1
   ```

Content Manager OnDemand cache storage files and subdirectories should have the following permissions:

```
drwx------ for every subdirectory (700)
-r-------- for every object that has been migrated to archive storage (400)
-rw------- for every object that has not yet been migrated (600)
-rwxrwxrwx for every symbolic link under the retr and migr directories (777)
```

The ARSLDAP.INI file

The ARS_LDAP_BIND_MESSAGES_FILE parameter enables Content Manager OnDemand to customize message text returned from an LDAP server that is used to alert users that their LDAP password is about to expire or their LDAP account is locked.

The messages displayed to users are contained in the file referenced by this parameter. To enable this user-configurable message functionality, create a file with the appropriate message strings, and set ARS_LDAP_BIND_MESSAGES_FILE to the full path of the file. The ARSLDAP.INI file is provided with example message strings that can be used by the ARS_LDAP_BIND_MESSAGES_FILE parameter.

The ARSLDAP.INI file contains the following three sections:

```
[BIND_MESSAGES]
PASSWORD_EXPIRED="/usr/lpp/ars/config/password_expired.txt"
ACCOUNT_LOCKED="/usr/lpp/ars/config/account_locked.txt"

[PASSWORD_EXPIRED]
TDS6="Password has expired"
AD="data 532"
UDEF1=
UDEF2=
UDEF3=

[ACCOUNT_LOCKED]
TDS6="Account is locked"
AD="data 775"
UDEF1=
UDEF2=
UDEF3=
```

The BIND_MESSAGES section specifies the path to the files containing the user-configurable message text that is displayed to users when their LDAP password is about to expire, or their LDAP account is locked. Generic files are supplied, and should be customized to reflect your actual Content Manager OnDemand environment.

An example message that would be displayed to a user:

```
Your LDAP password has expired and needs to be changed.
Log into <company intranet> for password setting instructions.
```

The entries in the PASSWORD_EXPIRED and ACCOUNT_LOCKED sections are for Tivoli Directory Server Version 6.x and Microsoft Active Directory (AD). These sections also contain three user-defined entries (UDEFx), allowing you to enter your own pattern strings for LDAP servers that are not directly supported.

The LDAP server may return additional information when the user's bind operation fails. When an error is returned from the LDAP server, Content Manager OnDemand reads the file referenced by the ARS_LDAP_BIND_MESSAGES_FILE parameter and searches under the two stanzas, [PASSWORD_EXPIRED] and [ACCOUNT_LOCKED], for user-defined text that matches the LDAP server error. If a match is found, Content Manager OnDemand will display the text found in the files defined under the [BIND_MESSAGES] stanza.

If the ARS_LDAP_BIND_MESSAGES_FILE parameter is not defined, has no file referenced, or the PASSWORD_EXPIRED or ACCOUNT_LOCKED files do not exist, the user will receive a default 'The server failed while attempting to logon' message.

Note: Currently only two error conditions can be handled: PASSWORD_EXPIRED and ACCOUNT_LOCKED. The section titles for these two conditions cannot be changed, but you can change the pattern strings and message text presented to the user to define any two error conditions.

Chapter 11. Creating an instance of Content Manager OnDemand on AIX

You create an instance of Content Manager OnDemand by running the ARSDB program on the library server. The ARSDB program initializes the base system tables that are required by Content Manager OnDemand. You initialize other system tables by running the ARSSYSCR program on the library server. The ARSSYSCR program initializes the system tables that are required to support the system log, system migration, and other Content Manager OnDemand functions.

Prerequisites

Before you create the instance, you must have completed the following:

__ 1. Installed and configured the database software (DB2 or Oracle), and created a database instance (DB2) or database (Oracle) for Content Manager OnDemand.

__ 2. Installed and configured the Content Manager OnDemand software, including the following files:
   - ARS.INI
   - ARS.CFG
   - ARS.DBFS
   - ARS.CACHE

Procedure

To create the instance, follow these steps:

__ 1. Specify permissions for the database directories.

__ 2. Create the instance by running the ARSDB program.

__ 3. Initialize the system logging facility by running the ARSSYSCR program. See "Initializing the system logging facility" on page 69.

__ 4. (Optional) Initialize the system load logging facility by running the ARSSYSCR program. See "Initialize the system load logging facility" on page 70 for more information.

__ 5. (Optional) Initialize the system migration facility by running the ARSSYSCR program.

For performance information about configuring DB2 parameters for Content Manager OnDemand on AIX, see *Database Performance Tuning on AIX* (SG24-5511-01).

Specifying permissions for the database directories

The group that the DB2 instance owner belongs to must have write access to the database directory names that are specified in the ARS.CFG file (the ARS_DB2_DATABASE_PATH, ARS_DB2_PRIMARY_LOGPATH, and ARS_DB2_ARCHIVE_LOGPATH parameters). You created the DB2 instance owner and group when you installed the database manager (see Chapter 7, "Installing the database manager on AIX," on page 23). See "Specifying the ARS.CFG file for the instance" on page 52 for help with configuring the ARS.CFG file.

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Procedure

To change the owner of the directories:

1. Log in to the server as the `root` user.
2. Use the CHOWN command to change directory ownership. For example, to change the owner and group of all file systems in the `/arsdb` tree to the `archive` owner and the `sysadm1` group, enter the following command:

   ```
   chown -R archive:sysadm1 /arsdb*
   ```

   Run the CHOWN command once to change the ownership of each of the database directories that are specified in the ARS.CFG file (the ARS_DB2_DATABASE_PATH, ARS_DB2_PRIMARY_LOGPATH, and ARS_DB2_ARCHIVE_LOGPATH parameters).

Creating the instance

Overview

You should use the ARSDB program to create the instance. The ARSDB program does the following to create the instance:

- Updates the database configuration
- Verifies the directories for the primary and archived log files
- Creates a link to the database user exit program

  If the database user exit program encounters errors when copying files, it creates the `db2uexit.err` file in the temporary data directory. (By default, `/tmp`. See "ARS_TMP parameter" on page 61 for details.) If this file exists, it usually means that you did not set the correct permissions for the log file directories or there is not enough free space to hold the archived log files. See "Specifying permissions for the database directories" on page 67 for information about setting permissions. See your operating system documentation for information about increasing the size of a file system.
- Creates a backup of the database
- Builds the Content Manager OnDemand system tables and indexes
- Binds the database to Content Manager OnDemand

The ARSDB program creates the database using standard SQL commands. See the documentation provided with the database manager product for information about the SQL commands issued by the ARSDB program and messages printed at the console.

Procedure

Notes:

1. You must provide the correct locale, code set, and code page **before** you create the database. These values are derived from the ARS_LANGUAGE parameter in the ARS.CFG file. See "ARS_LANGUAGE parameter" on page 57 for details.
2. **For Oracle users:** You must create the database by using the Oracle utilities **before** you create the Content Manager OnDemand instance. See "Installing Oracle" on page 24.

To create an instance of Content Manager OnDemand:

1. Log in to the server as the `root` user.
2. **DB2 users:** Type the following command at the prompt:

```
/usr/lpp/ars/bin/arsdb -I archive -gcv
```

Where `archive` is the name of the Content Manager OnDemand instance.

3. **Oracle users:** Type the following command at the prompt:

```
/usr/lpp/ars/bin/arsdb -I archive -rtv
```

Where `archive` is the name of the Content Manager OnDemand instance.

4. Press the Enter key.
5. The ARSDB program prompts you before creating a link to the database user exit program:
   - If you maintain DB2 archived log files on disk, enter 1 when prompted
   - If you use Tivoli Storage Manager to maintain the DB2 archived log files, enter 2 when prompted
6. Content Manager OnDemand creates the instance, makes a backup image of the database, and restores the Content Manager OnDemand system tables to the database. This process will take several minutes.

   The ARSDB program generates a series of messages. For example:

```
Creating the DB2 ARSDBASE database
Creating table ARSSERVR.arsag
Creating index ARSSERVR.arsag_name_idx
Creating index ARSSERVR.arsag_agid_idx
..... .. . . . . . . . . . . . . . . . . . .
..... .. . . . . . . . . . . . . . . . . . .
..... .. . . . . . . . . . . . . . . . . . .
Updating runstat statistics for table ARSSERVR.arsusrgrp
Creating table ARSSERVR.arsusrgrpid
Creating index ARSSERVR.arsusrgrpid_idx
Updating runstat statistics for table ARSSERVR.arsusrgrpid
```

Initializing the system logging facility

After you have successfully created the instance of Content Manager OnDemand, run the ARSSYSCR program to initialize the Content Manager OnDemand system logging facility for the instance.

To initialize the Content Manager OnDemand system logging facility:

1. Log in to the server as the `root` user.
2. Type the following command at the prompt:

```
/usr/lpp/ars/bin/arssyscr -I archive -l
```

Where `archive` is the name of the Content Manager OnDemand instance.

3. Press the Enter key.
4. Content Manager OnDemand creates the tables that support the system logging facility. This process may take several minutes.

   The ARSSYSCR program generates a series of messages. For example:

```
arssyscr: Updating ARSSERVR.ARSSYS
arssyscr: Adding to ARSSERVR.ARSAG with Storage Set Id = 0
arssyscr: Adding to ARSSERVR.ARSAGPERMS
arssyscr: Adding to ARSSERVR.ARSAGFLD
arssyscr: Adding to ARSSERVR.ARSAGFLDALIAS
arssyscr: Adding to ARSSERVR.ARSAG2FOL
arssyscr: Adding to ARSSERVR.ARSAPPUSR
arssyscr: Adding to ARSSERVR.ARSAPP
arssyscr: Adding to ARSSERVR.ARSFOL
arssyscr: Adding to ARSSERVR.ARSFOLPERMS
```

```
arssyscr: Adding to ARSSERVR.ARSFOLFLD
arssyscr: Adding to ARSSERVR.ARSFOLFLDUSR
arssyscr: Creation of System Log information was successful
```

Initialize the system load logging facility

Content Manager OnDemand provides an optional logging facility to enable tracking OnDemand loading activity. When you enable load logging, OnDemand stores the messages that are generated by OnDemand load programs in the system load log. You use one of the Content Manager OnDemand client programs to search for and filter messages by load date, application group name, load ID, input file name, and other parameters.

To initialize the Content Manager OnDemand system load logging facility:

1. Log in to the server as the `root` user.
2. Type the following command at the prompt:
   ```
   /opt/ondemand/bin/arssyscr -I archive  -a
   ```
3. Press the Enter key.
4. Content Manager OnDemand creates the tables that support the system load logging facility. This process may take several minutes.

   The ARSSYSCR program generates a series of messages. For example:

   ```
   arssyscr: Updating ARSSERVR.ARSSYS
   arssyscr: Adding to ARSSERVR.ARSAG with Storage Set Id = 0
   arssyscr: Adding to ARSSERVR.ARSAGPERMS
   arssyscr: Adding to ARSSERVR.ARSAGFLD
   arssyscr: Adding to ARSSERVR.ARSAGFLDALIAS
   arssyscr: Adding to ARSSERVR.ARSAG2FOL
   arssyscr: Adding to ARSSERVR.ARSAPPUSR
   arssyscr: Adding to ARSSERVR.ARSAPP
   arssyscr: Adding to ARSSERVR.ARSFOL
   arssyscr: Adding to ARSSERVR.ARSFOLPERMS
   arssyscr: Adding to ARSSERVR.ARSFOLFLD
   arssyscr: Adding to ARSSERVR.ARSFOLFLDUSR
   arssyscr: Creation of System Load information was successful
   ```

Initializing the system migration facility

The system migration facility is required only by customers who plan to migrate application group index data from the database to archive storage.

After you have successfully created the instance of the Content Manager OnDemand, run the ARSSYSCR program to initialize thethe Content Manager OnDemand system migration facility for the instance.

To initialize the Content Manager OnDemand system migration facility:

1. Log in to the server as the `root` user.
2. Type the following command at the prompt:
   ```
   /usr/lpp/ars/bin/arssyscr -I archive -a
   ```

   Where `archive` is the name of the Content Manager OnDemand instance.
3. Press the Enter key.
4. Content Manager OnDemand creates the tables that support the system migration facility. This process may take several minutes.

   The ARSSYSCR program generates a series of messages. For example:

```
arssyscr: Updating ARSSERVR.ARSSYS
arssyscr: Adding to ARSSERVR.ARSAG with Storage Set Id = 0
arssyscr: Adding to ARSSERVR.ARSAGPERMS
arssyscr: Adding to ARSSERVR.ARSAGFLD
arssyscr: Adding to ARSSERVR.ARSAGFLDALIAS
arssyscr: Adding to ARSSERVR.ARSAG2FOL
arssyscr: Adding to ARSSERVR.ARSAPPUSR
arssyscr: Adding to ARSSERVR.ARSAPP
arssyscr: Adding to ARSSERVR.ARSFOL
arssyscr: Adding to ARSSERVR.ARSFOLPERMS
arssyscr: Adding to ARSSERVR.ARSFOLFLD
arssyscr: Adding to ARSSERVR.ARSFOLFLDUSR
arssyscr: Creation of System Migration information was successful
```

Chapter 12. Automating instance operations on AIX

This section describes how to use operating system facilities to automatically start or schedule instance operations.

You can automatically start these instance operations whenever the system is started:

__ 1. Start the database on the library server
__ 2. Start the instance on the library server
__ 3. Start the instance on an object server
__ 4. Start the data loading programs

You can schedule these instance operations to begin automatically on a regular schedule:

__ 1. Schedule application group maintenance on the library server
__ 2. Schedule application group maintenance on an object server
__ 3. Schedule system table maintenance
__ 4. Schedule a backup of the Content Manager OnDemand database
__ 5. Schedule a backup of the Tivoli Storage Manager database

Starting the database

You can start the database on the library server using the ARSDB program:

```
su - archive "-c /usr/lpp/ars/bin/arsdb -gkv"  >> /tmp/arsdb.log 2>&1
```

Alternatively, you can start DB2 manually with the db2start command.

The following example shows an INIT record to automatically start the database when the operating system is initialized on the library server:

```
ars2:2:wait:su - archive "-c /usr/lpp/ars/bin/arsdb -gkv"  >> /tmp/arsdb.log 2>&1
```

Important: If the DB2 installation program adds a record to the INIT facility to automatically start the DB2 services, make sure that you place the ARSDB record after the record that starts the DB2 services.

Starting the instance on the library server

You must start an instance before clients can connect to the server or the database for the instance.

The ARSSOCKD program controls an Content Manager OnDemand instance on the library server. The ARSSOCKD program runs on the library server. The data loading program (ARSLOAD) and the maintenance programs (such as ARSADMIN and ARSMAINT) will fail and clients will be unable to connect to the instance if the ARSSOCKD program is not running on the library server.

To manually start the archive instance, you can enter the command:

```
/usr/lpp/ars/bin/arssockd archive
```

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The following example shows an INIT record that automatically starts the instance named `archive` when the operating system is initialized on the library server:

```
ars3:2:once:/usr/lpp/ars/bin/arssockd archive
```

Starting the instance on an object server

The ARSOBJD program controls an Content Manager OnDemand instance on an object server. Content Manager OnDemand programs that work with an instance on an object server will fail if the ARSOBJD program is not running on the object server.

The ARSOBJD program should be started only on object servers that are running on some other workstation than the library server.

To manually start the archive instance, you can enter the command:

```
/usr/lpp/ars/bin/arsobjd archive
```

The following example shows an INIT record that automatically starts the instance named `archive` when the operating system is initialized on an object server:

```
ars4:2:once:/usr/lpp/ars/bin/arsobjd archive
```

Starting the data loading programs

This section describes how to use operating system facilities to automatically start the Content Manager OnDemand data loading programs.

The Content Manager OnDemand data loading programs are:

- ARSJESD, to receive data from z/OS systems and store the data in file systems on the server
- ARSLOAD, to create index data and load the data into the system

ARSJESD

The ARSJESD program is the Content Manager OnDemand program that monitors a TCP/IP port for data transmitted to the Content Manager OnDemand server by Download for the z/OS feature from a host system. The ARSJESD program receives the data transmitted by Download for the z/OS feature and stores the data in file systems on the server. See *PSF for z/OS: Download for z/OS* for details about configuring and operating Download for the z/OS feature on the host system.

The following example shows an INIT record that automatically starts the ARSJESD program during operating system initialization:

```
ars5:2:once:/usr/lpp/ars/bin/arsjesd -p 6001 -d /arsacif/acif1
-d /arsacif/acif2 -d /arsacif/acif3 >> /tmp/arsjesd.log 2>&1
```

In the example, the ARSJESD program monitors TCP/IP port number `6001` and stores transmitted data in the specified directories. The ARSJESD program writes output messages to the `arsjesd.log` file in the `/tmp` directory.

You must verify the TCP/IP port number that the ARSJESD program monitors. Replace the string `6001` with the port number that is valid on the server that you are configuring. The ARSJESD program and Download on the z/OS system must specify the same port number. The port number that the ARSJESD program

monitors is different than the TCP/IP port number that the Content Manager OnDemand server uses to communicate with clients.

You must verify the names of the directories in which the ARSJESD program can put the data. Replace the strings `/arsacif/acif1`, `/arsacif/acif2`, and `/arsacif/acif3` with the names of directories that are valid on the server that you are configuring.

See the ARSJESD command reference in the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the options and parameters that you can specify.

ARSLOAD

The ARSLOAD program is the main Content Manager OnDemand data loading and indexing program. You can configure the ARSLOAD program to monitor specific file systems for report data downloaded from other systems. If the data needs to be indexed, then the ARSLOAD program calls the indexing program that is specified in the Content Manager OnDemand application. The ARSLOAD program then works with the database manager to load the index data into the database and works with the storage manager to load the report data and resources on to storage volumes.

The Content Manager OnDemand instance (started by using ARSSOCKD or ARSOBJD) must be running, otherwise the ARSLOAD program will fail.

Configuring the ARSLOAD.CFG file

To load a report into the system with the ARSLOAD program, you must specify a userid that has administrator authority for the application group into which you want to load the data. You must also specify a password for the userid. There are several ways that you can specify the userid and password:

- Specify the `-u` and `-p` parameters each time that you run the ARSLOAD program.
- Specify the `-U` parameter and name an input file each time that you run the ARSLOAD program. The input file contains the userid and password.
- Configure the ARSLOAD.CFG file with a system administrator userid and password. The values in the ARSLOAD.CFG file will be used when you run ARSLOAD program, unless you specify otherwise with the `-u` and `-p` parameters or the `-U` parameter. **Important:** Any time that you change the specified user's password in Content Manager OnDemand, remember to change it in the ARSLOAD.CFG file; otherwise the load will fail. The ARSLOAD program can accept an expired password. However, the ARSLOAD program will fail if you specify an incorrect password.

Follow these steps to configure the ARSLOAD.CFG file with a system administrator userid and password.

1. Log on as the `root` user.
2. Change to the `/usr/lpp/ars/config` directory.
3. Make a copy of the ARSLOAD.CFG file that was supplied by IBM:

   ```
   cp arsload.cfg arsload.cfg.orig
   ```

   Make changes to the ARSLOAD.CFG file with a standard text editor such as vi.
4. Change the userid and password. Table 5 on page 76 lists the values in the ARSLOAD.CFG file that was supplied by IBM.

Table 5. ARSLOAD.CFG file

Variable	Meaning	Default
USERID	Content Manager OnDemand system administrator user. A system administrator user can load data into any application group defined to Content Manager OnDemand.	admin
PASSWD	Password for the Content Manager OnDemand system administrator user	

5. Save your changes and exit the editor.
6. Set the user file permissions so that only the `root` user can access the ARSLOAD.CFG file. Clear the group and other file permissions. Set the Read Only user file permission for the ARSLOAD.CFG file. The permissions should appear as follows:

```
-r-------- 1 root system 1832 Sep 02 13:13 arsload.cfg
```

Automating the ARSLOAD program

The following example shows an INIT record that automatically starts the ARSLOAD program for the instance named `archive` during operating system initialization:

```
ars6:2:once:/usr/lpp/ars/bin/arsload -v -c /arsacif/acif4 -d /arsacif/acif1
-d /arsacif/acif2 -d /arsacif/acif3 -I archive
```

In the example, the ARSLOAD program checks for input files in the specified directories every ten minutes (the default polling time). An input file must have a file type of .ARD or .PDF to initiate the load process. If an input file needs to be indexed, the ARSLOAD program stores the index data in the specified index directory.

You must verify the names of the directories. Replace the strings `/arsacif/acif1`, `/arsacif/acif2`, `/arsacif/acif3`, and `/arsacif/acif4` with the names of directories that are valid on the server that you are configuring.

The example uses the Content Manager OnDemand userid and password that was specified in the ARSLOAD.CFG file. See "Configuring the ARSLOAD.CFG file" on page 75 for information about specifying the userid and password in the ARSLOAD.CFG file.

After indexing the data, the ARSLOAD program deletes the input files, unless you specify otherwise. Any output or error messages that are generated by the ARSLOAD program are written to `stdout`, `stderr`, and the system log.

See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSLOAD program.

Scheduling application group maintenance on the library server

You can run the ARSMAINT program on the library server to maintain application group data in the database and cache storage. See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSMAINT program.

The instance must be started by the ARSSOCKD program, otherwise the ARSMAINT program will fail.

The following is an example of a CRON record that automatically starts the ARSMAINT program every day at 4 am for the instance named `archive`. The ARSMAINT program will migrate and delete application group index data, optimize application group index data, copy report data from cache storage to archive media, delete report data from cache storage, and inspect and verify the cache file systems. This format of the command is typically used for a library/object server with Tivoli Storage Manager on one workstation.

```
00 4 * * * /usr/lpp/ars/bin/arsmaint -cdeimrsv -I archive
```

Scheduling application group maintenance on an object server

You can run the ARSMAINT program on an object server to maintain application group data in cache storage. See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSMAINT program.

The instance must be started by the ARSOBJD program, otherwise the ARSMAINT program will fail.

The following is an example of a CRON record that automatically starts the ARSMAINT program every day at 4 am for the instance named `archive`. The ARSMAINT program will maintain application group data in cache storage, including copying report data to archive storage. This format of the command is typically used for an object server with Tivoli Storage Manager on some other workstation than the library server.

```
00 4 * * * /usr/lpp/ars/bin/arsmaint -cmsv
```

Scheduling system table maintenance

You can run the ARSDB program to maintain the Content Manager OnDemand system tables on the library server. See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSDB program.

The instance must be started by the ARSSOCKD program, otherwise the ARSDB program will fail.

The following is an example of a CRON record that automatically starts the ARSDB program to maintain the Content Manager OnDemand system tables for the instance named `archive`. The ARSDB program will run twice a month, on the 7th and 14th of each month, beginning at 5 am.

```
00 5 7,14 * * /usr/lpp/ars/bin/arsdb -mv -I archive >> /tmp/arsdb.log 2>&1
```

Scheduling the Content Manager OnDemand database backup

You can use the ARSDB program to create a backup image of the Content Manager OnDemand database. The ARSDB program supports table space backups and full database backups, online backups and offline backups, and the use of Tivoli Storage Manager to maintain the backup image files. See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSDB program.

The following is an example of a CRON record that automatically starts the ARSDB program to create a full online backup image of the Content Manager OnDemand database for the instance named `archive` every day beginning at 5:30

am. The backup image is written to a tape in the device /dev/rmt0. A tape must be mounted in the device before the ARSDB program begins.

```
30 5 * * * /usr/lpp/ars/bin/arsdb -v -z /dev/rmt0 -I archive >> /tmp/arsdb.log 2>&1
```

Chapter 13. Your next step on AIX

After you have installed the Content Manager OnDemand and related software on the system, configured the instance of Content Manager OnDemand, created the instance, and automated instance operations, you are now ready to verify the installation on Content Manager OnDemand. See Chapter 55, “Verifying the installation,” on page 349.

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Part 3. Installing Content Manager OnDemand on HP-UX Itanium servers

This part of the *IBM Content Manager OnDemand for Multiplatforms: Installation and Configuration Guide* explains how to install and configure Content Manager OnDemand on an HP-UX Itanium server and how to install and configure related software to work with Content Manager OnDemand. There are five basic phases to the installation, which are illustrated in Figure 7:

- Preparing for the installation
- Installing and configuring Content Manager OnDemand and related software
- Verifying the installation
- Preparing the system for use
- Adding optional software

You will find checklists for each of these phases in Chapter 14, "Checklist for installation on HP-UX Itanium," on page 83.

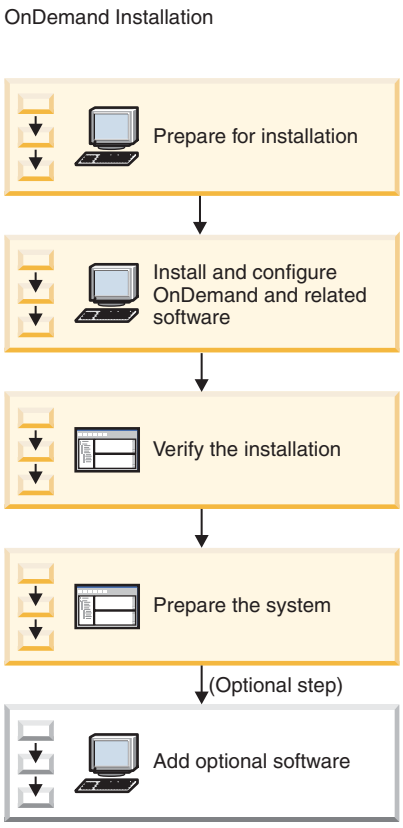

Figure 7. Installing Content Manager OnDemand on an HP-UX Itanium server

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Chapter 14. Checklist for installation on HP-UX Itanium

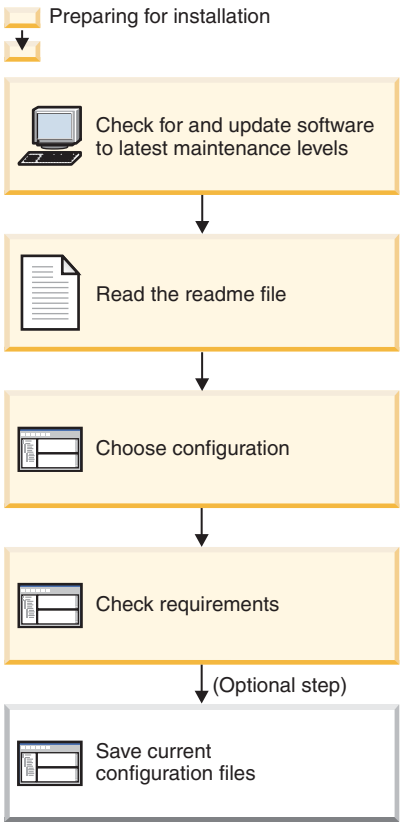

Figure 8. Pre-installation tasks

Before beginning the installation, you should complete the following tasks:

__ 1. Contact the IBM Support Center for the latest maintenance levels of DB2, Content Manager OnDemand, and optionally, Tivoli Storage Manager and IBM Infoprint Manager (Infoprint). If you are using Oracle instead of DB2, contact Oracle for information about the latest maintenance level of Oracle.

__ 2. Obtain a copy of the latest Content Manager OnDemand README file. Print and read the entire file before you begin.

__ 3. Check the Content Manager OnDemand prerequisites and verify the required and optional hardware and software products (see Chapter 15, "HP-UX Itanium server requirements," on page 89).

__ 4. Check the hardware and software requirements for all system components and features. See http://www.ibm.com/support/docview.wss?rs=129 &uid=swg27016455 or search for 7016455 at http://www.ibm.com/.

__ 5. Determine the type of system configuration that you need to install (see Chapter 2, "Choosing a configuration," on page 5).

__ 6. If you are upgrading to a new version of Content Manager OnDemand, save the configuration files used by the system (see Chapter 16, "Saving configuration files on HP-UX Itanium," on page 91).

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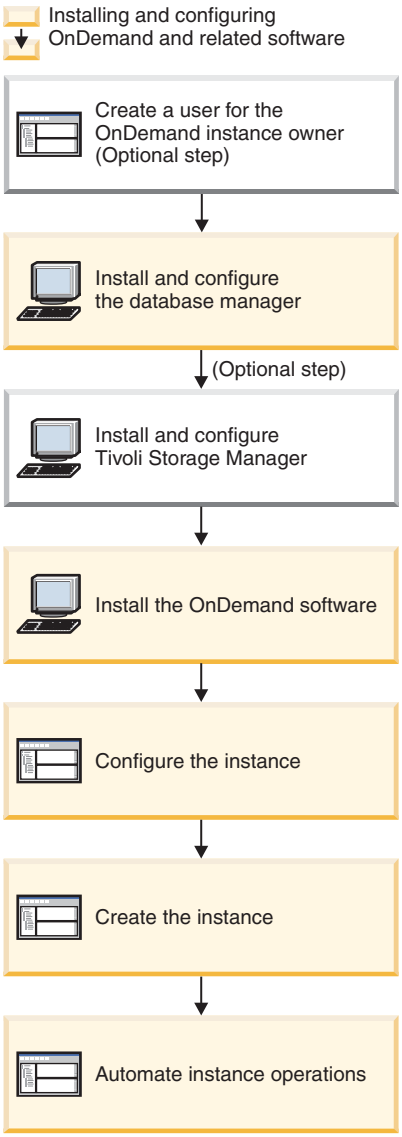

Figure 9. Installing Content Manager OnDemand and related software

Configuring an Content Manager OnDemand system typically requires that you do the following:

__ 1. (Optional) Create a user account for the Content Manager OnDemand instance owner (see Chapter 17, "Creating a user for the Content Manager OnDemand instance owner on HP-UX Itanium," on page 93).

__ 2. Install and configure the database manager product on the library server (see Chapter 18, "Installing the database manager on HP-UX Itanium," on page 95).

__ 3. If you plan to maintain data in archive storage, install and configure Tivoli Storage Manager on the library server or on each object server that will be used to maintain data in archive storage (see Chapter 19, "Installing and configuring Tivoli Storage Manager on HP-UX Itanium," on page 99).

__ 4. Install the Content Manager OnDemand software on each workstation that is part of the Content Manager OnDemand system (see Chapter 20, "Installing the Content Manager OnDemand software on HP-UX Itanium," on page 119).

__ 5. Configure an instance of Content Manager OnDemand on each workstation that is part of the Content Manager OnDemand system (see Chapter 21, “Configuring instances on HP-UX Itanium,” on page 121). This step includes the following:

   __ a. Specify the instance in the ARS.INI file (see “Specifying the instance in the ARS.INI file” on page 122)

   __ b. Specify the ARS.CFG file for the instance (see “Specifying the ARS.CFG file for the instance” on page 124)

   __ c. Specify the ARS.DBFS file for the instance (see “Specifying the ARS.DBFS file for the instance” on page 135)

   __ d. Specify the ARS.CACHE file for the instance (see “Specifying the ARS.CACHE file for the instance” on page 136)

__ 6. Create the instance of Content Manager OnDemand (see Chapter 22, “Creating an instance of Content Manager OnDemand on HP-UX Itanium,” on page 139). This step includes the following:

   __ a. Specify permissions for the database directories (see “Specifying permissions for the database directories” on page 139)

   __ b. Create the instance by running the ARSDB program (see “Creating the instance” on page 140)

   __ c. Initialize the system logging facility by running the ARSSYSCR program (see “Initializing the system logging facility” on page 141)

   __ d. (Optional) Initialize the system migration facility by running the ARSSYSCR program (see “Initializing the system migration facility” on page 142)

__ 7. Automate instance operations (see Chapter 23, “Automating instance operations on HP-UX Itanium,” on page 145). This step includes the following:

   __ a. Start the database on the library server (see “Starting the database” on page 145)

   __ b. Start the instance on the library server (see “Starting the instance on the library server” on page 145)

   __ c. Start the instance on an object server (see “Starting the instance on an object server” on page 146)

   __ d. Start the data loading programs (see “Starting the data loading programs” on page 146)

   __ e. Schedule application group maintenance on the library server (see “Scheduling application group maintenance on the library server” on page 149)

   __ f. Schedule application group maintenance on an object server (see “Scheduling application group maintenance on an object server” on page 149)

   __ g. Schedule system table maintenance (see “Scheduling system table maintenance” on page 149)

   __ h. Schedule a backup of the Content Manager OnDemand database (see “Scheduling the Content Manager OnDemand database backup” on page 150)

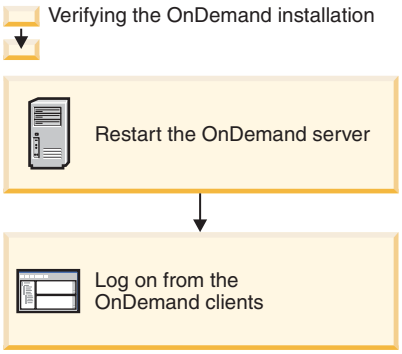

Figure 10. Verifying the installation

Verify the installation of Content Manager OnDemand (see Chapter 55, "Verifying the installation," on page 349):

__ 1. After installing and configuring each Content Manager OnDemand server, restart the system. The operating system reinitializes and starts the services required by Content Manager OnDemand.

__ 2. Log in to the library server with an Content Manager OnDemand client program. (To access the system, you must install at least one of the Content Manager OnDemand client programs on a PC running Microsoft Windows. See the *IBM Content Manager OnDemand: Client Installation Guide* for installation information about the Content Manager OnDemand client or the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for installation information about the Content Manager OnDemand administrative client.)

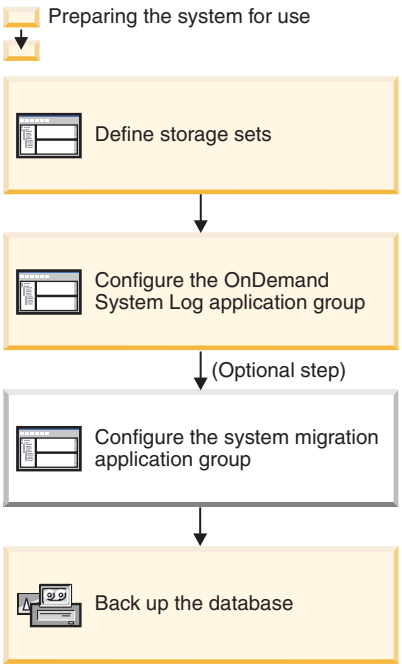

Figure 11. Preparing the system for use

Prepare the system for use:

__ 1. Define storage sets (see Chapter 56, “Defining storage sets,” on page 351). Before you add application groups or load data into the system, you must define storage sets.

__ 2. Configure the System Log application group (see Chapter 57, “Configuring the System Log application group,” on page 353). Before you define reports to the system, load data, or let users access the system, you should configure the System Log application group.

__ 3. If you plan to migrate index data to archive storage, configure the System Migration application group (see Chapter 59, “Configuring the System Migration application group,” on page 361).

__ 4. Back up the databases (see Chapter 60, “Backing up the Content Manager OnDemand database,” on page 363 and “Backing up the Tivoli Storage Manager database and critical files” on page 115). After configuring the system, you should create a full backup image of the Content Manager OnDemand database and the Tivoli Storage Manager database.

Installing and configuring optional software:

1. If you plan to use Download for the z/OS feature (Download) to transmit data from z/OS systems to Content Manager OnDemand servers, then you must install and configure Download. Follow the instructions in *PSF for z/OS: Download for z/OS* to plan, install, configure, and verify the installation of the Download software. Then configure Download on each Content Manager OnDemand server. Complete the following tasks:
   __ a. Obtain a copy of *PSF for z/OS: Download for z/OS*.
   __ b. Check the prerequisites and verify the z/OS and TCP/IP software levels for Download.
   __ c. Install and configure the Download software.
   __ d. Configure Download on each Content Manager OnDemand server that will receive datasets from a z/OS system. (see “Starting the data loading programs” on page 146).
2. If you plan to reprint documents using the Content Manager OnDemand server print function, you must install Infoprint on a workstation that belongs to the same network as the Content Manager OnDemand library server. Follow the instructions in the Infoprint documentation for your operating system to plan, install, configure, and verify the installation of the Infoprint software. Then configure the server print function on the library server. Complete the following tasks:
   __ a. Obtain a copy of the Infoprint documentation for the server operating system.
   __ b. Install and configure Infoprint.
   __ c. Verify that all of the resources and fonts that your organization requires to reprint the reports that you plan to store in Content Manager OnDemand are installed on the Infoprint server.
   __ d. Define the print queues and devices that Infoprint uses to manage the Content Manager OnDemand server print environment.
   __ e. Obtain the TCP/IP host name or IP address of the Infoprint server.
   __ f. On the library server, edit the ARSPRT file and insert the host name or IP address of the Infoprint server. The ARSPRT file can be found in the `/opt/ondemand/bin` directory.
   __ g. Define a server printer on the Content Manager OnDemand library server with the administrative client.

3. If you need to customize and enhance the standard functionality within the product, see the user exit documentation in the Appendix of this publication. A user exit is a point during processing that enables you to run a user-written program and return control of processing after your user-written program ends. OnDemand provides the following user exit points:
   __ a. Download user exit
   __ b. Report specifications archive definition user exit
   __ c. Retrieval preview user exit
   __ d. Security user exit
   __ e. System log user exit
   __ f. Table space creation user exit

Chapter 15. HP-UX Itanium server requirements

The exact hardware and software configuration that you need for Content Manager OnDemand to support your organization depends on the volume of data that you plan to maintain on the system, the number of concurrent users that the system must support, the backup and recovery requirements of your organization, and the performance levels that the system must meet. At a minimum, you need one processor for a standard Content Manager OnDemand library/object server.

For all HP-UX server requirements, see http://www.ibm.com/support/docview.wss?rs=129&uid=swg27016455 or search for 7016455 at http://www.ibm.com/.

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Chapter 16. Saving configuration files on HP-UX Itanium

When you install software on an Content Manager OnDemand server, the installation programs copy program files, configuration files, and other types of files from the distribution media to directories on the server. When you configure a server to meet the specific requirements of your environment, you make changes to configuration files and you might customize other files, such as user-defined files and font initialization files.

Before you upgrade to a new version of Content Manager OnDemand or upgrade the database manager software or other software related to Content Manager OnDemand, you should save a copy of the files listed in this section. You can save a copy of the files in a temporary directory, such as `/tmp`.

After you upgrade the software, you will probably need to reconfigure the files for your environment. To reconfigure the files, you can restore the copies of the files that you saved or make changes to the updated files, using the configuration information in the files that you saved as a guide.

Content Manager OnDemand files

Save a copy of the Content Manager OnDemand configuration files listed in Table 6.

Table 6. Content Manager OnDemand configuration files to save

File	Location	Purpose
ars.cache	/opt/ondemand/config	Define cache storage file systems. Changes described in “Specifying the ARS.CACHE file for the instance” on page 136.
ars.cfg	/opt/ondemand/config	Content Manager OnDemand server configuration file. Changes described in “Specifying the ARS.CFG file for the instance” on page 124.
ars.dbfs	/opt/ondemand/config	Define DB2 table space file systems. Changes described in “Specifying the ARS.DBFS file for the instance” on page 135.
ars.ini	/opt/ondemand/config	Configure Content Manager OnDemand instances. Changes described in “Specifying the instance in the ARS.INI file” on page 122.
arsload.cfg	/opt/ondemand/config	Define a default Content Manager OnDemand system administrator userid and password for the ARSLOAD program. Changes described in “Configuring the ARSLOAD.CFG file” on page 147.

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Table 6. Content Manager OnDemand configuration files to save (continued)

File	Location	Purpose
arslog	/opt/ondemand/bin	The System Log user exit program. Described in Appendix H, "System log user exit," on page 389.
arsprt	/opt/ondemand/bin	Server print program.

Tivoli Storage Manager files

If you use Tivoli Storage Manager to maintain OnDemand data in archive storage, save a copy of the Tivoli Storage Manager configuration files listed in Table 7.

Table 7. Tivoli Storage Manager configuration files to save

File	Location	Purpose
dsmserv.dsk	/opt/tivoli/tsm/server/bin	Locations of the Tivoli Storage Manager database and recovery logs
history.dev	/opt/tivoli/tsm/server/bin	Tivoli Storage Manager device history file
history.vol	/opt/tivoli/tsm/server/bin	Tivoli Storage Manager storage volume history file
dsmserv.opt	/opt/tivoli/tsm/server/bin	Tivoli Storage Manager server options file
dsm.sys	/opt/tivoli/tsm/server/bin	Tivoli Storage Manager servers file
dsm.opt	/opt/tivoli/tsm/client/ba/bin	Tivoli Storage Manager client options file
dsm.db2.opt	The location for this file is user-defined and specified by the ARS_DB2_TSM_CONFIG parameter in ars.cfg.	Tivoli Storage Manager client options file for maintaining DB2 archived log files and backup image files
dsm.sys	/usr/tivoli/tsm/client/api/bin64	Tivoli Storage Manager client system options file

Chapter 17. Creating a user for the Content Manager OnDemand instance owner on HP-UX Itanium

Note: This publication was written assuming that OnDemand instances will be run under the root user. The information in this section is provided for customers who need to run instances of Content Manager OnDemand under a user other than the root user. Those customers should print the information in this section and have it available to assist them as they continue with the installation and configuration process.

New installations (instances) of Content Manager OnDemand can be configured to run under a user other than the root user. If you plan to run an instance under a user other than root, you must do the following:

- Create the user for the Content Manager OnDemand instance owner
- Set permissions for the cache storage file systems
- Set permissions for the Content Manager OnDemand configuration and script files
- Give the instance owner permission to write to the system console
- Specify the instance owner in the ARS.INI file

If you plan to run a distributed library/object server system, with one or more object servers on different workstations or nodes than the library server, then you should also configure Content Manager OnDemand on the object servers.

Configuring the library server

Create a user that is a member of the database owner's group. This group has administrator authority for the database and the database file systems. Give the Content Manager OnDemand instance owner the following authorities and permissions:

- Administrator authority for the database. You can do this by adding the Content Manager OnDemand instance owner to the database owner's group.
- Ownership of the cache storage file systems that are listed in the ARS.CACHE file. You can do this by running the Change Owner command for each file system that is listed in the ARS.CACHE file and specifying the user and group for the Content Manager OnDemand instance owner.
- Permission to read the Content Manager OnDemand configuration files. Make sure that the Content Manager OnDemand instance owner has permission to read the following files:
  - ARS.CACHE
  - ARS.CFG
  - ARS.DBFS
  - ARS.INI
- Permission to read and execute the Content Manager OnDemand script files. Make sure that the Content Manager OnDemand instance owner has permission to read and execute the following files:
  - ARSLOG
  - ARSPRT

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- Permission to write to the console. Make sure that the Content Manager OnDemand instance owner has permission to write to the system console.

You should specify a different user for each instance that you create. This allows for easier error recovery if a system error occurs.

Important: You cannot set the permissions to read and execute OnDemand files until you complete installation of the Content Manager OnDemand software. See Chapter 42, "Installing the Content Manager OnDemand software on Linux," on page 263 for instructions on installing the Content Manager OnDemand software on Linux.

Configuring an object server

If you plan to run a distributed library/object server system, with one or more object servers on different workstations or nodes than the library server, then you should also configure Content Manager OnDemand on each of the object servers.

To configure Content Manager OnDemand on the object servers, do the following:

- Create a group and user for the Content Manager OnDemand instance owner.
- Give ownership of the cache storage file systems listed in the ARS.CACHE file to the group and user for the Content Manager OnDemand instance owner.
- Give permission to read the following files to the Content Manager OnDemand instance owner:
  - ARS.CACHE
  - ARS.CFG
  - ARS.INI
- Give permission to write to the console to the Content Manager OnDemand instance owner.

Chapter 18. Installing the database manager on HP-UX Itanium

The Content Manager OnDemand library server maintains system information and user-defined index data in a relational database. You can use either DB2 Universal Database Version 9.1 or later or Oracle 10g as the database manager. For either product, see the product documentation for complete installation instructions. This section provides installation and configuration information specific to Content Manager OnDemand for both DB2 and Oracle.

Installing DB2

You must install either DB2 or Oracle on the Content Manager OnDemand library server. This section describes how to install DB2. See "Installing Oracle" on page 97 for instructions about installing Oracle.

The DB2 Universal Database Enterprise Edition program CD-ROMs are provided with the Content Manager OnDemand program package. The DB2 technical information is available in HTML and PDF formats on separate CD-ROMs. The README file explains how to locate the information that you need. Follow the instructions in the *IBM DB2 Universal Database Quick Beginnings for DB2 Servers* to plan, install, configure, and verify the installation of DB2.

Installation notes

To install DB2 on the library server:

1. Install DB2 Universal Database Enterprise Edition.
2. When prompted, select Typical as the installation type, to install all DB2 components required to support OnDemand. You can take most default options (unless you have specific requirements of your own).
3. Create the DB2 instance for Content Manager OnDemand when you install DB2. Use the following values:

Parameter	Value
Instance Name or User	archive
Group Name	gname **Note:** The group must have SYSADM authority, and its name must be unique. The group name on your database might be something other than 'gname'. Ask your database administrator if you do not know the group name for your database.
Home Directory	/home/archive
Auto start DB2 instance at boot time	no
Create a sample database for DB2 instance	no

4. After you install the software from the CD-ROM, apply the latest service update for DB2. You can obtain the latest service update from IBM service at ftp://service.software.ibm.com/ps/products/db2/fixes. From the fixes directory, go to the directory for your language. Then go to the directory for your operating system and go to the fix pack directory. Print the README file.

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Follow the instructions in the README file to apply the service update. **Note:** After installing a service update, you might need to update your database instances (for example, `archive`). See the DB2 README for details.

Configuration notes

After installing DB2 on the library server:

1. Add the user that owns the Content Manager OnDemand instance to the DB2 instance owner's group.

   For example, if the DB2 instance owner's group is `sysadm1` and the Content Manager OnDemand instance owner is `root`, specified by the SRVR_INSTANCE_OWNER parameter in the ARS.INI, add the `root` user to the sysadm1 group.
2. Create links for the DB2 files. For example:

   ```
   /opt/IBM/db2/V9.5/cfg
   ```

   See the instructions in *IBM DB2 Universal Database Quick Beginnings for DB2 Servers* to create links to the DB2 files.
3. The minimum swap space for an HP-UX Itanium server with DB2 is 256 MB. Set the swap space to two times the size of physical RAM.
4. Optionally create a table space for the Content Manager OnDemand system tables. If you plan to store the system tables in their own table space, specify the name of the table space on the ARS_DB_TABLESPACE parameter in the ARS.CFG file. See "Specifying the ARS.CFG file for the instance" on page 124.
5. Verify the value of the DB2INSTANCE parameter in the ARS.CFG file. The value of the DB2INSTANCE parameter is case-sensitive. This value must specify the name of the DB2 instance that you created for Content Manager OnDemand. The default value is `archive`. See "Specifying the ARS.CFG file for the instance" on page 124.

Setting the DB2 operating environment

If you plan to use DB2 commands to work with the Content Manager OnDemand database, you must execute a script file to set the DB2 operating environment before you start the DB2 command line interface. For Bourne or Korn shell users, run the DB2PROFILE script file. For C shell users, run the DB2CSHRC script file.

The script files can be found in the `INSTHOME/sqllib` directory, where `INSTHOME` is the home directory of the instance owner. If you installed and configured the system using the suggested defaults, the instance owner is `archive` and the script files reside in the `sqllib` directory under `/home/archive`.

You should add the script file to your `.profile` or `.login` file. For example:

```
. /home/archive/sqllib/db2profile
```

After executing the script file, you can start the DB2 command line interface and connect to the database. For example:

```
$>db2
 .
 .
 .
```

To stop the DB2 command line interface, enter:

```
db2 =>quit
```

Installing Oracle

You must install either DB2 or Oracle on the Content Manager OnDemand library server. This section describes how to install Oracle. See “Installing DB2” on page 95 for instructions on installing DB2.

See your Oracle documentation for installation instructions. When you have completed installing the Oracle software, continue with “Configuration notes.”

Configuration notes

After you verify the installation of the Oracle software on the library server, you must configure it to work with Content Manager OnDemand. To configure Oracle to work with Content Manager OnDemand:

1. Configure login processing.

   The Content Manager OnDemand processes run under the UID of the root user. Verify the values of these parameters in the ARS.CFG file (see “Specifying the ARS.CFG file for the instance” on page 124).

   ARS_ORACLE_USERID
   The userid of the Content Manager OnDemand user in Oracle (root).

   ARS_ORACLE_PASSWD
   The password for the Content Manager OnDemand user (root) in Oracle.

2. Create the database.

   You should create the Content Manager OnDemand database using Oracle utilities. The name that you specify for the database should match the value that you specify for the stanza name (`[@SRV@_ARCHIVE]`). See “Specifying the instance in the ARS.INI file” on page 122.

3. Create the userid of the Content Manager OnDemand instance owner in Oracle.

   All tables created by Content Manager OnDemand will be owned by the user that you create in this step. If you wish to have a default Oracle table space for the user, you should specify the table space when you create the user.

   To create the Content Manager OnDemand user in Oracle:

   ```
   CREATE USER root IDENTIFIED BY xxxxxxxx ;
   GRANT dba to root ;
   ```

   Where `root` is the value of the ARS_ORACLE_USERID parameter in the ARS.CFG file and `xxxxxxxx` is the value of the ARS_ORACLE_PASSWD parameter in the ARS.CFG file (see “Specifying the ARS.CFG file for the instance” on page 124).

4. Specify the base Oracle installation directory on the ARS_ORACLE_HOME parameter in the ARS.CFG file. The default value is `/oracle`. See “Specifying the ARS.CFG file for the instance” on page 124.

5. Specify Oracle as the database manager on the ARS_DB_ENGINE parameter in the ARS.CFG file. See “Specifying the ARS.CFG file for the instance” on page 124.

6. Optionally create a table space for the Content Manager OnDemand system tables. If you plan to store the system tables in their own table space, specify the name of the table space on the ARS_DB_TABLESPACE parameter in the ARS.CFG file. See “Specifying the ARS.CFG file for the instance” on page 124.

Chapter 19. Installing and configuring Tivoli Storage Manager on HP-UX Itanium

This section explains how to set up Tivoli Storage Manager for Content Manager OnDemand on an HP-UX Itanium workstation.

Tivoli Storage Manager can be used with Content Manager OnDemand object servers to store report data on devices that are supported by Tivoli Storage Manager. Devices supported by Tivoli Storage Manager include optical libraries and tape media. The use of Tivoli Storage Manager is optional and is needed only if you want to provide long-term storage for your reports on devices other than the fixed disks attached to the object server. You can also use Tivoli Storage Manager facilities to maintain DB2 archived log files and backup image files.

You will need the *IBM Tivoli Storage Manager for HP-UX Itanium: Quick Start* publication to install and configure Tivoli Storage Manager. HTML and PDF versions of Tivoli Storage Manager publications, including the *Quick Start*, are available at http://publib.boulder.ibm.com/tividd/td/tdprodlist.html.

Prerequisites

OnDemand supports Tivoli Storage Manager in the following configurations:

- Standard library/object server plus Tivoli Storage Manager on one workstation. Install the Server, Clients, 64-bit Client API, Device Support Runtime, Server Runtime, and Licenses packages on the workstation.
- Library server only (where Tivoli Storage Manager resides on some other workstation than the library server). Install the 64-bit Clients and 64-bit API packages on the library server workstation.
- Object server plus Tivoli Storage Manager on some other workstation than the library server. Install the Server, 64-bit Clients, 64-bit API, Device Support Runtime, Server Runtime, and Licenses packages on the object server workstation.

OnDemand uses the Tivoli Storage Manager API client to store data into the Tivoli Storage Manager server. The Tivoli Storage Manager server is managed and administered independently of Content Manager OnDemand. The Tivoli Storage Manager administrator must ensure that the following conditions are met:

- All the normal requirements for Tivoli Storage Manager storage are monitored and managed accordingly
- All required Tivoli Storage Manager policies, management classes, storage pools, and volumes are defined accordingly
- All required Tivoli Storage Manager storage pools and volumes are online
- All Tivoli Storage Manager storage pools and volumes have sufficient storage space to satisfy the needs of Content Manager OnDemand
- The Tivoli Storage Manager server is active when OnDemand needs to read from or write to its storage repository

If your Tivoli Storage Manager configuration cannot support OnDemand, system requests (that require Tivoli Storage Manager services) will fail. The Tivoli Storage

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Manager administrator should examine the system to ensure that it will support the storage and retrieval of data by OnDemand.

Procedure

This section provides general information and examples about how to configure Tivoli Storage Manager to maintain Content Manager OnDemand data in archive storage. Tivoli Storage Manager can maintain the reports that you load into Content Manager OnDemand, can maintain migrated index data, and can maintain DB2 archived log files and backup image files.

Before you begin, you should familiarize yourself with Configuring and Managing Server Storage in the *IBM Tivoli Storage Manager for HP-UX Itanium: Administrator's Guide*. In addition, the *IBM Tivoli Storage Manager for HP-UX Itanium: Administrator's Reference* provides detailed information about all of the commands used in this section and should be your primary reference when you work with Tivoli Storage Manager. See the Tivoli Storage Manager publications if you encounter problems configuring Tivoli Storage Manager or if the examples in this section do not provide the information that you need to define your server storage devices, policies, and operations.

Complete these steps to set up Tivoli Storage Manager for Content Manager OnDemand on an HP-UX Itanium workstation:

__ 1. Define the Tivoli Storage Manager server options
__ 2. Define the Tivoli Storage Manager server
__ 3. Define the Tivoli Storage Manager client options
__ 4. Register Tivoli Storage Manager licenses
__ 5. Register Tivoli Storage Manager administrators
__ 6. Define other Tivoli Storage Manager server options
__ 7. Starting, halting, and restarting Tivoli Storage Manager the server
__ 8. Increase Tivoli Storage Manager database and recovery log sizes
__ 9. Define a storage library
__ 10. Define policy domains
__ 11. Register client nodes
__ 12. Prepare storage pool volumes
__ 13. (Optional) Configure Tivoli Storage Manager to maintain DB2 archived log files and backup image files
__ 14. Define a backup device for the Tivoli Storage Manager database
__ 15. Configure the ARS_ADSM program
__ 16. Back up the Tivoli Storage Manager database and critical files

Tivoli Storage Manager objects created during a typical installation

Table 8 on page 101 lists the objects that should be defined to the Tivoli Storage Manager server after you update the Tivoli Storage Manager configuration for Content Manager OnDemand in the sections that follow. The objects defined to the Tivoli Storage Manager server will depend on the number and types of devices that you configure on the system. The information in the table assumes that you will configure one automated library on the system (such as an IBM 3995-C68 optical library with four optical drives) and add one client node to hold Content Manager OnDemand data for seven years.

Table 8. Tivoli Storage Manager objects created during a typical installation

Object	Name
Automated Library	archlib0
Drive 1	optdrv0
Drive 2	optdrv1
Drive 3	optdrv2
Drive 4	optdrv3
Storage Pool	odstgp1
Device Class	opt1
Client Node	OD7YRPRI
Policy Domain	OD7YRPD
Policy Set	OD7YRPS
Management Class	OD7YRMG
Copy Group	STANDARD
Administrative Clients	root archive

Defining the Tivoli Storage Manager server options

Update the DSMSERV.OPT server options file from the installed server options file. The installed server options file can be found in the `/opt/tivoli/tsm/server/bin` directory.

Update the server options file to enable TCP/IP as the communications protocol and set the port address of the server, specify a maximum of 255 simultaneous client sessions, establish values for the database and recovery log buffer pools, expire data once a day, keep mount requests from being preempted except by a backup database command, and specify the names of volume and device configuration files. For example:

```
COMMmethod TCPIP
TCPPort 1500
COMMmethod HTTP
HTTPPORT 1580
TCPWindowsize 0
MAXSessions 255
COMMTimeout 30
IDLETimeout 60
BUFPoolsize 512
LOGPoolsize 256
EXPInterval 12
NOPREEMPT
VOLUMEHistory volhist.out
DEVCONFig devcnfg.out
```

Defining the Tivoli Storage Manager client system options

Create a DSM.SYS servers file from the installed servers file. The installed servers file can be found in the `/opt/tivoli/tsm/server/bin` directory.

Update the servers file to identify the name of the server and the fully qualified TCP/IP host name of the workstation on which the Tivoli Storage Manager server

runs, enable TCP/IP as the communications protocol, set the TCP/IP port address of the server, and turn off compression. For example:

```
SErvername         archive
TCPServeraddress   fully.qualified.tcpip.host.name
COMMmethod         TCPip
TCPPort            1500
COMPRESSION OFF
```

Defining the Tivoli Storage Manager client options

Create a DSM.OPT client options file from the installed options file. The installed options file can be found in the `/opt/tivoli/tsm/client/ba/bin` directory.

Update the client options file to identify the name of the server and set the processing mode. The name that you specify must be the same as the name of the server that you specified in the DSM.SYS file (see "Defining the Tivoli Storage Manager client system options" on page 101). for example:

```
SErvername         archive
QUIET
```

Registering Tivoli Storage Manager licenses

Register your Tivoli Storage Manager licenses. When you install Tivoli Storage Manager, your system is licensed for the base Tivoli Storage Manager support, which provides the following:

- An unlimited number of administrative clients
- One backup-archive client
- Certain types of removable media devices

License certificate files are included with your server package in the server installation directory. Each license certificate file licenses the server for a single option or feature. For current information about devices supported by Tivoli Storage Manager, contact the IBM Support Center. To register any Tivoli Storage Manager licenses beyond the base support, issue the REGISTER LICENSE command to read in a license certificate file. For example, to license the TSM server for Data Retention Protection functionality, run the following commands from the Tivoli Storage Manager Server command line interface:

```
register license file=tsmee.lic
register license file=dataret.lic
```

Registering Tivoli Storage Manager administrators

Register additional Tivoli Storage Manager administrators. The administrative user can start and stop the server and use the administrative client to do other Tivoli Storage Manager administrative tasks. You should also register the `root` user as an administrative user. The following example shows how to register users from the Tivoli Storage Manager Server command line interface. (In the example, the password for the `archive` user is `archive1`; the password for the `root` user is `xxxxxxxx`.) See the *IBM Tivoli Storage Manager for HP-UX Itanium: Administrator's Reference* for information about the commands, including the parameters and options you can specify.

```
register admin archive archive1
register admin root xxxxxxxx
grant authority archive classes=system
grant authority root classes=system
```

Defining other Tivoli Storage Manager server options

Define other Tivoli Storage Manager server options. Set the password expiration to the maximum permitted value and set the activity log retention period to one year by running the following commands from the Tivoli Storage Manager Server command line interface:

```
set passexp 9999
set actlogretention 365
```

Starting, halting, and restarting Tivoli Storage Manager the server

Tivoli Storage Manager administrators can manage server operations. These operations include such tasks as starting and halting the server, adding or updating server options, defining devices and policies, managing removable media, and monitoring server information.

Starting the server

To start the server:

1. Change to the `/opt/tivoli/tsm/server/bin` directory.
2. Start the server:

   ```
   dsmserv
   ```

   When the server is started, Tivoli Storage Manager displays information about product licensing, server options, the database and recovery log, storage pools, and progress messages and any errors encountered during server initialization.

You can capture Tivoli Storage Manager server console messages to a user log file with the Tivoli Storage Manager `dsmulog` program. See the Tivoli Storage Manager documentation for more information.

Starting the Tivoli Storage Manager server command line interface

In this section, most examples illustrate how to perform tasks by using the Tivoli Storage Manager server command line interface. To start the Tivoli Storage Manager server command line interface, enter:

```
dsmadmc
```

Tivoli Storage Manager provides you with a number of methods to monitor processes and messages:

- Use the console mode from an administrative client to monitor processes and messages:

  ```
  dsmadmc -console
  ```

  While the system is running in console mode, you cannot enter any administrative commands from the client session. You can, however, start another administrative client session for entering commands.
- Specify the OUTFILE option to write all terminal output to a file. For example:

  ```
  dsmadmc -console -outfile=adsm.out
  ```
- From the command line interface, query the activity log for status information and possible error messages:

  ```
  query actlog
  ```

See the Tivoli Storage Manager documentation for more information about managing client sessions.

Halting the server

When you halt the server, all processes are abruptly stopped and client sessions are canceled, even if they are not completed. Any in-progress transactions are rolled back when the server is restarted. When the server is halted, administrator activity is not possible. If possible, halt the server only after current administrative and client node sessions have completed or canceled. To shut down the server without severely impacting administrative and client node activity with the server, follow the instructions in the Tivoli Storage Manager documentation.

To halt the server and shut down all server operations, enter `halt` at the Tivoli Storage Manager server command line interface.

Restarting the server

To start the server after it has been halted, follow the instructions in "Starting, halting, and restarting Tivoli Storage Manager the server" on page 103.

When you restart the server after it has been halted, Tivoli Storage Manager rolls back any operations that had been in process to ensure that the database remains in a consistent state.

Increasing Tivoli Storage Manager database and recovery log sizes

When you initially install Tivoli Storage Manager, the installation procedure creates a default 17 MB database volume (`db.dsm`) and a default 9 MB recovery log volume (`log.dsm`).

The database size is determined by the amount of data that you plan to store on the system. The recovery log might need to be increased depending on the current utilization. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* provides formulas that you can use to estimate the database and recovery log sizes. You should start by increasing the database by 256 MB and the recovery log by 72 MB. As you load data on the system, you can monitor the utilization and increase or decrease the database and recovery log sizes accordingly.

To increase the size of the database or recovery log, do the following:

1. Select storage volumes with sufficient free space to hold the database and recovery log.
2. Format and define a 256 MB database volume and a 72 MB recovery log volume and extend the database and recovery log, by entering the following at the Tivoli Storage Manager server command line interface:

```
define dbvolume db2.dsm formatsize=256
define logvolume log2.dsm formatsize=72

extend db 256
extend log 72
```

Defining a storage library

When you add an optical or tape library to the system, you must define it to Tivoli Storage Manager. When you define a library to Tivoli Storage Manager, you define a device class for the library and define the library and the drives contained in the library. You also define a storage pool for the collection of storage volumes that belong to the library.

The following example shows how to define an optical library, device class, and storage pool as the destination for files archived from the Content Manager OnDemand system. You can use this example as a guide when defining other libraries and storage pools. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation.

Define the library

The following example shows how to define a SCSI-attached library:

```
def library archlib0 libtype=scsi
def path archive archlib0 srctype=server desttype=library device=/dev/lb0
```

The string `archlib0` is an arbitrary name that you assign to the library. Make sure that the name is not already defined to Tivoli Storage Manager. The `device` parameter gives the device name for the library.

Define the drives

The following example shows how to define the drives in a library that contains four drives, such as an IBM 3995-C68 optical storage library:

```
def drive archlib0 optdrv0 element=1
def drive archlib0 optdrv1 element=2
def drive archlib0 optdrv2 element=3
def drive archlib0 optdrv3 element=4
def path archive optdrv0 srctype=server desttype=drive -
         library=archlib0 device=/dev/rop0
def path archive optdrv1 srctype=server desttype=drive -
         library=archlib0 device=/dev/rop1
def path archive optdrv2 srctype=server desttype=drive -
         library=archlib0 device=/dev/rop2
def path archive optdrv3 srctype=server desttype=drive -
         library=archlib0 device=/dev/rop3
```

The drives belong to the `archlib0` library. The strings `optdrv1`, `optdrv2`, `optdrv3`, and `optdrv4` are arbitrary names you assign to the optical disk drives. Make sure that the names are not already defined to Tivoli Storage Manager. The `device` parameter gives the device name for the drive. The `element` parameter identifies the physical location of the drive within the library.

Define the device class

The following example shows how to define a device class for optical devices that use the 2600 recording format. The library contains four drives. Tivoli Storage Manager keeps idle optical platters in the drives for ten minutes before dismounting them:

```
    def devclass opt1 devtype=optical format=2600MB   -
                 mountlimit=4 library=archlib9        -
                 estcapacity=2600M mountretention=10
```

The string opt1 is an arbitrary name that you assign to the optical device class. Make sure that the name is not already defined to Tivoli Storage Manager.

Define the storage pool

The following example shows how to define a storage pool to use the devices in the opt1 device class.

```
define stgpool ODSTGP1 opt1                          -
               desc='Storage pool for OnDemand data' -
               collocate=no reclaim=60               -
               maxscratch=1 reusedelay=30
```

The string ODSTGP1 is an arbitrary name that you assign to the storage pool. Make sure that the name is not already defined to Tivoli Storage Manager.

Defining policy domains

The Tivoli Storage Manager policy domain links data with media in a storage pool. A policy domain supports a single storage pool, which in turn supports a single library.

The following example shows how to define a policy domain to maintain data for a period of seven years (2557 days). You can use this example as a guide when defining other policy domains. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation. Enter the commands at the Tivoli Storage Manager server command line interface.

1. Define the domain:

   ```
   define domain OD7YRPD desc='OnDemand Policy Domain'
   ```

   Replace the string OD7YRPD with the name of a Tivoli Storage Manager domain that you plan to use to manage storage for Content Manager OnDemand. Make sure that the name is not already defined to Tivoli Storage Manager.

2. Define the policy set:

   ```
   define policyset OD7YRPD OD7YRPS desc='OnDemand Policy Set'
   ```

   Replace the string OD7YRPD with the name of the domain. Replace the string OD7YRPS with the name of the policy set. Make sure that the name is not already defined to Tivoli Storage Manager.

3. Define the management class:

   ```
   define mgmtclass OD7YRPD OD7YRPS OD7YRMG -
                    desc='OnDemand Management Class'
   ```

   Replace the string OD7YRPD with the name of the policy domain. Replace the string OD7YRPS with the name of the policy set. Replace the string OD7YRMG with the name of the management class. Make sure that the name is not already defined to Tivoli Storage Manager.

4. Define an archive copy group. The archive copy group identifies the name of the storage pool where Tivoli Storage Manager stores the data and the length of time that Tivoli Storage Manager maintains the data:

   ```
   define copygroup OD7YRPD OD7YRPS OD7YRMG standard -
                    type=archive dest=odstgp1 retver=2557
   ```

   Replace the string OD7YRPD with the name of the policy domain. Replace the string OD7YRPS with the name of the policy set . Replace the string OD7YRMG with

the name of the management class. Replace the string odstgp1 with the name of a storage pool. Replace the string 2557 with the length of time (in days) that you want Tivoli Storage Manager to maintain data in the storage pool.

Important: When you create an application group, you specify the length of time that Content Manager OnDemand maintains data stored in the application group. If you plan to store application group data in Tivoli Storage Manager, then you must make sure that the retention period in Tivoli Storage Manager (the value of the retver parameter in the archive copy group) is equal to or greater than the Life of Data and Indexes value that you specify for the application group.

5. To check what you have defined, enter the following commands:

```
query domain
query policyset
query mgmtclass
query copygroup
```

6. After you define your policy sets and the management classes they contain, you must assign a default management class for each policy set. To assign the OD7YMG management class as the default management class for the OD7YRPS policy set in the OD7YRPD policy domain, enter:

```
assign defmgmtclass OD7YRPD OD7YRPS OD7YRMG
```

   Replace the string OD7YRPD with the name of the policy domain. Replace the string OD7YRPS with the name of the policy set. Replace the string OD7YRMG with the name of the management class.

7. After you define a default management class for the policy set, validate and activate the policy set:

```
validate policyset OD7YRPD OD7YRPS
activate policyset OD7YRPD OD7YRPS
```

   Replace the string OD7YRPD with the name of the policy domain. Replace the string OD7YRPS with the name of the policy set.

Registering client nodes

A client node links clients and their data with storage volumes and devices. Before Content Manager OnDemand can store data in Tivoli Storage Manager storage, you must register at least one client node. You must register at least one client node in each policy domain that will contain Content Manager OnDemand data. You can use the example that follows as a guide when registering client nodes. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation. Enter the command at the Tivoli Storage Manager server command line interface.

To register the client node PRI7YR and password password, assign the client node to the OD7YPD policy domain, and specify that the client node should be able to delete its own archive files from the server, enter:

```
register node PRI7YR password domain=OD7YRPD archdel=yes contact='your name'
```

The archdel=yes parameter is required for Content Manager OnDemand processing.

Note: When you define an Content Manager OnDemand storage node (by using the Content Manager OnDemand facilities), specify a Tivoli Storage Manager client node and client node password to “link” the Content Manager OnDemand storage node to archive storage.

Preparing storage pool volumes

You need to perform some steps to prepare removable media for initial use by Tivoli Storage Manager. This section provides general information and examples showing how to label storage pool volumes and check them into an automated library. For details about these tasks and important information about managing removable media operations, see the Tivoli Storage Manager documentation.

In general, to prepare a storage volume you:

- Label the volume. Any volumes associated with optical or tape devices must be labeled before Tivoli Storage Manager can use them.
- For storage pools in automated libraries, check the volume into the library.

You can use the LABEL LIBVOL command to label and check in a volume in one operation:

- To label storage volumes and check them into a library that is filled with blank storage volumes, use the following format of the command:

  ```
  label libvol archlib0 search=yes overwrite=yes checkin=scratch     -
        labelsource=prompt
  ```

  The label command will search all of the storage slots in the `archlib0` library for volumes and try to label each one that it finds. After labeling a storage volume, Tivoli Storage Manager keeps it in a storage slot inside the library. Because the example assumes new storage volumes, it is acceptable to overwrite an existing volume label.
- To label storage volumes and check them into a library by manually inserting each new storage volume when prompted, use the following format of the command:

  ```
  label libvol archlib0 search=bulk overwrite=yes checkin=scratch     -
       labelsource=prompt
  ```

  The label command will prompt you to insert a new storage volume into the `archlib0` library and then prompt you for the label of the volume. After labeling the storage volume, Tivoli Storage Manager keeps it in a storage slot inside the library and prompts you to insert the next storage volume to be labeled. Because the example assumes new storage volumes, it is acceptable to overwrite an existing volume label.

Wait for the LABEL LIBVOL operation to complete. Because the label and check in commands involve device access, it might take a long time to complete.

When you have completed labeling and checking in all the storage volumes, enter the following command to list the storage volumes in the `archlib0` library:

```
query libvol archlib0
```

Configuring Tivoli Storage Manager to maintain DB2 files

You can use Tivoli Storage Manager to maintain DB2 archived log files and backup image files. This capability means that you do not have to manually maintain these files on disk. The tasks in this section are optional, and are only recommended for customers who need to use Tivoli Storage Manager facilities to backup the Content Manager OnDemand database in DB2. For more information about using Tivoli

Storage Manager to manage DB2 files, see *IBM DB2 Universal Database: Data Recovery and High Availability Guide and Reference*, SC09-4831.

The following topics describe how to configure Tivoli Storage Manager to maintain DB2 files:

- Defining server options
- Defining client options
- Defining storage objects
- Registering the client node
- Setting the client node password
- Space requirements
- Backup considerations
- Protecting data with the data retention protection (DRP) protocol

Defining server options

The DSM.SYS file on the Content Manager OnDemand library server identifies Tivoli Storage Manager servers and specifies server options.

If you installed and configured Tivoli Storage Manager to maintain report data, then you defined at least one Tivoli Storage Manager server (see "Defining the Tivoli Storage Manager client system options" on page 101). Most customers usually define one Tivoli Storage Manager server to maintain report data and a different server to maintain the DB2 files.

The following example shows a DSM.SYS file that identifies two Tivoli Storage Manager servers on the same workstation:

```
* The following server manages Content Manager OnDemand report data
SERVERNAME archive
COMMmethod tcpip
TCPPORT 1500
TCPSERVERADDRESS server1.company.xyz.com
COMPRESSION no

* The following server manages DB2 log files and backup images
SERVERNAME dbbackup
COMMmethod tcpip
TCPPORT 1500
TCPSERVERADDRESS server1.company.xyz.com
COMPRESSION yes
PASSWORDACCESS generate
```

- The first section identifies the server that maintains the Content Manager OnDemand report data.
- The second section identifies the server that maintains the DB2 files. The `SERVERNAME` parameter identifies the Tivoli Storage Manager server. The `TCPSERVERADDRESS` identifies the fully qualified TCP/IP host name of the workstation on which the Tivoli Storage Manager server is running. When defining a Tivoli Storage Manager server to maintain DB2 files, you must set the `COMPRESSION` parameter to `YES` and the `PASSWORDACCESS` parameter to `GENERATE`.

After you finish making your changes, save the DSM.SYS file in the directory named by the `DSM_CONFIG` parameter in the ARS.CFG file. See "Specifying the ARS.CFG file for the instance" on page 124 for more information.

Defining client options

The DSM.DB2.OPT file on the Content Manager OnDemand library server identifies the Tivoli Storage Manager server that maintains the DB2 files. The SERVERNAME parameter identifies the Tivoli Storage Manager server you defined in "Defining server options" on page 109. For example:

```
* The following server manages DB2 log files and backup images
SERVERNAME dbbackup
quiet
```

After you create the DSM.DB2.OPT file, save it in the directory named by the ARS_DB2_ADSM_CONFIG parameter in the ARS.CFG file. See "Specifying the ARS.CFG file for the instance" on page 124 for more information.

Defining storage objects

You must define the storage objects that Tivoli Storage Manager uses to maintain the DB2 files. The storage objects include a storage library, device class, storage pool, and policy domain:

- If you plan to use an existing storage pool to maintain the DB2 files, you do not need to define a storage library or device class. You should use dedicated hardware and storage objects to maintain the DB2 files.
- If you plan to use an existing policy domain to maintain the DB2 files, the domain must include an archive copy group and a backup copy group. See "Define the archive copy group" on page 111 and "Define the backup copy group" on page 111 for details.
- If you plan to define new storage objects to maintain the DB2 files, you must define a storage library, device class, storage pool, and policy domain, including the archive and backup copy groups. See "Defining a storage library" on page 105 for an example of how to define a storage library, device class, and storage pool. See "Define the domain" for an example of how to define a domain. See "Define the archive copy group" on page 111 and "Define the backup copy group" on page 111 for an example of how to define an archive copy group and a backup copy group.

Important: The storage pool where Tivoli Storage Manager maintains the DB2 files must use rewriteable optical media (not WORM) or tape.

Define the storage objects on the object server on which you installed Tivoli Storage Manager to maintain the DB2 files. Define the storage objects to the Tivoli Storage Manager server that maintains the DB2 files (this is the server that you identified in "Defining client options").

Define the domain

The following example shows how to define a policy domain to Tivoli Storage Manager. You must provide a name that is unique to Tivoli Storage Manager. The name in the example implies that Tivoli Storage Manager will maintain the files for one year. The length of time that Tivoli Storage Manager actually maintains the files depends on how you define the archive and backup copy groups.

```
define domain 1YRPD -
              desc='Domain for DB2 file storage'
```

The following example shows how to define a policy set to Tivoli Storage Manager. You must provide a name that is unique to Tivoli Storage Manager. The policy set identifies the policy domain.

```
define policyset 1YRPD 1YRPS -
                desc='Policy set for DB2 file storage'
```

The following example shows how to define a management class to Tivoli Storage Manager. You must provide a name that is unique to Tivoli Storage Manager. The management class identifies the policy domain and the policy set.

```
define mgmtclass 1YRPD 1YRPS 1YRMG -
                desc='Management class for DB2 file storage'
```

Define the archive copy group

The archive copy group determines several Tivoli Storage Manager options for the DB2 archived log files, including the number of days that Tivoli Storage Manager maintains the files. The DB2 archived log files must be maintained until they are no longer needed for database or table space recovery. Log files are valid between full, offline backup images of the database. When you create a full, offline backup image of the database, the log files created prior to the backup image can be deleted. For example, if you create a full, offline backup image of the database every thirty days, then you must keep log files for at least thirty days. If you do not create full, online backup images of the database, you should maintain the log files indefinitely.

The following example shows how to define an archive copy group. The archive copy group identifies the policy domain, policy set, and management class. The archive copy group also identifies the storage pool where Tivoli Storage Manager maintains the DB2 archived log files and the length of time that Tivoli Storage Manager maintains them. In the example, Tivoli Storage Manager maintains each log file stored in the storage pool for 366 days:

```
define copygroup 1YRPD 1YRPS 1YRMG standard -
                type=archive dest=ODSTGP2 retver=366
```

Define the backup copy group

The backup copy group determines Tivoli Storage Manager options for the DB2 backup images, including the number of versions of each backup image maintained and the length of time that Tivoli Storage Manager maintains them. You should plan to save one version of each backup image. By default, Tivoli Storage Manager maintains files in a backup copy group until they are deleted by an administrator.

The following example shows how to define a backup copy group. The backup copy group identifies the policy domain, policy set, and management class. The backup copy group also identifies the storage pool where Tivoli Storage Manager manages the DB2 backup images and the number of versions of each backup image that Tivoli Storage Manager maintains. In the example, Tivoli Storage Manager maintains one version of each DB2 backup image file indefinitely:

```
define copygroup 1YRPD 1YRPS 1YRMG standard -
                type=backup dest=ODSTGP2 verexists=1
```

Assign a default management class

After you define the policy set, the management classes it contains, and the copy groups, you must assign a default management class for the policy set. The following example shows how to assign a default management class:

```
assign defmgmtclass 1YRPD 1YRPS 1YRMG
```

Validate the policy set

After you define a default management class, validate the policy set:

```
validate policyset 1YRPD 1YRPS
```

Activate the policy set

Finally, you must activate the policy set to make the definitions available to Tivoli Storage Manager:

```
activate policyset 1YRPD 1YRPS
```

Registering the DB2 client node

You must register a client node in Tivoli Storage Manager for DB2 to use when it archives log files and creates backup image files. When you register the client node, you identify the policy used by Tivoli Storage Manager to maintain the files. The client node name must be unique to Tivoli Storage Manager. You must also supply a password for the client node.

You must register the client node on the object server on which you installed Tivoli Storage Manager to maintain the DB2 files. Register the client node to the Tivoli Storage Manager server that maintains the DB2 files (this is the server that you identified in "Defining client options" on page 110).

The following example shows how to register the client node `dbbackup` and assign it to the `1YRPD` policy domain. The node password is `password`. You must specify the `archdel=yes` and `backdel=yes` parameters so that the client node is permitted to delete its own archive and backup files from the server.

```
register node dbbackup password domain=1YRPD      -
        archdel=yes backdel=yes contact='your name'
```

Setting the client node password in DB2

Before DB2 can use Tivoli Storage Manager to maintain archived log files and backup image files, you must set the Tivoli Storage Manager client node password in DB2 on the library server. You established the client node password when you registered the client node in Tivoli Storage Manager (see "Registering the DB2 client node").

Use the `dsmapipw` command to set the client node password in DB2. The `dsmapipw` command is provided with the DB2 software. The `dsmapipw` command is installed in the `INSTHOME/sqllib/adsm` directory of the instance owner. By default, the instance owner is `archive`.

To set the client node password:

1. On the library server, log on as the `root` user.
2. Open a terminal window.
3. Set the DSMI_DIR and DSMI_CONFIG parameters. These parameters identify the user-defined directory that contains the API trusted agent file and the full path name of the options file that Tivoli Storage Manager uses to identify the server that maintains the DB2 files. You defined the options file in "Defining client options" on page 110.

   For example:

   ```
   export DSMI_DIR=/usr/tivoli/tsm/client/api/bin64
   export DSMI_CONFIG=/usr/tivoli/tsm/client/api/bin64/dsm.db2.opt
   ```

4. Run the `dsmapipw` command. For example:

   ```
   /home/archive/sqllib/adsm/dsmapipw
   ```

5. The `dsmapipw` command prompts you for the following information:

   `old password`, which is the current password for the client node. This is the password that you specified when you registered the client node in Tivoli Storage Manager (see "Registering the DB2 client node").

`new password`, which is the password that will be stored in DB2. You will be prompted twice for the password. Unless you have a good reason for **not** doing so, specify the `old password` when prompted.

6. Close the terminal window.
7. If DB2 is running, you should stop and restart DB2.

Important: If you change the client node password in Tivoli Storage Manager, remember to run the `dsmapipw` command to set the new password in DB2.

Space requirements

The storage pool where Tivoli Storage Manager maintains the DB2 files must contain enough storage to hold the files needed to recover the database. Because you should maintain the files indefinitely, you must plan to allocate a sufficient number of storage volumes to meet these needs. For example, a single log file requires approximately 1.3 MB of storage space. Depending on the amount of data that you store in Content Manager OnDemand and the frequency of full database backups, you might need to maintain hundreds of log files in storage managed by Tivoli Storage Manager. Depending on the frequency and type of backup images that you create, you might need to maintain several database and table space backup images. Depending on the size of your database and tables, each backup image may require several storage volumes. Finally, if you plan to migrate large tables of application group data to their own table spaces, DB2 requires storage for a backup image of each table that you migrate.

Backup considerations

Depending on the size of the database and the frequency of backups, you might need to regularly initialize and load scratch storage volumes into the storage library. If Tivoli Storage Manager determines that there is not enough space available in the storage pool, then it can request a mount for a scratch storage volume. However, the backup command cannot complete until the mount request is satisfied. If you operate in an unattended environment, this could have an adverse affect on system availability, especially when running an offline backup.

In addition to storing the DB2 files in Tivoli Storage Manager, you should regularly back up the Tivoli Storage Manager database and the Tivoli Storage Manager control files. Doing so can help prevent prolonged system outages in the event that you need to recover the database. You can schedule a task in Tivoli Storage Manager that automatically starts the backup process. See the Tivoli Storage Manager documentation for help with defining a schedule to Tivoli Storage Manager.

Defining a backup device for the Tivoli Storage Manager database

You can back up the Tivoli Storage Manager database to a file on disk or to tape. If you choose to back up the database to a file on disk, Tivoli Storage Manager supports the use of disk storage as volumes (files) that store data sequentially (as on tape volumes). These volumes are useful when you need to transfer the data for purposes such as electronic vaulting.

Defining a disk device class

The following example shows how to define a disk device class to Tivoli Storage Manager. You can use this example as a guide when you define your disk device class. The example presents the procedure with a minimum of customization. If

you want to do more, refer to the Tivoli Storage Manager documentation. Enter the command at the Tivoli Storage Manager server command line interface.

To define a disk device class for database backup:

```
define devclass DUMPFILEDEV devtype=file directory=/dsmdump mountlimit=2
```

The `directory` parameter identifies an existing directory where Tivoli Storage Manager stores database backup files. The directory must contain enough space to hold at least one copy of the database backup.

Defining a tape device

The following example shows how to define a manual tape drive to Tivoli Storage Manager. You can use this example as a guide when you define your manual tape device. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation. Enter the commands at the Tivoli Storage Manager server command line interface.

1. Define the manual library:

   ```
   def library dumplib libtype=manual
   ```

   The string `dumplib` is an arbitrary name that you assign to the library. Make sure that the name is not already defined to Tivoli Storage Manager. The library type is `manual` because an operator must mount the tapes.

2. Define the drive. For example:

   ```
   def drive dumplib dumpdrive device=/dev/rmt/mt0
   ```

   In the example, the drive belongs to the `dumplib` library. The string `dumpdrive` is an arbitrary name that you assign to the drive. Make sure that the name is not already defined to Tivoli Storage Manager. The `device` parameter gives the special device name for the drive.

3. Classify the drive according to type by defining the Tivoli Storage Manager device class. For example, the following command shows how to define a device class named `DUMPTAPEDEV` for the `dumplib` library:

   ```
   def devclass DUMPTAPEDEV devtype=generictape library=dumplib
   ```

4. Create a storage pool to use the devices in the device class you just defined:

   ```
   def stgpool dumppool DUMPTAPEDEV maxscratch=20
   ```

   The string `dumppool` is an arbitrary name that you assign to the storage pool. Make sure that the name is not already defined to Tivoli Storage Manager.

   Note: The `maxscratch` parameter can be used to allow Tivoli Storage Manager to choose from the scratch volumes available in a library, without further action on your part. If you do not allow scratch volumes, you must perform the extra step of explicitly defining each volume to be used in a storage pool. Refer to the Tivoli Storage Manager documentation for more information.

5. To check what you have defined, enter the following commands:

   ```
   query library
   query drive
   query devclass
   query stgpool
   ```

Backing up the Tivoli Storage Manager database and critical files

After you configure Tivoli Storage Manager, you should backup the database and save the server files that contain important information. The backup copy of the database can be used if you need to recover the database. You should save the backup copy until the next time that you create a full backup of the database. The server files contain important information that you must have if you need to recover the database. **Note:** You should backup the database and save the server files whenever you make changes to the database. The database is modified whenever the system stores data in storage managed by Tivoli Storage Manager and whenever you make changes to the Tivoli Storage Manager environment, such as defining new devices and managing removable media operations.

Backing up the database

Before you backup the database, you must define the backup storage objects to Tivoli Storage Manager and label at least one tape storage volume. You can define one device class for full backups and a different device class for incremental backups. For example, you can write full backups to a tape device and incremental backups to a disk device. At a minimum, you should define a tape backup device, device class, library, and storage pool. See "Defining a backup device for the Tivoli Storage Manager database" on page 113 for information about defining backup storage objects to Tivoli Storage Manager.

After you have defined the backup storage objects, label a tape storage volume. See the Tivoli Storage Manager documentation for help with labeling storage volumes.

After you have defined the backup storage objects to Tivoli Storage Manager and labeled a tape storage volume, you can backup the database. First, place a labeled tape storage volume in the drive. Then enter the backup command at the Tivoli Storage Manager server command line interface. For example:

```
backup db type=full devclass=dumptapedev
```

Replace the string `dumptapedev` with the name of the device class that you defined for tape backup. The backup command issues several messages, concluding with "Database dump process completed", after successfully creating the database backup.

Make a record of the information about the database backup, including the date and time that the backup was taken and the label of the storage volume label. Keep the backup copy of the database in a safe location, preferably offsite. Save the backup copy at least until the next time that you create another full backup copy of the database.

Saving critical files

The following files contain important information that you must have if you need to recover the Tivoli Storage Manager database:

- The server options file (DSMSERV.OPT)
- The volume history file (VOLHIST.OUT)
- The device configuration file (DEVCNFG.OUT)
- The Tivoli Storage Manager database and recovery log location file (DSMSERV.DSK)

Save a copy of the files on removable media and keep the copy in a safe location, preferably offsite. Save the copy at least until the next time that you create another backup copy of the files.

Protecting data with the data retention protection (DRP) protocol

To avoid the accidental erasure or overwriting of critical data, Content Manager OnDemand supports the Tivoli Storage Manager APIs related to data retention.

d

Data retention protection (DRP)
Prohibits the explicit deletion of documents until their specified retention criterion is met. Although documents can no longer be explicitly deleted, they can still expire.

Important: DRP is permanent. After it is turned on, it cannot be turned off.

Event-based retention policy
Retention based on an external event other than the storage of data. For Content Manager OnDemand, the retention event is the call to delete the data. A load, unload, application group delete, or expiration of data triggers the retention event.

Restriction: Content Manager OnDemand does not support *deletion hold*, which is a feature that prevents stored data from being deleted until the hold is released.

If you decide to use these policies in Tivoli Storage Manager, then the following scenarios result:

Table 9. Scenarios of using data retention protection

	Creation-based object expiration policy	**Event-based retention object expiration policy**
Data retention protection off	Content Manager OnDemand issues a delete object command through the Tivoli Storage Manager API. Objects are deleted during the next inventory expiration. If an Content Manager OnDemand application group is being deleted, a `delete filespace` command is issued, and the object file space is immediately deleted with the file space.	Content Manager OnDemand issues an event trigger command through the Tivoli Storage Manager API. The status of the objects that are affected are changed from PENDING to STARTED, and the objects are expired by Tivoli Storage Manager based on their retention parameters. If the retention parameters are set to `NOLIMIT`, then the objects never expire. If an OnDemand application group is being deleted, a `delete filespace` command is issued instead, and the objects are immediately deleted along with the file space.

Table 9. Scenarios of using data retention protection (continued)

	Creation-based object expiration policy	Event-based retention object expiration policy
Data retention protection on	Content Manager OnDemand issues no commands to Tivoli Storage Manager. The objects are effectively orphaned by Content Manager OnDemand and are expired by Tivoli Storage Manager based on their retention parameters. If the retention parameters are set to `NOLIMIT`, then the objects never expire.	Content Manager OnDemand issues an event trigger command through the Tivoli Storage Manager API. The event status of the objects that are affected are changed from PENDING to STARTED and the objects will be expired by Tivoli Storage Manager based on their retention parameters. If the retention parameters are set to `NOLIMIT`, then the objects never expire. If an Content Manager OnDemand application group is being deleted, then a `delete filespace` cannot be used with DRP enabled, therefore, the operation is treated the same as if a delete were indicated. The status of all the affected objects is changed from PENDING to STARTED, and they will be expired by Tivoli Storage Manager based on their retention parameters. Because this leaves the file space entries in TSM, you must manually delete these entries when the file space is empty (even with DRP enabled).

Recommendations:

- Set up the application groups to expire by load.
- Define the Tivoli Storage Manager archive copy groups to be event-based, and retain data for 0 days.
- Run the Tivoli Storage Manager inventory expiration regularly to ensure that expired data is removed.

Additionally, Content Manager OnDemand supports the following devices:

IBM DR450 and DR550
Disk-based system that contains a Tivoli Storage Manager that runs DRP.

EMC Centera
Disk-based system that is treated as a device by Tivoli Storage Manager. Tivoli Storage Manager must run DRP.

Chapter 20. Installing the Content Manager OnDemand software on HP-UX Itanium

You must install a copy of the Content Manager OnDemand software on each workstation or node that is part of the Content Manager OnDemand system.

Prerequisite:

1. You need approximately 200 MB of free space in the /opt file system to install the software.
2. By default, the installation is carried out in the GUI mode, therefore, the X windows support is required for the GUI install.

Complete the following steps to install the Content Manager OnDemand product files on an HP-UX workstation:

1. Insert the Content Manager OnDemand for HP-UX Itanium server CD-ROM into the drive. The steps that follow assume that the CD-ROM is mounted on directory /cdrom.
2. Log in as the root user.
3. Go to the /cdrom/server/hpux/ directory.
4. Enter this command:

   ```
   ./odhpit
   ```

5. Read the Welcome screen and then click **Next**. The License Agreement window appears.
6. Select **I accept the terms in the license agreement** to accept the license agreement. Click **Next**.
7. Accept the default directory name. Click **Next**.
8. When the process completes, this question **Would you like to display the product ReadMe file?** appears. The location of the product readme file is displayed also. On HP-UX Itanium, the readme file is located in the /opt/ondemand directory.
9. If you want to view the readme file now, click **Yes**. Otherwise, click **No**. Click **Next**.
10. Read the information in the window, and click **Next**.
11. Click **Finish**.
12. After installing the software from the CD-ROM, apply the latest service update for Content Manager OnDemand. You can obtain the latest service update from IBM service at http://www.ibm.com/eserver/support/fixes/.
13. After the installation completes successfully, eject the CD-ROM from the drive.

Optionally, the install can be performed in the character based console mode. To install the Content Manager OnDemand for HP-UX Itanium server in the console mode, enter the following command from the directory which contains the installer:

```
./odhpit -i console
```

and follow the instructions on the installation panels.

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Installing optional Content Manager OnDemand software

The command to install the Content Manager OnDemand Web Enablement Kit is:

```
./odwekhp
```

or

```
./odwekhp -i console
```

The command to install the Content Manager OnDemand Advanced Function Presentation Transformations for Multiplatforms feature is:

```
./afp2web
```

or

```
./afp2web -i console
```

The command to install the Content Manager OnDemand Enhanced Retention Management feature is:

```
./oderm
```

or

```
./oderm -i console
```

The command to install the Content Manager OnDemand PDF Indexing feature is:

```
./odpdf
```

or

```
./odpdf -i console
```

The command to install the IBM Content Manager OnDemand Report Distribution for Multiplatforms feature is:

```
./odrdf
```

or

```
./odrdf -i console
```

Chapter 21. Configuring instances on HP-UX Itanium

Overview

An Content Manager OnDemand instance is a logical server environment made up of a database, a library server, and one or more object servers. An instance is defined in the ARS.INI file by naming the instance, identifying the name of the database used by the instance, and identifying the library server on which the database will be maintained. When you configure an object server, you identify its library server in the ARS.CFG file on the object server. An instance has its own table space file systems for the database and cache file systems. The table space file systems are defined in the ARS.DBFS file on the library server. The cache file systems are defined in the ARS.CACHE file on each object server. All of the servers that belong to an instance run in a single code page and on the same TCP/IP port number.

You can run multiple instances on the same workstation, with each instance configured differently:

- To have separate test and production environments
- To have databases using different code pages

Each instance has different security from other instances on the same workstation. You must define users and groups to each instance and set application group and folder permissions for users of each instance. Each instance has its own system log.

Each additional instance requires additional system resources, such as virtual storage and disk space, and more administration.

If you plan to run more than one instance on the same workstation:

- The ARS.INI file must contain one section for each instance. Each section identifies the ARS.CFG file, ARS.DBFS file, and ARS.CACHE file used by the instance.
- You must create a unique copy of the ARS.CFG file for each instance.
- You should maintain separate table space file systems and cache storage file systems for each instance, as in a ARS.DBFS file and ARS.CACHE file for each instance.
- Each instance must run on its own unique TCP/IP port number. The port for each instance is configured in the ARS.INI file.

Procedure

To configure an instance, follow these steps:

__ 1. Specify the instance in the ARS.INI file.
__ 2. Specify the ARS.CFG file for the instance.
__ 3. Specify the ARS.DBFS file for the instance.
__ 4. Specify the ARS.CACHE file for the instance.

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Specifying the instance in the ARS.INI file

Overview

The ARS.INI file contains information about Content Manager OnDemand instances. When you install the Content Manager OnDemand software, the ARS.INI file contains information about a default instance named archive. Most customers will use the default instance for their first or only instance of Content Manager OnDemand.

The information in the ARS.INI file is organized in sections with a header line that identifies each section. The header line can be identified by the brackets [ ] that delimit the beginning and end of the line.

The first section in the ARS.INI file contains information about the default instance. The following shows the default instance as provided by IBM:

```
[@SRV@_ARCHIVE]
HOST=platte
PROTOCOL=2
PORT=0
SRVR_INSTANCE=archive
SRVR_INSTANCE_OWNER=root
SRVR_OD_CFG=/opt/ondemand/config/ars.cfg
SRVR_DB_CFG=/opt/ondemand/config/ars.dbfs
SRVR_SM_CFG=/opt/ondemand/config/ars.cache
```

The HOST parameter identifies the host name alias, IP address, or fully qualified host name of the workstation on which the library server is running. The PROTOCOL parameter identifies the communications protocol used by the instance. The PORT parameter identifies the TCP/IP port number that the instance monitors for client requests. The stanza name (`[@SRV@_ARCHIVE]`) identifies the name of the Content Manager OnDemand instance. The SRVR_INSTANCE parameter identifies the name of the Content Manager OnDemand database. The SRVR_INSTANCE_OWNER parameter identifies the userid of the Content Manager OnDemand instance owner. The SRVR_OD_CFG parameter identifies the ARS.CFG file used by the instance. The SRVR_DB_CFG parameter identifies the ARS.DBFS file used by the instance. The SRVR_SM_CFG parameter identifies the ARS.CACHE file used by the instance.

When adding an instance to the ARS.INI file, remember that each instance must specify a unique instance name. For example, to add an instance for testing new applications, you might add an instance named *test*. When you work with more than one instance, you must identify the instance name when you run Content Manager OnDemand programs (such as ARSDB, ARSLOAD, and ARSSOCKD) and database commands (such as connecting to the database). The following shows an example of a second instance in the ARS.INI file:

```
[@SRV@_TEST]
HOST=rhone
PROTOCOL=2
PORT=1444
SRVR_INSTANCE=test
SRVR_INSTANCE_OWNER=root
SRVR_OD_CFG=/opt/ondemand/config/ars.test.cfg
SRVR_DB_CFG=/opt/ondemand/config/ars.test.dbfs
SRVR_SM_CFG=/opt/ondemand/config/ars.test.cache
```

The header line for the definition of the instance is `TEST`. The HOST statement identifies the host name alias of the library server. The instance communicates over

TCP/IP port number 1444. The name of the Content Manager OnDemand database is test. The name of the Content Manager OnDemand instance is test. The userid of the Content Manager OnDemand instance owner is root. The instance identifies its server configuration file (ARS.TEST.CFG), table space file systems file (ARS.TEST.DBFS), and cache file systems file (ARS.TEST.CACHE).

Procedure

To specify the instance in the ARS.INI file, follow these steps:

1. Log in to the server as the root user.
2. Change to the /opt/ondemand/config directory.
3. Make a backup copy of the file provided by IBM.
4. Edit the ARS.INI file with a standard text editor such as vi.
5. Most customers will use the default instance named ARCHIVE for their first or only instance of Content Manager OnDemand. Verify the following parameters and values.
   __ a. The header line contains a string that identifies the name of the instance. Unless you specify otherwise, the first or only instance is named ARCHIVE.
   __ b. The HOST parameter identifies the host name alias, IP address, or fully qualified host name of the library server.
   __ c. The PROTOCOL parameter identifies the communications protocol used by the instance. The number 2 identifies TCP/IP, and is the only valid value.
   __ d. The PORT parameter identifies the TCP/IP port number that the instance monitors for client requests (the number 0 means that the instance monitors port number 1445). If you use a port number other than 1445 on the library server, enter that number instead of 0 (zero). **For customers running more than one instance:** Each instance that runs on the same workstation must specify a different port number. If you configure a separate object server, ensure that the port number of the object server matches the port number of the library server.
   __ e. The stanza name ([@SRV@_ARCHIVE]) identifies the name of the Content Manager OnDemand instance. This value should match the name of the Content Manager OnDemand database (see “Installing DB2” on page 95 or “Installing Oracle” on page 97). The instance name can be from one to eight characters in length, and can include the A through Z and 0 through 9 characters.
   __ f. The SRVR_INSTANCE_OWNER parameter identifies the userid of the Content Manager OnDemand instance owner. This is the userid that is permitted to run the Content Manager OnDemand server programs, such as ARSSOCKD, ARSLOAD, and ARSMAINT. **For customers configuring the system to run under a user other than root:** See Chapter 17, “Creating a user for the Content Manager OnDemand instance owner on HP-UX Itanium,” on page 93.
   __ g. The SRVR_OD_CFG parameter identifies the ARS.CFG configuration file used by the instance. See “Specifying the ARS.CFG file for the instance” on page 124.
   __ h. The SRVR_DB_CFG parameter identifies the ARS.DBFS table space file system file used by the instance. See “Specifying the ARS.DBFS file for the instance” on page 135.

__ i. The SRVR_SM_CFG parameter identifies the ARS.CACHE cache file system file used by the instance. See "Specifying the ARS.CACHE file for the instance" on page 136.

6. **Note for distributed library/object servers:** Configure one copy of the ARS.INI file on each workstation that is part of the Content Manager OnDemand system. Verify that the information specified in the ARS.INI file is consistent on all workstations that are part of the instance. In addition:
   a. Ensure that the port number of the object server matches the port number of the library server.
   b. Verify that the HOST parameter on the object server must specify the host name alias, IP address, or fully qualified host name of the library server.
7. Save the file and exit the text editor.
8. You should control access to the ARS.INI file by changing the file permissions so that only the Content Manager OnDemand instance owner has read or write access to the file.

Specifying the ARS.CFG file for the instance

The ARS.CFG file contains information about the instance, such as identifying the object servers that belong to the instance, the language settings for the instance, and information that is used by database, storage, and print manager programs.

Before you create the Content Manager OnDemand database, start Content Manager OnDemand, use archive storage, use the server print function, migrate tables to table spaces, or import tables from archive storage to the database, you should review the parameters in the ARS.CFG file. The values that IBM provides are sufficient for most customers. However, you might need to change some of the values for your environment.

Procedure

To specify the ARS.CFG file for the instance, follow these steps:

1. Log in to the server as the `root` user.
2. Change to the `/opt/ondemand/config` directory.
3. Make a backup copy of the file provided by IBM.
4. Edit the ARS.CFG file with a standard text editor such as vi.
5. **Note for distributed library/object servers:** Some parameters in the ARS.CFG file are not used on object servers. For example, an object server does not use the license parameters, server print parameters, and database parameters. See the sections that follow for more information. Configure one copy of the ARS.CFG file on each workstation that is part of the Content Manager OnDemand system. Set the ARS_SRVR parameter to the TCP/IP host name alias, fully qualified host name, or IP address of the library server and set the ARS_ARS_LOCAL_SRVR parameter to the TCP/IP host name alias, fully qualified host name, or IP address of the object server. Some parameters in the ARS.CFG file are not used on object servers. For example, an object server does not use the license parameters, server print parameters, and database parameters. See the sections that follow for more information.
6. Save the file and exit the text editor.
7. You should control access to the ARS.CFG file by changing the file permissions so that only the Content Manager OnDemand instance owner has read or write access to the file.

See the following topics for more information:

- ARS_CODEPAGE
- ARS_DB_ENGINE
- ARS_DB_IMPORT
- ARS_DB_PARTITION
- ARS_DB_TABLESPACE
- ARS_DB_TABLESPACE_USEREXIT
- ARS_DB2_ARCHIVE_LOGPATH
- ARS_DB2_DATABASE_PATH
- ARS_DB2_LOG_NUMBER
- ARS_DB2_LOGFILE_SIZE
- ARS_DB2_PRIMARY_LOGPATH
- ARS_DB2_TSM_CONFIG
- ARS_LANGUAGE
- ARS_LDAP_ALLOW_ANONYMOUS
- ARS_LDAP_BASE_DN
- ARS_LDAP_BIND_ATTRIBUTE
- ARS_LDAP_BIND_DN
- ARS_LDAP_BIND_DN_PWD
- ARS_LDAP_BIND_MESSAGES_FILE
- ARS_LDAP_MAPPED_ATTRIBUTE
- ARS_LDAP_PORT
- ARS_LDAP_SERVER
- ARS_LOCAL_SRVR
- ARS_MESSAGE_OF_THE_DAY
- ARS_NUM_DBSRVR
- ARS_NUM_LICENSE
- ARS_ORACLE_HOME
- ARS_ORACLE_PASSWORD
- ARS_ORACLE_USERID
- ARS_PRINT_PATH
- ARS_SRVR
- ARS_STORAGE_MANAGER
- ARS_TMP
- DB_ENGINE
- DB2INSTANCE
- DSM_CONFIG
- DSM_DIR
- DSM_LOG
- DSMG_CONFIG
- DSMG_DIR
- DSMG_LOG
- DSMI_CONFIG
- DSMI_DIR
- DSMI_LOG

- DSMSERV_CONFIG
- DSMSERV_DIR

ARS_CODEPAGE

The ARS_CODEPAGE parameter identifies the code page of the Content Manager OnDemand database. The ARS_CODEPAGE parameter need be specified only if the locale of the system on which the Content Manager OnDemand server is running is different than the code page of the Content Manager OnDemand database. OnDemand uses the locale of the system on which the Content Manager OnDemand server is running as the default value. This parameter may be specified on the library server and on object servers.

ARS_DB_ENGINE parameter

The database manager product that you installed on the library server. You can specify DB2 or ORACLE. The default value is DB2. The ARS_DB_ENGINE parameter is ignored on object servers.

ARS_DB_IMPORT parameter

The method that Content Manager OnDemand uses to migrate index data to table spaces and import tables from archive storage to the database. The default value is `0` (zero). The ARS_DB_IMPORT parameter is ignored on object servers.

If you are configuring a library server, then you must set the ARS_DB_IMPORT parameter to one of the following values:

0 Content Manager OnDemand uses the EXPORT and IMPORT commands to migrate table data. This method requires disk space to hold log records generated when exporting existing table data and importing data to the new table space. This is the default migration method.

1 Content Manager OnDemand uses the EXPORT and LOAD commands to migrate table data. This method requires disk space to hold log records generated when exporting existing table data. The LOAD command generates a backup image of the new table space. The image file is stored in Tivoli Storage Manager-managed storage. This is the recommended migration method.

Note: Before you can use Tivoli Storage Manager to manage DB2 backup image files, you must install and configure Tivoli Storage Manager. See Chapter 19, “Installing and configuring Tivoli Storage Manager on HP-UX Itanium,” on page 99 for details.

2 Content Manager OnDemand uses the EXPORT and LOAD commands to migrate the table data. This method requires disk space to hold log records generated when exporting existing table data. The LOAD command generates a backup image of the new table space. The image file is stored in the file system identified by the ARS_TMP parameter (see “ARS_TMP parameter” on page 133).

ARS_DB_PARTITION parameter

Determines whether you can partition the database across nodes or systems. By default, you cannot partition the database. If the database manager product that you are using with Content Manager OnDemand supports partitioning, then you can specify that you want to partition the database by changing the value of this parameter to 1 (one). Currently, partitioning is supported only by DB2 Universal

Database Extended Enterprise Edition. To store application group index data in partitions, your application groups must specify a *partition field*. The ARS_DB_PARTITION parameter is ignored on object servers.

ARS_DB_TABLESPACE parameter

The name of the table space for the Content Manager OnDemand system tables. The value of this parameter must match an existing table space name in the database. You must have created the table space in DB2 or Oracle.

ARS_DB_TABLESPACE_USEREXIT parameter

Determines if the Content Manager OnDemand table space creation exit will be invoked. The Content Manager OnDemand table space creation exit allows an installation to take action when OnDemand creates a table space, table, or index tables that will be used to store application index data. The exit is not called for the Content Manager OnDemand system tables.

The following statement must exist in the ARS.CFG file that is associated with the instance so that the ARSUTBL DLL can be invoked:

```
ARS_DB_TABLESPACE_USEREXIT=absolute path name
```

For the sample ARSUTBL, you would specify the following statement in the ARS.CFG file:

```
ARS_DB_TABLESPACE_USEREXIT=/opt/ondemand/bin/exits/arsutbl
```

Appendix I, "Table space creation exit," on page 393 provides information about the exit point that gets invoked when OnDemand creates table spaces, tables, and indexes for the Content Manager OnDemand data tables.

ARS_DB2_ARCHIVE_LOGPATH parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 126) to DB2 (the default), the location that will hold the offline archived log files. The default value is `/arsdb_archivelog`. The ARS_DB2_ARCHIVE_LOGPATH is ignored if you use Tivoli Storage Manager to maintain the DB2 archived log files. The ARS_DB2_ARCHIVE_LOGPATH parameter is ignored on object servers.

The DB2UEXIT.DISK program copies the online archived log files from the primary log file directory to the archive log file directory. An archived log file becomes *offline* when it is no longer stored in the primary log file directory. After creating a backup image of the database, the ARSDB program deletes the offline archived log files. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* can help you estimate the amount of space required to hold the offline archived log files.

ARS_DB2_DATABASE_PATH parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 126) to DB2 (the default), the base file system in which the Content Manager OnDemand database will reside. You must make sure that the specified location contains enough space to hold the system tables, the USERSPACE1 table space, and any application group tables that are not stored in their own table spaces. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* can help you estimate the amount of space required to hold the database. The default value is `/arsdb`. The ARS_DB2_DATABASE_PATH parameter is ignored on object servers.

ARS_DB2_LOG_NUMBER parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 126) to DB2 (the default), the number of primary log files. The default value is `40`. The ARS_DB2_LOG_NUMBER parameter is ignored on object servers.

The values of the ARS_DB2_LOGFILE_SIZE and ARS_DB2_LOG_NUMBER parameters determine the total amount of space available for DB2 to log changes to the database. The values that you specify must support the largest single report that you plan to load (or unload). DB2 will fail if there is not enough log file space available to hold the changes to the database. The default values allocate 160 MB of space. See the *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* for information about estimating the amount of storage space required to hold the DB2 log files.

ARS_DB2_LOGFILE_SIZE parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 126) to DB2 (the default), the size of a log file, in 4 KB blocks. The default value is `1000`. The ARS_DB2_LOGFILE_SIZE parameter is ignored on object servers.

The values of the ARS_DB2_LOGFILE_SIZE and ARS_DB2_LOG_NUMBER parameters determine the total amount of space available for DB2 to log changes to the database. The values that you specify must support the largest single report that you plan to load (or unload). DB2 will fail if there is not enough log file space available to hold the changes to the database. The default values allocate 160 MB of space. See the *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* for information about estimating the amount of storage space required to hold the DB2 log files.

ARS_DB2_PRIMARY_LOGPATH parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 126) to DB2 (the default), the location that will hold the active archived log files. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* can help you estimate the amount of space required to hold the active archived log files. The default value is `/arsdb_primarylog`. The ARS_DB2_PRIMARY_LOGPATH parameter is ignored on object servers.

ARS_DB2_TSM_CONFIG parameter

If you are configuring the Content Manager OnDemand library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 126) to DB2 (the default) and you plan to use Tivoli Storage Manager to maintain DB2 archived log files and backup image files, the full path name of the Tivoli Storage Manager options file that identifies the Tivoli Storage Manager server that will maintain the DB2 files. For example: `/opt/tivoli/tsm/client/ba/bin/dsm.db2.opt`.

The ARS_DB2_TSM_CONFIG parameter is ignored on object servers. "Configuring Tivoli Storage Manager to maintain DB2 files" on page 108 provides information to help you configure Tivoli Storage Manager to maintain DB2 files.

ARS_LANGUAGE parameter

The national language environment used to create the database. Content Manager OnDemand uses a three-character *language code* to derive the locale and code set for the server operating system. The default value is ENU (US English). See Appendix J, "National Language Support," on page 397 for a list of the language codes and information about configuring the system for national language character support. The ARS_LANGUAGE parameter is ignored on object servers.

Important: You must provide the correct language code for your operating environment **before** you create the Content Manager OnDemand database.

ARS_LDAP_ALLOW_ANONYMOUS parameter

Specifies whether or not anonymous bind connections are allowed on this LDAP server. Valid values are TRUE and FALSE. If FALSE, you must also specify ARS_LDAP_BIND_DN and ARS_LDAP_BIND_DN_PWD.

ARS_LDAP_BASE_DN parameter

Specifies the base distinguished name to use. This parameter is required for LDAP authentication.

Example 1:

```
ARS_LDAP_BASE_DN=ou=mycity,o=xyzcompany
```

Example 2:

```
ARS_LDAP_BASE_DN=dc=ondemand,dc=xyzcompany
```

ARS_LDAP_BIND_ATTRIBUTE parameter

Specifies the attribute being bound and is the attribute name to be searched on the LDAP server. This parameter is required for LDAP authentication.

Example:

```
ARS_LDAP_BIND_ATTRIBUTE=mail
```

ARS_LDAP_BIND_DN parameter

Specifies the distinguished name to use if anonymous connections are not allowed for binding. Used with ARS_LDAP_ALLOW_ANONYMOUS set to FALSE.

ARS_LDAP_BIND_DN_PWD parameter

Specifies the distinguished name password to use if anonymous connections are not allowed for binding. Used with ARS_LDAP_ALLOW_ANONYMOUS set to FALSE.

ARS_LDAP_BIND_MESSAGES_FILE parameter

Specifies the location of a file containing the LDAP message strings the Content Manager OnDemand server looks for during login. This is used for issuing messages when the user's password is about to expire, or their LDAP account is locked. ARS_LDAP_BIND_MESSAGES_FILE is used in conjunction with the ARSLDAP.INI file to implement this functionality.

ARS_LDAP_MAPPED_ATTRIBUTE parameter

Specifies the attribute being returned to Content Manager OnDemand as a user ID. This is the attribute name to be returned from the LDAP server once the bind attribute name is found. It can be the same as the bind attribute or different. This parameter is required for LDAP authentication.

Example:

```
ARS_LDAP_MAPPED_ATTRIBUTE=sAMAccountName
```

ARS_LDAP_PORT parameter

Specifies the port on which LDAP is listening. The default value is 389. This parameter is optional.

ARS_LDAP_SERVER parameter

Specifies the IP address or the fully-qualified hostname of the LDAP server. This parameter is required for LDAP authentication.

ARS_LOCAL_SRVR parameter

The name of the object server. The ARS_LOCAL_SRVR parameter is ignored on library servers. However, if you are configuring a library server, you must either omit this parameter from the ARS.CFG file or set this parameter to a blank value, that is: `ARS_LOCAL_SRVR=` .

If you are configuring an object server, set this parameter to the TCP/IP host name alias, fully qualified host name, or IP address of the object server. If the object server is running on a node of a multi-processor workstation, then set this parameter to the external IP address of the node on which you installed the object server.

When you add an Content Manager OnDemand storage node to an object server, you must use the value of the ARS_LOCAL_SRVR parameter to name the storage node.

ARS_MESSAGE_OF_THE_DAY parameter

Use to show the message of the day. Set to the full path name of a file that contains the message that you want to show. For example:

```
ARS_MESSAGE_OF_THE_DAY=/opt/ondemand/tmp/message.txt
```

The contents of the message file can contain a maximum of 1024 characters of text. The administrative client and the Windows client show the message after the user logs on to the server. To close the message box and continue, the user must click OK. If you do not specify a message file, then the normal client processing occurs.

ARS_NUM_DBSRVR parameter

Determines the number of processes that Content Manager OnDemand starts on the library server to handle connections to the database. The ARS_NUM_DBSRVR parameter is ignored on object servers.

In addition to database connections by Content Manager OnDemand client programs, the value that you specify must support the number of active Content Manager OnDemand commands and daemons such as ARSLOAD, ARSDOC, ARSDB, ARSMAINT, and ARSADMIN.

Each connection to the database requires a database agent. Content Manager OnDemand can start a database agent for each connection. However, each agent requires its own private memory and some portion of application shared memory. You can use the ARS_NUM_DBSRVR parameter to optimize the way that Content Manager OnDemand handles the database load. For example, you can define ARS_NUM_DBSRVR so that Content Manager OnDemand starts a fixed number of database agents, regardless of the number of concurrent database requests. While this might appear restrictive, database requests typically process very quickly. For example, ten database agents can handle a heavy database request load, while balancing the impact on system resources.

You should specify a value for the ARS_NUM_DBSRVR parameter that supports the peak number of concurrent database connections that you expect the library server to handle. A low value limits access to the database during periods of high database activity. A high value requires more system resources during periods of high database activity. The value that you choose also depends on the characteristics of the queries. For example, general queries typically keep a connection open longer than a more specific query.

ARS_NUM_LICENSE parameter

The maximum number of concurrent users allowed on the system. The default value is 1 (one). The ARS_NUM_LICENSE parameter is ignored on object servers.

You must acquire an authorization for each concurrent user. See the license information provided with the Content Manager OnDemand product package for more information.

To monitor the number of users on your system, search the System Log folder for message numbers 201 and 202. To determine whether your system has exceeded the allowed number of users, search the System Log for messages that indicate that the number of users accessing the system exceeds the maximum allowed (as specified by the ARS_NUM_LICENSE parameter).

ARS_ORACLE_HOME parameter

Use to specify the base installation directory for Oracle. The default value is:

```
ARS_ORACLE_HOME=/oracle
```

Replace the string `/oracle` with the name of the directory in which Oracle was installed.

ARS_ORACLE_PASSWORD parameter

Specifies the password of the Content Manager OnDemand user in Oracle (root). This value must match the userid of the Content Manager OnDemand user in Oracle that was specified in “Installing Oracle” on page 97.

Example:

```
ARS_ORACLE_PASSWORD=xxxxxxxxxx
```

Replace the string `xxxxxxxxxx` with the password of the Content Manager OnDemand user in Oracle.

ARS_ORACLE_USERID parameter

Specifies the userid of the Content Manager OnDemand user in Oracle (root). This value must match the userid of the Content Manager OnDemand user in Oracle that was specified in "Installing Oracle" on page 97.

Example:

```
ARS_ORACLE_USERID=root
```

Replace the string `root` with the userid of the Content Manager OnDemand user in Oracle.

ARS_PRINT_PATH parameter

The location where the Content Manager OnDemand server print function temporarily stores print data. You must make sure that there is enough space in the specified location to hold the print files for the maximum number of concurrent print requests that the server will handle. The default value is `/tmp`. The ARS_PRINT_PATH parameter is ignored on object servers.

You should dedicate a file system to hold the print files. The file system contain at least 500 MB of free space at all times. If your storage configuration permits, you should allocate 1 GB or more of free space to the specified file system.

The permissions for the file system must be `drwxrwxrwt`. You can use the CHMOD command to set the permissions. For example, the command `chmod 1777 /tmp` sets the permissions for the `/tmp` file system.

ARS_SRVR parameter

The name of the library server. The ARS_SRVR parameter is ignored on library servers. However, if you are configuring a library server, you must either omit this parameter from the ARS.CFG file or set this parameter to a blank value, that is: `ARS_SRVR= .`

If you are configuring an object server, set the ARS_SRVR parameter to the TCP/IP host name alias, fully qualified host name, or IP address of the library server. If the library server is running on a node of a multi-processor workstation, then set this parameter to the external IP address of the node on which you installed the library server.

ARS_STORAGE_MANAGER parameter

Determines whether the server program is linked to a cache-only storage manager or an archive storage manager. You must specify this parameter on library and object servers.

You can specify one of the following values:

CACHE_ONLY
Link the server program to a cache-only storage manager.

TSM Link the server program to an archive storage manager. This is the default value in the ARS.CFG file that is provided by IBM.

Note: Before Content Manager OnDemand can work with an archive storage manager to maintain data, you must install and configure the archive storage manager software.

ADSM

Deprecated. This option has been replaced by TSM. ADSM is still supported for existing customers.

ARS_SUPPORT_CFSOD parameter

If you plan to use Content Federation Services for OD, you must set this parameter equal to 1.

ARS_TMP parameter

The location where Content Manager OnDemand programs temporarily store data. You must allocate sufficient free space in the specified file system to support tasks such as migrating and importing index data. The default value is: `/tmp`. You must specify the ARS_TMP parameter on the library server and on all object servers.

You should dedicate a file system to temporary storage. The file system should contain at least 500 MB of free space at all times. If your storage configuration permits, you should allocate 1 GB or more of free space to the specified file system.

The permissions for the file system must be `drwxrwxrwt`. You can use the CHMOD command to set the permissions. For example, the command `chmod 1777 /tmp` sets the permissions for the `/tmp` file system.

DB_ENGINE parameter

Deprecated. This parameter has been replaced by ARS_DB_ENGINE. However, the DB_ENGINE parameter is still supported for existing customers.

DB2INSTANCE parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 126) to DB2 (the default), the name of the database instance owner that you created when you installed DB2 (see "Installing DB2" on page 95). The default value is `archive`. The DB2INSTANCE parameter is ignored on object servers.

DSM_CONFIG parameter

If you plan to use Tivoli Storage Manager, the full path name of the Tivoli Storage Manager client options file. For example: `/opt/tivoli/tsm/client/ba/bin/dsm.opt`

You must set the DSM_CONFIG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSM_DIR parameter

If you plan to use Tivoli Storage Manager, the directory that contains the Tivoli Storage Manager client files. For example: `/opt/tivoli/tsm/client/ba/bin`.

You must set the DSM_DIR parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSM_LOG parameter

If you plan to use Tivoli Storage Manager, the directory in which Tivoli Storage Manager stores the space management client error log. The default value is `/tmp`.

You must set the DSM_LOG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMG_CONFIG parameter

If you plan to use Tivoli Storage Manager, the full path name of the Tivoli Storage Manager administrative client options file. For example: `/opt/tivoli/tsm/client/admin/bin/dsm.opt`.

You must set the DSMG_CONFIG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMG_DIR parameter

If you plan to use Tivoli Storage Manager, the directory that contains the Tivoli Storage Manager administrative client files. For example: `/opt/tivoli/tsm/client/admin/bin`.

You must set the DSMG_DIR parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMG_LOG parameter

If you plan to use Tivoli Storage Manager, the directory in which Tivoli Storage Manager stores the administrative client error log. The default value is `/tmp`. You must set the DSMG_LOG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMI_CONFIG parameter

If you plan to use Tivoli Storage Manager, the full path name of the Tivoli Storage Manager API options file. For example: `/usr/tivoli/tsm/client/api/bin64/dsm.opt`.

You must set the DSMI_CONFIG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMI_DIR

If you plan to use Tivoli Storage Manager, the directory that contains the Tivoli Storage Manager API files. For example: `/usr/tivoli/tsm/client/api/bin64`.

You must set the DSMI_DIR parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMI_LOG parameter

If you plan to use Tivoli Storage Manager, the directory in which Tivoli Storage Manager stores the Tivoli Storage Manager API error log. The default value is `/tmp`. You must set the DSMI_LOG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMSERV_CONFIG parameter

If you plan to use Tivoli Storage Manager, the full path name of the Tivoli Storage Manager server options file. For example: `/opt/tivoli/tsm/server/bin/dsmserv.opt`.

You must set the DSMSERV_CONFIG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMSERV_DIR parameter

If you plan to use Tivoli Storage Manager, the directory that contains the Tivoli Storage Manager server files. For example: `/opt/tivoli/tsm/server/bin`.

You must set the DSMSERV_DIR parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

Specifying the ARS.DBFS file for the instance

Overview

The ARS.DBFS file lists the file systems on the library server that can be used by the database manager to maintain index data in table spaces. The rules for using table space file systems are:

- You should store only Content Manager OnDemand application group data in the table space file systems.
- You should define a minimum of two table space file systems. (In general, the more table space file systems that you define, the better for performance and recovery.)
- You should allocate equal amounts of disk space to each table space file system. If you increase the amount of space in one table space file system, you should increase the amount of space in the other table space file systems by an equal amount.

Each line in the ARS.DBFS file identifies the name of a file system that Content Manager OnDemand can use to store table spaces and specifies the type of table spaces created in the file system.

When naming table space file systems, you should use the following convention:

```
/filesystem SMS
```

Where `filesystem` is the name of the file system and `SMS` indicates the type of table spaces created in the file system. The name of the file system should identify the type of table spaces that can be created in the file system. For example, the following line identifies an SMS table space file system:

```
/arsdb/db1/SMS SMS
```

The following shows an example of an ARS.DBFS file that defines three SMS table space file systems:

```
/arsdb/db1/SMS SMS
/arsdb/db2/SMS SMS
/arsdb/db3/SMS SMS
```

Procedure

To create (or edit) the ARS.DBFS file for the instance:

1. Log in to the server as the `root` user.
2. Change to the `/opt/ondemand/config` directory.
3. Create (or edit) the ARS.DBFS file using a standard text editor such as vi.
4. Add one line for each file system that Content Manager OnDemand can use for table spaces.

5. Save the file and exit the editor.
6. A table space file system must be owned by the database instance owner and group. The suggested defaults are `archive` (instance owner) and `sysadm1` (group). You specified the instance owner and group when you installed the database manager product (see Chapter 18, "Installing the database manager on HP-UX Itanium," on page 95). Make sure that the user and group file permissions are set correctly. For example:

   ```
   drwxrws---  3 archive sysadm1  512 May 17 12:58 /arsdb/db1/SMS
   ```

   You can use the CHOWN command to set the ownership permissions. For example, the following command changes the owner of all file systems in the `/arsdb` tree to the `archive` user and the `sysadm1` group:

   ```
   chown -R archive:sysadm1 /arsdb*
   ```
7. You can use the CHMOD command to set the file permissions. For example, the following commands set the correct permissions for the `/arsdb/db1/SMS` filesystem:

   ```
   chmod 2770 /arsdb/db1/SMS
   chmod g+s /arsdb/db1/SMS
   ```

Specifying the ARS.CACHE file for the instance

The ARS.CACHE file lists the file systems on the object server that can be used by Content Manager OnDemand for cache storage.

If there are multiple file systems in the ARS.CACHE file, OnDemand uses the file system with the greatest amount of space free to store the objects.

The following example shows an ARS.CACHE file that defines five cache storage file systems:

```
/arscache/cache1
/arscache/cache2
/arscache/cache3
/arscache/cache4
/arscache/cache5
```

Procedure

To create the ARS.CACHE file for the instance:

1. Log in to the server as the `root` user.
2. Change to the `/opt/ondemand/config` directory.
3. Create (or edit) the ARS.CACHE file using a standard text editor such as vi.
4. Insert one line in the file for each file system on the server that Content Manager OnDemand can use for cache storage. **Important:** The first entry in the ARS.CACHE file identifies the base cache storage file system. Content Manager OnDemand stores control information in the base cache storage file system. After you define the base cache storage file system to Content Manager OnDemand, you cannot add or remove it from Content Manager OnDemand. It must remain as the first entry.
5. Save the file and exit the editor.
6. Cache file systems must be owned by the Content Manager OnDemand instance owner and the `system` group. Make sure that only the user file permissions are set, not the group or other file permissions. For example:

   ```
   drwx------  3 root root  512 Sep 22 13:08 /arscache/cache1
   ```

7. Use the CHOWN command to set the ownership permissions. The following example shows how to change the user ownership of all file systems in the /arscache tree:

   ```
   chown -R root:root /arscache*
   ```

8. Use the CHMOD command to set the file permissions. For example, the following commands set the correct permissions for the /arscache/cache1 file system:

   ```
   chmod 700 /arscache/cache1
   chmod g-s /arscache/cache1
   ```

Content Manager OnDemand cache storage files and subdirectories should have the following permissions:

```
drwx------ for every subdirectory (700)
-r-------- for every object that has been migrated to archive storage (400)
-rw------- for every object that has not yet been migrated (600)
-rwxrwxrwx for every symbolic link under the retr and migr directories (777)
```

The ARSLDAP.INI file

The ARS_LDAP_BIND_MESSAGES_FILE parameter enables Content Manager OnDemand to customize message text returned from an LDAP server that is used to alert users that their LDAP password is about to expire or their LDAP account is locked.

The messages displayed to users are contained in the file referenced by this parameter. To enable this user-configurable message functionality, create a file with the appropriate message strings, and set ARS_LDAP_BIND_MESSAGES_FILE to the full path of the file. The ARSLDAP.INI file is provided with example message strings that can be used by the ARS_LDAP_BIND_MESSAGES_FILE parameter.

The ARSLDAP.INI file contains the following three sections:

```
[BIND_MESSAGES]
PASSWORD_EXPIRED="/usr/lpp/ars/config/password_expired.txt"
ACCOUNT_LOCKED="/usr/lpp/ars/config/account_locked.txt"

[PASSWORD_EXPIRED]
TDS6="Password has expired"
AD="data 532"
UDEF1=
UDEF2=
UDEF3=

[ACCOUNT_LOCKED]
TDS6="Account is locked"
AD="data 775"
UDEF1=
UDEF2=
UDEF3=
```

The BIND_MESSAGES section specifies the path to the files containing the user-configurable message text that is displayed to users when their LDAP password is about to expire, or their LDAP account is locked. Generic files are supplied, and should be customized to reflect your actual Content Manager OnDemand environment.

An example message that would be displayed to a user:

```
Your LDAP password has expired and needs to be changed.
Log into <company intranet> for password setting instructions.
```

The entries in the PASSWORD_EXPIRED and ACCOUNT_LOCKED sections are for Tivoli Directory Server Version 6.x and Microsoft Active Directory (AD). These sections also contain three user-defined entries (UDEFx), allowing you to enter your own pattern strings for LDAP servers that are not directly supported.

The LDAP server may return additional information when the user's bind operation fails. When an error is returned from the LDAP server, Content Manager OnDemand reads the file referenced by the ARS_LDAP_BIND_MESSAGES_FILE parameter and searches under the two stanzas, [PASSWORD_EXPIRED] and [ACCOUNT_LOCKED], for user-defined text that matches the LDAP server error. If a match is found, Content Manager OnDemand will display the text found in the files defined under the [BIND_MESSAGES] stanza.

If the ARS_LDAP_BIND_MESSAGES_FILE parameter is not defined, has no file referenced, or the PASSWORD_EXPIRED or ACCOUNT_LOCKED files do not exist, the user will receive a default 'The server failed while attempting to logon' message.

Note: Currently only two error conditions can be handled: PASSWORD_EXPIRED and ACCOUNT_LOCKED. The section titles for these two conditions cannot be changed, but you can change the pattern strings and message text presented to the user to define any two error conditions.

Chapter 22. Creating an instance of Content Manager OnDemand on HP-UX Itanium

You create an instance of Content Manager OnDemand by running the ARSDB program on the library server. The ARSDB program initializes the base system tables that are required by Content Manager OnDemand. You initialize other system tables by running the ARSSYSCR program on the library server. The ARSSYSCR program initializes the system tables that are required to support the system log, system migration, and other Content Manager OnDemand functions.

Prerequisites

Before you create the instance, you must have completed the following:

__ 1. Installed and configured the database software (DB2 or Oracle), and created a database instance (DB2) or database (Oracle) for Content Manager OnDemand.

__ 2. Installed and configured the Content Manager OnDemand software, including the following files:

- ARS.INI
- ARS.CFG
- ARS.DBFS
- ARS.CACHE

Procedure

To create the instance, follow these steps:

__ 1. Specify permissions for the database directories.

__ 2. Create the instance by running the ARSDB program.

__ 3. Initialize the system logging facility by running the ARSSYSCR program. See "Initialize the system load logging facility" on page 142.

__ 4. (Optional) Initialize the system migration facility by running the ARSSYSCR program.

Specifying permissions for the database directories

The group that the instance owner belongs to must have write access to the database directory names that are specified in the ARS.CFG file (the ARS_DB2_DATABASE_PATH, ARS_DB2_PRIMARY_LOGPATH, and ARS_DB2_ARCHIVE_LOGPATH parameters). You created the instance owner and group when you installed the database manager (see Chapter 18, "Installing the database manager on HP-UX Itanium," on page 95). See "Specifying the ARS.CFG file for the instance" on page 124 for help with configuring the ARS.CFG file.

Procedure

To change the owner of the directories:

1. Log in to the server as the `root` user.
2. Use the CHOWN command to change directory ownership. For example, to change the owner and group of all file systems in the `/arsdb` tree to the `archive` owner and the `sysadm1` group, enter the following command:

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```
chown -R archive:sysadm1 /arsdb*
```

Run the CHOWN command once to change the ownership of each of the database directories that are specified in the ARS.CFG file (the ARS_DB2_DATABASE_PATH, ARS_DB2_PRIMARY_LOGPATH, and ARS_DB2_ARCHIVE_LOGPATH parameters).

Creating the instance

Overview

You should use the ARSDB program to create the instance. The ARSDB program does the following to create the instance:

- Updates the database configuration
- Verifies the directories for the primary and archived log files
- Creates a link to the database user exit program

  If the database user exit program encounters errors when copying files, it creates the `db2uexit.err` file in the temporary data directory. (By default, `/tmp`. See "ARS_TMP parameter" on page 133 for details.) If this file exists, it usually means that you did not set the correct permissions for the log file directories or there is not enough free space to hold the archived log files. See "Specifying permissions for the database directories" on page 139 for information about setting permissions. See your operating system documentation for information about increasing the size of a file system.
- Creates a backup of the database
- Builds the Content Manager OnDemand system tables and indexes
- Binds the database to Content Manager OnDemand

The ARSDB program creates the database using standard SQL commands. See the documentation provided with the database manager product for information about the SQL commands issued by the ARSDB program and messages printed at the console.

Procedure

Notes:

1. You must provide the correct locale, code set, and code page **before** you create the database. These values are derived from the ARS_LANGUAGE parameter in the ARS.CFG file. See "ARS_LANGUAGE parameter" on page 129 for details.
2. **For Oracle users:** You must create the database by using the Oracle utilities **before** you create the Content Manager OnDemand instance. See "Installing Oracle" on page 97.

To create an instance of Content Manager OnDemand:

1. Log in to the server as the `root` user.
2. **DB2 users:** Type the following command at the prompt:

   ```
   /opt/ondemand/bin/arsdb -I archive -gcv
   ```

   Where `archive` is the name of the Content Manager OnDemand instance.
3. **Oracle users:** Type the following command at the prompt:

   ```
   /opt/ondemand/bin/arsdb -I archive -rtv
   ```

Where `archive` is the name of the Content Manager OnDemand instance.

4. Press the Enter key.
5. The ARSDB program prompts you before creating a link to the database user exit program:
   - If you maintain DB2 archived log files on disk, enter 1 when prompted
   - If you use Tivoli Storage Manager to maintain the DB2 archived log files, enter 2 when prompted
6. Content Manager OnDemand creates the instance, makes a backup image of the database, and restores the Content Manager OnDemand system tables to the database. This process will take several minutes.

   The ARSDB program generates a series of messages. For example:

```
Creating the DB2 ARSDBASE database
Creating table ARSSERVR.arsag
Creating index ARSSERVR.arsag_name_idx
Creating index ARSSERVR.arsag_agid_idx
..... .. . . . . . . . . . . . . . . . . . .
..... .. . . . . . . . . . . . . . . . . . .
..... .. . . . . . . . . . . . . . . . . . .
Updating runstat statistics for table ARSSERVR.arsusrgrp
Creating table ARSSERVR.arsusrgrpid
Creating index ARSSERVR.arsusrgrpid_idx
Updating runstat statistics for table ARSSERVR.arsusrgrpid
```

Initializing the system logging facility

After you have successfully created the instance of Content Manager OnDemand, run the ARSSYSCR program to initialize the Content Manager OnDemand system logging facility for the instance.

To initialize the Content Manager OnDemand system logging facility:

1. Log in to the server as the `root` user.
2. Type the following command at the prompt:

   ```
   /opt/ondemand/bin/arssyscr -I archive -l
   ```

   Where `archive` is the name of the Content Manager OnDemand instance.
3. Press the Enter key.
4. Content Manager OnDemand creates the tables that support the system logging facility. This process may take several minutes.

   The ARSSYSCR program generates a series of messages. For example:

```
arssyscr: Updating ARSSERVR.ARSSYS
arssyscr: Adding to ARSSERVR.ARSAG with Storage Set Id = 0
arssyscr: Adding to ARSSERVR.ARSAGPERMS
arssyscr: Adding to ARSSERVR.ARSAGFLD
arssyscr: Adding to ARSSERVR.ARSAGFLDALIAS
arssyscr: Adding to ARSSERVR.ARSAG2FOL
arssyscr: Adding to ARSSERVR.ARSAPPUSR
arssyscr: Adding to ARSSERVR.ARSAPP
arssyscr: Adding to ARSSERVR.ARSFOL
arssyscr: Adding to ARSSERVR.ARSFOLPERMS
arssyscr: Adding to ARSSERVR.ARSFOLFLD
arssyscr: Adding to ARSSERVR.ARSFOLFLDUSR
arssyscr: Creation of System Log information was successful
```

Initialize the system load logging facility

OnDemand provides a logging facility to enable tracking OnDemand loading activity. When you enable load logging, OnDemand stores the messages that are generated by OnDemand load programs in the system load log. You use one of the Content Manager OnDemand client programs to search for and filter messages by load date, application group name, load ID, input file name, and other parameters.

Before you start OnDemand for the first time, you must initialize the system load logging facility:

1. Log in to the server as the `root` user.
2. Type the following command at the prompt:
   ```
   /opt/ondemand/bin/arssyscr -I archive  -a
   ```
3. Press the Enter key.
4. Content Manager OnDemand creates the tables that support the system load logging facility. This process may take several minutes.

   The ARSSYSCR program generates a series of messages. For example:
   ```
   arssyscr: Updating ARSSERVR.ARSSYS
   arssyscr: Adding to ARSSERVR.ARSAG with Storage Set Id = 0
   arssyscr: Adding to ARSSERVR.ARSAGPERMS
   arssyscr: Adding to ARSSERVR.ARSAGFLD
   arssyscr: Adding to ARSSERVR.ARSAGFLDALIAS
   arssyscr: Adding to ARSSERVR.ARSAG2FOL
   arssyscr: Adding to ARSSERVR.ARSAPPUSR
   arssyscr: Adding to ARSSERVR.ARSAPP
   arssyscr: Adding to ARSSERVR.ARSFOL
   arssyscr: Adding to ARSSERVR.ARSFOLPERMS
   arssyscr: Adding to ARSSERVR.ARSFOLFLD
   arssyscr: Adding to ARSSERVR.ARSFOLFLDUSR
   arssyscr: Creation of System Load information was successful
   ```

Initializing the system migration facility

The system migration facility is required only by customers who plan to migrate application group index data from the database to archive storage.

After you have successfully created the instance of Content Manager OnDemand, run the ARSSYSCR program to initialize the Content Manager OnDemand system migration facility for the instance.

To initialize the Content Manager OnDemand system migration facility:

1. Log in to the server as the `root` user.
2. Type the following command at the prompt:
   ```
   /opt/ondemand/bin/arssyscr -I archive -a
   ```

   Where `archive` is the name of the Content Manager OnDemand instance.
3. Press the Enter key.
4. Content Manager OnDemand creates the tables that support the system migration facility. This process may take several minutes.

   The ARSSYSCR program generates a series of messages. For example:
   ```
   arssyscr: Updating ARSSERVR.ARSSYS
   arssyscr: Adding to ARSSERVR.ARSAG with Storage Set Id = 0
   arssyscr: Adding to ARSSERVR.ARSAGPERMS
   arssyscr: Adding to ARSSERVR.ARSAGFLD
   arssyscr: Adding to ARSSERVR.ARSAGFLDALIAS
   ```

```
arssyscr: Adding to ARSSERVR.ARSAG2FOL
arssyscr: Adding to ARSSERVR.ARSAPPUSR
arssyscr: Adding to ARSSERVR.ARSAPP
arssyscr: Adding to ARSSERVR.ARSFOL
arssyscr: Adding to ARSSERVR.ARSFOLPERMS
arssyscr: Adding to ARSSERVR.ARSFOLFLD
arssyscr: Adding to ARSSERVR.ARSFOLFLDUSR
arssyscr: Creation of System Migration information was successful
```

Chapter 23. Automating instance operations on HP-UX Itanium

This section describes how to use operating system facilities to automatically start or schedule instance operations.

You can automatically start these instance operations whenever the system is initialized:

__ 1. Start the database on the library server
__ 2. Start the instance on the library server
__ 3. Start the instance on an object server
__ 4. Start the data loading programs

You can schedule these instance operations to begin automatically on a regular schedule:

__ 1. Schedule application group maintenance on the library server
__ 2. Schedule application group maintenance on an object server
__ 3. Schedule system table maintenance
__ 4. Schedule a backup of the Content Manager OnDemand database
__ 5. Schedule a backup of the Tivoli Storage Manager database

Starting the database

You can start the database on the library server using the ARSDB program:

```
su - archive "-c /opt/ondemand/bin/arsdb -gkv"  >> /tmp/arsdb.log 2>&1
```

Alternatively, you can start DB2 manually with the db2start command.

The following example shows an INIT record to automatically start the database when the operating system is initialized on the library server:

```
ars2:2:wait:su - archive "-c /opt/ondemand/bin/arsdb -gkv"  >> /tmp/arsdb.log 2>&1
```

Important: If the DB2 installation program adds a record to the INIT facility to automatically start the DB2 services, make sure that you place the ARSDB record after the record that starts the DB2 services.

Starting the instance on the library server

You must start an instance before clients can connect to the server or the database for the instance.

The ARSSOCKD program controls an Content Manager OnDemand instance on the library server. The ARSSOCKD program runs on the library server. The data loading program (ARSLOAD) and the maintenance programs (such as ARSADMIN and ARSMAINT) will fail and clients will be unable to connect to the instance if the ARSSOCKD program is not running on the library server.

To manually start the archive instance, you can enter the command:

```
/opt/ondemand/bin/arssockd archive
```

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The following example shows an INIT record that automatically starts the instance named `archive` when the operating system is initialized on the library server:

```
ars3:2:once:/opt/ondemand/bin/arssockd archive
```

Starting the instance on an object server

The ARSOBJD program controls an Content Manager OnDemand instance on an object server. Content Manager OnDemand programs that work with an instance on an object server will fail if the ARSOBJD program is not running on the object server.

The ARSOBJD program should be started only on object servers that are running on some other workstation than the library server.

To manually start the archive instance, you can enter the command:

```
/opt/ondemand/bin/arsobjd archive
```

The following example shows an INIT record that automatically starts the instance named `archive` when the operating system is initialized on an object server:

```
ars4:2:once:/opt/ondemand/bin/arsobjd archive
```

Starting the data loading programs

This section describes how to use operating system facilities to automatically start the Content Manager OnDemand data loading programs.

The Content Manager OnDemand data loading programs are:

- ARSJESD, to receive data from z/OS systems and store the data in file systems on the server
- ARSLOAD, to create index data and load the data into the system

ARSJESD

The ARSJESD program is the Content Manager OnDemand program that monitors a TCP/IP port for data transmitted to the Content Manager OnDemand server by Download for the z/OS feature from a host system. The ARSJESD program receives the data transmitted by Download for the z/OS feature and stores the data in file systems on the server. See *PSF for z/OS: Download for z/OS* for details about configuring and operating Download for z/OS feature on the host system.

The following example shows an INIT record that automatically starts the ARSJESD program during operating system initialization:

```
ars5:2:once:/opt/ondemand/bin/arsjesd -p 6001 -d /arsacif/acif1
-d /arsacif/acif2 -d /arsacif/acif3 >> /tmp/arsjesd.log 2>&1
```

In the example, the ARSJESD program monitors TCP/IP port number `6001` and stores transmitted data in the specified directories. The ARSJESD program writes output messages to the `arsjesd.log` file in the `/tmp` directory.

You must verify the TCP/IP port number that the ARSJESD program monitors. Replace the string `6001` with the port number that is valid on the server that you are configuring. The ARSJESD program and Download on the z/OS system must specify the same port number. The port number that the ARSJESD program monitors is different than the TCP/IP port number that the Content Manager OnDemand server uses to communicate with clients.

You must verify the names of the directories in which the ARSJESD program can put the data. Replace the strings `/arsacif/acif1`, `/arsacif/acif2`, and `/arsacif/acif3` with the names of directories that are valid on the server that you are configuring.

See the ARSJESD command reference in the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the options and parameters that you can specify.

ARSLOAD

The ARSLOAD program is the main Content Manager OnDemand data loading and indexing program. You can configure the ARSLOAD program to monitor specific file systems for report data downloaded from other systems. If the data needs to be indexed, then the ARSLOAD program calls the indexing program that is specified in the Content Manager OnDemand application. The ARSLOAD program then works with the database manager to load the index data into the database and works with the storage manager to load the report data and resources on to storage volumes.

The Content Manager OnDemand instance (started by using ARSSOCKD or ARSOBJD) must be running, otherwise the ARSLOAD program will fail.

Configuring the ARSLOAD.CFG file

To load a report into the system with the ARSLOAD program, you must specify a userid that has administrator authority for the application group into which you want to load the data. You must also specify a password for the userid. There are several ways that you can specify the userid and password:

- Specify the `-u` and `-p` parameters each time that you run the ARSLOAD program.
- Specify the `-U` parameter and name an input file each time that you run the ARSLOAD program. The input file contains the userid and password.
- Configure the ARSLOAD.CFG file with a system administrator userid and password. The values in the ARSLOAD.CFG file will be used when you run ARSLOAD program, unless you specify otherwise with the `-u` and `-p` parameters or the `-U` parameter. **Important:** Any time that you change the specified user's password in Content Manager OnDemand, remember to change it in the ARSLOAD.CFG file; otherwise the load will fail. The ARSLOAD program can accept an expired password. However, the ARSLOAD program will fail if you specify an incorrect password.

Follow these steps to configure the ARSLOAD.CFG file with a system administrator userid and password.

1. Log on as the `root` user.
2. Change to the `/opt/ondemand/config` directory.
3. Make a copy of the ARSLOAD.CFG file that was supplied by IBM:

   ```
   cp arsload.cfg arsload.cfg.orig
   ```

   Make changes to the ARSLOAD.CFG file with a standard text editor such as vi.
4. Change the userid and password. Table 10 on page 148 lists the values in the ARSLOAD.CFG file that was supplied by IBM.

Table 10. ARSLOAD.CFG file

Variable	Meaning	Default
USERID	Content Manager OnDemand system administrator user. A system administrator user can load data into any application group defined to Content Manager OnDemand.	admin
PASSWD	Password for the Content Manager OnDemand system administrator user	

5. Save your changes and exit the editor.
6. Set the user file permissions so that only the `root` user can access the ARSLOAD.CFG file. Clear the group and other file permissions. Set the Read Only user file permission for the ARSLOAD.CFG file. The permissions should appear as follows:

```
-r-------- 1 root system 1832 Sep 02 13:13 arsload.cfg
```

Automating the ARSLOAD program

The following example shows an INIT record that automatically starts the ARSLOAD program for the instance named `archive` during operating system initialization:

```
ars6:2:once:/opt/ondemand/bin/arsload -v -c /arsacif/acif4 -d /arsacif/acif1
-d /arsacif/acif2 -d /arsacif/acif3 -I archive
```

In the example, the ARSLOAD program checks for input files in the specified directories every ten minutes (the default polling time). An input file must have a file type of .ARD or .PDF to initiate the load process. If an input file needs to be indexed, the ARSLOAD program stores the index data in the specified index directory.

You must verify the names of the directories. Replace the strings `/arsacif/acif1`, `/arsacif/acif2`, `/arsacif/acif3`, and `/arsacif/acif4` with the names of directories that are valid on the server that you are configuring.

The example uses the Content Manager OnDemand userid and password that was specified in the ARSLOAD.CFG file. See "Configuring the ARSLOAD.CFG file" on page 147 for information about specifying the userid and password in the ARSLOAD.CFG file.

After indexing the data, the ARSLOAD program deletes the input files, unless you specify otherwise. Any output or error messages that are generated by the ARSLOAD program are written to `stdout`, `stderr`, and the system log.

See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSLOAD program.

If you use the generic indexer: You must specify a full (or absolute) directory name for the `GROUP_FILENAME` parameter. Otherwise, ARSLOAD cannot locate the input files.

Scheduling application group maintenance on the library server

You can run the ARSMAINT program on the library server to maintain application group data in the database and cache storage. See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSMAINT program.

The instance must be started by the ARSSOCKD program, otherwise the ARSMAINT program will fail.

The following is an example of a CRON record that automatically starts the ARSMAINT program every day at 4 am for the instance named `archive`. The ARSMAINT program will migrate and delete application group index data, optimize application group index data, copy report data from cache storage to archive media, delete report data from cache storage, and inspect and verify the cache file systems. This format of the command is typically used for a library/object server with Tivoli Storage Manager on one workstation.

```
00 4 * * * /opt/ondemand/bin/arsmaint -cdeimrsv -I archive
```

Scheduling application group maintenance on an object server

You can run the ARSMAINT program on an object server to maintain application group data in cache storage. See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSMAINT program.

The instance must be started by the ARSOBJD program, otherwise the ARSMAINT program will fail.

The following is an example of a CRON record that automatically starts the ARSMAINT program every day at 4 am for the instance named `archive`. The ARSMAINT program will maintain application group data in cache storage, including copying report data to archive storage. This format of the command is typically used for an object server with Tivoli Storage Manager on some other workstation than the library server.

```
00 4 * * * /opt/ondemand/bin/arsmaint -cmsv
```

Scheduling system table maintenance

You can run the ARSDB program to maintain the Content Manager OnDemand system tables on the library server. See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSDB program.

The instance must be started by the ARSSOCKD program, otherwise the ARSDB program will fail.

The following is an example of a CRON record that automatically starts the ARSDB program to maintain the Content Manager OnDemand system tables for the instance named `archive`. The ARSDB program will run twice a month, on the 7th and 14th of each month, beginning at 5 am.

```
00 5 7,14 * * /opt/ondemand/bin/arsdb -mv -I archive >> /tmp/arsdb.log 2>&1
```

Scheduling the Content Manager OnDemand database backup

You can use the ARSDB program to create a backup image of the Content Manager OnDemand database. The ARSDB program supports table space backups and full database backups, online backups and offline backups, and the use of Tivoli Storage Manager to maintain the backup image files. See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSDB program.

The following is an example of a CRON record that automatically starts the ARSDB program to create a full online backup image of the Content Manager OnDemand database for the instance named `archive` every day beginning at 5:30 am. The backup image is written to a tape in the device `/dev/rmt0`. A tape must be mounted in the device before the ARSDB program begins.

```
30 5 * * * /opt/ondemand/bin/arsdb -v -z /dev/rmt0 -I archive >> /tmp/arsdb.log 2>&1
```

Chapter 24. Your next step on HP-UX Itanium

After you have installed the Content Manager OnDemand and related software on the system, configured the instance of Content Manager OnDemand, created the instance, and automated instance operations, you are now ready to verify the installation on Content Manager OnDemand. See Chapter 55, “Verifying the installation,” on page 349.

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Part 4. Installing Content Manager OnDemand on Solaris servers

This part of the *IBM Content Manager OnDemand for Multiplatforms: Installation and Configuration Guide* explains how to install and configure Content Manager OnDemand on a Solaris server and how to install and configure related software to work with Content Manager OnDemand. There are five basic phases to the installation, which are illustrated in Figure 12:

- Preparing for the installation
- Installing and configuring Content Manager OnDemand and related software
- Verifying the installation
- Preparing the system for use
- Adding optional software

You will find checklists for each of these phases in Chapter 25, "Checklist for installation on Solaris," on page 155.

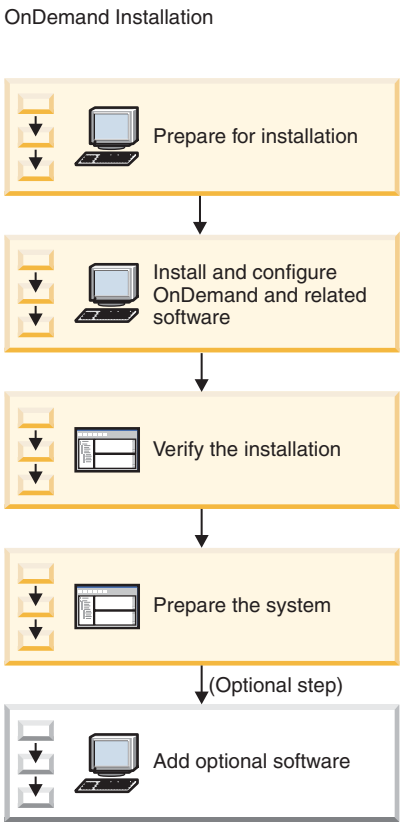

Figure 12. Installing Content Manager OnDemand on a Solaris server

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Chapter 25. Checklist for installation on Solaris

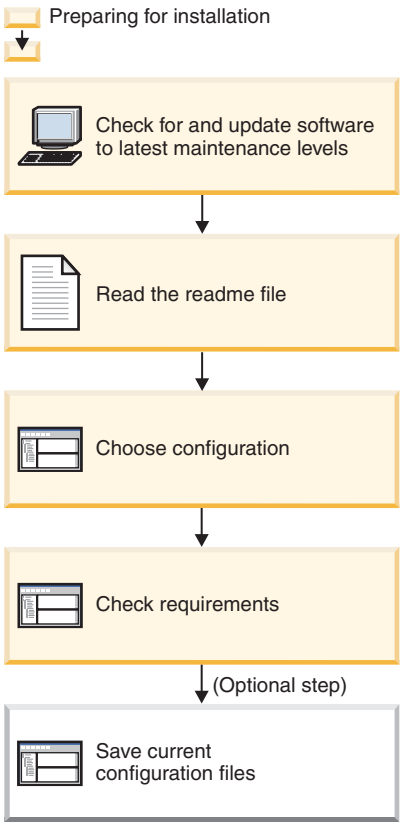

Figure 13. Pre-installation tasks

Before beginning the installation, you should complete the following tasks:

__ 1. Contact the IBM Support Center for the latest maintenance levels of DB2, Content Manager OnDemand, and optionally, Tivoli Storage Manager and IBM Infoprint Manager (Infoprint). If you are using Oracle instead of DB2, contact Oracle for information about the latest maintenance level of Oracle.

__ 2. Obtain a copy of the latest Content Manager OnDemand README file. Print and read the entire file before you begin.

__ 3. Check the Content Manager OnDemand prerequisites and verify the required and optional hardware and software products (see Chapter 26, "Solaris server requirements," on page 161).

__ 4. Check the hardware and software requirements for all system components and features. See http://www.ibm.com/support/docview.wss?rs=129 &uid=swg27016455 or search for 7016455 at http://www.ibm.com/.

__ 5. Determine the type of system configuration that you need to install (see Chapter 2, "Choosing a configuration," on page 5).

__ 6. If you are upgrading to a new version of Content Manager OnDemand, save the configuration files used by the system (see Chapter 27, "Saving configuration files on Solaris," on page 163).

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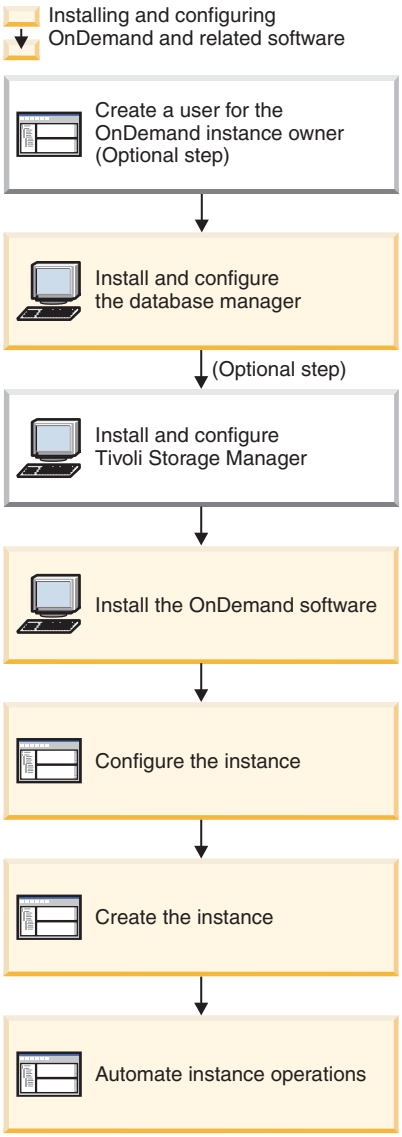

Figure 14. Installing Content Manager OnDemand and related software

Configuring an Content Manager OnDemand system typically requires that you do the following:

__ 1. (Optional) Create a user account for the Content Manager OnDemand instance owner (see Chapter 28, "Creating a user for the Content Manager OnDemand instance owner on Solaris," on page 165).

__ 2. Install and configure the database manager product on the library server (see Chapter 29, "Installing the database manager on Solaris," on page 167).

__ 3. If you plan to maintain data in archive storage, install and configure Tivoli Storage Manager on the library server or on each object server that will be used to maintain data in archive storage (see Chapter 30, "Installing and configuring Tivoli Storage Manager on Solaris," on page 171).

__ 4. Install the Content Manager OnDemand software on each workstation that is part of the Content Manager OnDemand system (see Chapter 31, "Installing the Content Manager OnDemand software on Solaris," on page 191).

__ 5. Configure an instance of Content Manager OnDemand on each workstation that is part of the Content Manager OnDemand system (see Chapter 32, "Configuring instances on Solaris," on page 193). This step includes the following:

   __ a. Specify the instance in the ARS.INI file (see "Specifying the instance in the ARS.INI file" on page 194)

   __ b. Specify the ARS.CFG file for the instance (see "Specifying the ARS.CFG file for the instance" on page 196)

   __ c. Specify the ARS.DBFS file for the instance (see "Specifying the ARS.DBFS file for the instance" on page 207)

   __ d. Specify the ARS.CACHE file for the instance (see "Specifying the ARS.CACHE file for the instance" on page 208)

__ 6. Create the instance of Content Manager OnDemand (see Chapter 33, "Creating an instance of Content Manager OnDemand on Solaris," on page 211). This step includes the following:

   __ a. Specify permissions for the database directories (see "Specifying permissions for the database directories" on page 211)

   __ b. Create the instance by running the ARSDB program (see "Creating the instance" on page 212)

   __ c. Initialize the system logging facility by running the ARSSYSCR program (see "Initializing the system logging facility" on page 213)

   __ d. (Optional) Initialize the system migration facility by running the ARSSYSCR program (see "Initializing the system migration facility" on page 214)

__ 7. Automate instance operations (see Chapter 34, "Automating instance operations on Solaris," on page 217). This step includes the following:

   __ a. Start the database on the library server (see "Starting the database" on page 217)

   __ b. Start the instance on the library server (see "Starting the instance on the library server" on page 217)

   __ c. Start the instance on an object server (see "Starting the instance on an object server" on page 218)

   __ d. Start the data loading programs (see "Starting the data loading programs" on page 218)

   __ e. Schedule application group maintenance on the library server (see "Scheduling application group maintenance on the library server" on page 220)

   __ f. Schedule application group maintenance on an object server (see "Scheduling application group maintenance on an object server" on page 221)

   __ g. Schedule system table maintenance (see "Scheduling system table maintenance" on page 221)

   __ h. Schedule a backup of the Content Manager OnDemand database (see "Scheduling the Content Manager OnDemand database backup" on page 221)

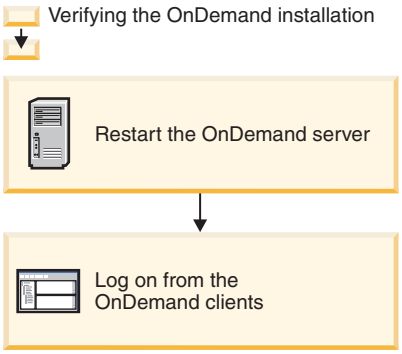

Figure 15. Verifying the installation

Verify the installation of Content Manager OnDemand (see Chapter 55, "Verifying the installation," on page 349):

__ 1. After installing and configuring each Content Manager OnDemand server, restart the system. The operating system reinitializes and starts the services required by Content Manager OnDemand.

__ 2. Log in to the library server with an Content Manager OnDemand client program. (To access the system, you must install at least one of the Content Manager OnDemand client programs on a PC running Microsoft Windows. See the *IBM Content Manager OnDemand: Client Installation Guide* for installation information about the Content Manager OnDemand client or the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for installation information about the Content Manager OnDemand administrative client.)

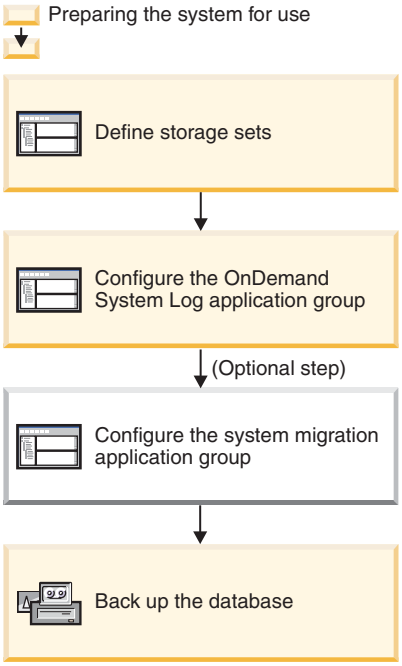

Figure 16. Preparing the system for use

Prepare the system for use:

__ 1. Define storage sets (see Chapter 56, “Defining storage sets,” on page 351). Before you add application groups or load data into the system, you must define storage sets.

__ 2. Configure the System Log application group (see Chapter 57, “Configuring the System Log application group,” on page 353). Before you define reports to the system, load data, or let users access the system, you should configure the System Log application group.

__ 3. If you plan to migrate index data to archive storage, configure the System Migration application group (see Chapter 59, “Configuring the System Migration application group,” on page 361).

__ 4. Back up the databases (see Chapter 60, “Backing up the Content Manager OnDemand database,” on page 363 and “Backing up the Tivoli Storage Manager database and critical files” on page 187). After configuring the system, you should create a full backup image of the Content Manager OnDemand database and the Tivoli Storage Manager database.

Installing and configuring optional software:

1. If you plan to use Download for the z/OS feature (Download) to transmit data from z/OS systems to Content Manager OnDemand servers, then you must install and configure Download. Follow the instructions in *PSF for z/OS: Download for z/OS* to plan, install, configure, and verify the installation of the Download software. Then configure Download on each Content Manager OnDemand server. Complete the following tasks:
   __ a. Obtain a copy of *PSF for z/OS: Download for z/OS*.
   __ b. Check the prerequisites and verify the z/OS and TCP/IP software levels for Download.
   __ c. Install and configure the Download software.
   __ d. Configure Download on each Content Manager OnDemand server that will receive datasets from a z/OS system. (see “Starting the data loading programs” on page 218).
2. If you plan to reprint documents using the Content Manager OnDemand server print function, you must install Infoprint on a workstation that belongs to the same network as the Content Manager OnDemand library server. Follow the instructions in the Infoprint documentation for your operating system to plan, install, configure, and verify the installation of the Infoprint software. Then configure the server print function on the library server. Complete the following tasks:
   __ a. Obtain a copy of the Infoprint documentation for the server operating system.
   __ b. Install and configure Infoprint.
   __ c. Verify that all of the resources and fonts that your organization requires to reprint the reports that you plan to store in Content Manager OnDemand are installed on the Infoprint server.
   __ d. Define the print queues and devices that Infoprint uses to manage the Content Manager OnDemand server print environment.
   __ e. Obtain the TCP/IP host name or IP address of the Infoprint server.
   __ f. On the library server, edit the ARSPRT file and insert the host name or IP address of the Infoprint server. The ARSPRT file can be found in the `/opt/ondemand/bin` directory.
   __ g. Define a server printer on the Content Manager OnDemand library server with the administrative client.

3. If you need to customize and enhance the standard functionality within the product, see the user exit documentation in the Appendix of this publication. A user exit is a point during processing that enables you to run a user-written program and return control of processing after your user-written program ends. OnDemand provides the following user exit points:
   __ a. Download user exit
   __ b. Report specifications archive definition user exit
   __ c. Retrieval preview user exit
   __ d. Security user exit
   __ e. System log user exit
   __ f. Table space creation user exit

Chapter 26. Solaris server requirements

The exact hardware and software configuration that you need for Content Manager OnDemand to support your organization depends on the volume of data that you plan to maintain on the system, the number of concurrent users that the system must support, the backup and recovery requirements of your organization, and the performance levels that the system must meet. At a minimum, you need one processor for a standard Content Manager OnDemand library/object server.

For all Solaris server requirements, see http://www.ibm.com/support/docview.wss?rs=129&uid=swg27016455 or search for 7016455 at http://www.ibm.com/.

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Chapter 27. Saving configuration files on Solaris

When you install software on an Content Manager OnDemand server, the installation programs copy program files, configuration files, and other types of files from the distribution media to directories on the server. When you configure a server to meet the specific requirements of your environment, you make changes to configuration files and you might customize other files, such as user-defined files and font initialization files.

Before you upgrade to a new version of Content Manager OnDemand or upgrade the database manager software or other software related to Content Manager OnDemand, you should save a copy of the files listed in this section. You can save a copy of the files in a temporary directory, such as `/tmp`.

After you upgrade the software, you will probably need to reconfigure the files for your environment. To reconfigure the files, you can restore the copies of the files that you saved or make changes to the updated files, using the configuration information in the files that you saved as a guide.

Content Manager OnDemand files

Save a copy of the Content Manager OnDemand configuration files listed in Table 11.

Table 11. Content Manager OnDemand configuration files to save

File	Location	Purpose
ars.cache	/opt/ondemand/config	Define cache storage file systems. Changes described in “Specifying the ARS.CACHE file for the instance” on page 208.
ars.cfg	/opt/ondemand/config	Content Manager OnDemand server configuration file. Changes described in “Specifying the ARS.CFG file for the instance” on page 196.
ars.dbfs	/opt/ondemand/config	Define DB2 table space file systems. Changes described in “Specifying the ARS.DBFS file for the instance” on page 207.
ars.ini	/opt/ondemand/config	Configure Content Manager OnDemand instances. Changes described in “Specifying the instance in the ARS.INI file” on page 194.
arsload.cfg	/opt/ondemand/config	Define a default Content Manager OnDemand system administrator userid and password for the ARSLOAD program. Changes described in “Configuring the ARSLOAD.CFG file” on page 219.

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Table 11. Content Manager OnDemand configuration files to save (continued)

File	Location	Purpose
arslog	/opt/ondemand/bin	The System Log user exit program. Described in Appendix H, "System log user exit," on page 389.
arsprt	/opt/ondemand/bin	Server print program.

Tivoli Storage Manager files

If you use Tivoli Storage Manager to maintain OnDemand data in archive storage, save a copy of the Tivoli Storage Manager configuration files listed in Table 12.

Table 12. Tivoli Storage Manager configuration files to save

File	Location	Purpose
dsmserv.dsk	/opt/tivoli/tsm/server/bin	Locations of the Tivoli Storage Manager database and recovery logs
history.dev	/opt/tivoli/tsm/server/bin	Tivoli Storage Manager device history file
history.vol	/opt/tivoli/tsm/server/bin	Tivoli Storage Manager storage volume history file
dsmserv.opt	/opt/tivoli/tsm/server/bin	Tivoli Storage Manager server options file
dsm.sys	/opt/tivoli/tsm/server/bin	Tivoli Storage Manager servers file
dsm.opt	/opt/tivoli/tsm/client/ba/bin	Tivoli Storage Manager client options file
dsm.db2.opt	The location for this file is user-defined and specified by the ARS_DB2_TSM_CONFIG parameter in ars.cfg.	Tivoli Storage Manager client options file for maintaining DB2 archived log files and backup image files
dsm.sys	/usr/tivoli/tsm/client/api/bin64	Tivoli Storage Manager client system options file

Chapter 28. Creating a user for the Content Manager OnDemand instance owner on Solaris

Note: This publication was written assuming that OnDemand instances will be run under the root user. The information in this section is provided for customers who need to run instances of Content Manager OnDemand under a user other than the root user. Those customers should print the information in this section and have it available to assist them as they continue with the installation and configuration process.

New installations (instances) of Content Manager OnDemand can be configured to run under a user other than the root user. If you plan to run an instance under a user other than root, you must do the following:

- Create the user for the Content Manager OnDemand instance owner
- Set permissions for the cache storage file systems
- Set permissions for the Content Manager OnDemand configuration and script files
- Give the instance owner permission to write to the system console
- Specify the instance owner in the ARS.INI file

If you plan to run a distributed library/object server system, with one or more object servers on different workstations or nodes than the library server, then you should also configure Content Manager OnDemand on the object servers.

Configuring the library server

Create a user that is a member of the database owner's group. This group has administrator authority for the database and the database file systems. Give the Content Manager OnDemand instance owner the following authorities and permissions:

- Administrator authority for the database. You can do this by adding the Content Manager OnDemand instance owner to the database owner's group.
- Ownership of the cache storage file systems that are listed in the ARS.CACHE file. You can do this by running the Change Owner command for each file system that is listed in the ARS.CACHE file and specifying the user and group for the Content Manager OnDemand instance owner.
- Permission to read the Content Manager OnDemand configuration files. Make sure that the Content Manager OnDemand instance owner has permission to read the following files:
  - ARS.CACHE
  - ARS.CFG
  - ARS.DBFS
  - ARS.INI
- Permission to read and execute the Content Manager OnDemand script files. Make sure that the Content Manager OnDemand instance owner has permission to read and execute the following files:
  - ARSLOG
  - ARSPRT

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- Permission to write to the console. Make sure that the Content Manager OnDemand instance owner has permission to write to the system console.

You should specify a different user for each instance that you create. This allows for easier error recovery if a system error occurs.

Important: You cannot set the permissions to read and execute OnDemand files until you complete installation of the Content Manager OnDemand software. See Chapter 42, "Installing the Content Manager OnDemand software on Linux," on page 263 for instructions on installing the Content Manager OnDemand software on Linux.

Configuring an object server

If you plan to run a distributed library/object server system, with one or more object servers on different workstations or nodes than the library server, then you should also configure Content Manager OnDemand on each of the object servers.

To configure Content Manager OnDemand on the object servers, do the following:

- Create a group and user for the Content Manager OnDemand instance owner.
- Give ownership of the cache storage file systems listed in the ARS.CACHE file to the group and user for the Content Manager OnDemand instance owner.
- Give permission to read the following files to the Content Manager OnDemand instance owner:
  - ARS.CACHE
  - ARS.CFG
  - ARS.INI
- Give permission to write to the console to the Content Manager OnDemand instance owner.

Chapter 29. Installing the database manager on Solaris

The Content Manager OnDemand library server maintains system information and user-defined index data in a relational database. You can use either DB2 Universal Database Version 9.1 or later or Oracle 10g as the database manager. For either product, see the product documentation for complete installation instructions. This section provides installation and configuration information specific to Content Manager OnDemand for both DB2 and Oracle.

Installing DB2

You must install either DB2 or Oracle on the Content Manager OnDemand library server. This section describes how to install DB2. See "Installing Oracle" on page 169 for instructions about installing Oracle.

The DB2 Universal Database Enterprise Edition program CD-ROMs are provided with the Content Manager OnDemand program package. The DB2 technical information is available in HTML and PDF formats on separate CD-ROMs. The README file explains how to locate the information that you need. Follow the instructions in the *IBM DB2 Universal Database Quick Beginnings for DB2 Servers* to plan, install, configure, and verify the installation of DB2.

Installation notes

To install DB2 on the library server:

1. Install DB2 Universal Database Enterprise Edition.
2. When prompted, select Typical as the installation type, to install all DB2 components required to support OnDemand. You can take most default options (unless you have specific requirements of your own).
3. Create the DB2 instance for Content Manager OnDemand when you install DB2. Use the following values:

Parameter	Value
Instance Name or User	archive
Group Name	gname **Note:** The group must have SYSADM authority, and its name must be unique. The group name on your database might be something other than 'gname'. Ask your database administrator if you do not know the group name for your database.
Home Directory	/home/archive
Auto start DB2 instance at boot time	no
Create a sample database for DB2 instance	no

4. After you install the software from the CD-ROM, apply the latest service update for DB2. You can obtain the latest service update from IBM service at ftp://service.software.ibm.com/ps/products/db2/fixes. From the fixes directory, go to the directory for your language. Then go to the directory for your operating system and go to the fix pack directory. Print the README file. Follow the instructions in the README file to apply the service update. **Note:**

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After installing a service update, you might need to update your database instances (for example, archive). See the DB2 README for details.

Configuration notes

After installing DB2 on the library server:

1. Add the user that owns the Content Manager OnDemand instance to the DB2 instance owner's group.

   For example, if the DB2 instance owner's group is sysadm1 and the Content Manager OnDemand instance owner is root, specified by the SRVR_INSTANCE_OWNER parameter in the ARS.INI, add the root user to the sysadm1 group.
2. Create links for the DB2 files. For example:

   ```
   /opt/IBM/db2/V9.5/cfg
   ```

   See the instructions in *IBM DB2 Universal Database Quick Beginnings for DB2 Servers* to create links to the DB2 files.
3. Optionally create a table space for the Content Manager OnDemand system tables. If you plan to store the system tables in their own table space, specify the name of the table space on the ARS_DB_TABLESPACE parameter in the ARS.CFG file. See "Specifying the ARS.CFG file for the instance" on page 196.
4. Verify the value of the DB2INSTANCE parameter in the ARS.CFG file. The value of the DB2INSTANCE parameter is case-sensitive. This value must specify the name of the DB2 instance that you created for Content Manager OnDemand. The default value is archive. See "Specifying the ARS.CFG file for the instance" on page 196.

Setting the DB2 operating environment

If you plan to use DB2 commands to work with the Content Manager OnDemand database, you must execute a script file to set the DB2 operating environment before you start the DB2 command line interface. For Bourne or Korn shell users, run the DB2PROFILE script file. For C shell users, run the DB2CSHRC script file.

The script files can be found in the INSTHOME/sqllib directory, where INSTHOME is the home directory of the instance owner. If you installed and configured the system using the suggested defaults, the instance owner is archive and the script files reside in the sqllib directory under /home/archive.

You should add the script file to your .profile or .login file. For example:

```
. /export/home/archive/sqllib/db2profile
```

After executing the script file, you can start the DB2 command line interface and connect to the database. For example:

```
$>db2
 .
 .
 .
```

To stop the DB2 command line interface, enter:

```
db2 =>quit
```

Installing Oracle

You must install either DB2 or Oracle on the Content Manager OnDemand library server. This section describes how to install Oracle. See “Installing DB2” on page 167 for instructions on installing DB2.

See your Oracle documentation for installation instructions. When you have completed installing the Oracle software, continue with “Configuration notes.”

Configuration notes

After you verify the installation of the Oracle software on the library server, you must configure it to work with Content Manager OnDemand. To configure Oracle to work with Content Manager OnDemand:

1. Configure login processing.

   The Content Manager OnDemand processes run under the UID of the root user. Verify the values of these parameters in the ARS.CFG file (see “Specifying the ARS.CFG file for the instance” on page 196).

   ARS_ORACLE_USERID
   The userid of the Content Manager OnDemand user in Oracle (root).

   ARS_ORACLE_PASSWD
   The password for the Content Manager OnDemand user (root) in Oracle.

2. Create the database.

   You should create the Content Manager OnDemand database using Oracle utilities. The name that you specify for the database should match the value that you specify for the stanza name (`[@SRV@_ARCHIVE]`). See “Specifying the instance in the ARS.INI file” on page 194.

3. Create the userid of the Content Manager OnDemand instance owner in Oracle.

   All tables created by Content Manager OnDemand will be owned by the user that you create in this step. If you wish to have a default Oracle table space for the user, you should specify the table space when you create the user.

   To create the Content Manager OnDemand user in Oracle:

   ```
   CREATE USER root IDENTIFIED BY xxxxxxxx ;
   GRANT dba to root ;
   ```

   Where `root` is the value of the ARS_ORACLE_USERID parameter in the ARS.CFG file and `xxxxxxxx` is the value of the ARS_ORACLE_PASSWD parameter in the ARS.CFG file (see “Specifying the ARS.CFG file for the instance” on page 196).

4. Specify the base Oracle installation directory on the ARS_ORACLE_HOME parameter in the ARS.CFG file. The default value is `/oracle`. See “Specifying the ARS.CFG file for the instance” on page 196.

5. Specify Oracle as the database manager on the ARS_DB_ENGINE parameter in the ARS.CFG file. See “Specifying the ARS.CFG file for the instance” on page 196.

6. Optionally create a table space for the Content Manager OnDemand system tables. If you plan to store the system tables in their own table space, specify the name of the table space on the ARS_DB_TABLESPACE parameter in the ARS.CFG file. See “Specifying the ARS.CFG file for the instance” on page 196.

Chapter 30. Installing and configuring Tivoli Storage Manager on Solaris

This section explains how to set up Tivoli Storage Manager for Content Manager OnDemand on a Solaris workstation.

Tivoli Storage Manager can be used with Content Manager OnDemand object servers to store report data on devices that are supported by Tivoli Storage Manager. Devices supported by Tivoli Storage Manager include optical libraries and tape media. The use of Tivoli Storage Manager is optional and is needed only if you want to provide long-term storage for your reports on devices other than the fixed disks attached to the object server. You can also use Tivoli Storage Manager facilities to maintain DB2 archived log files and backup image files.

You will need the *IBM Tivoli Storage Manager for Sun Solaris: Quick Start* publication to install and configure Tivoli Storage Manager. HTML and PDF versions of Tivoli Storage Manager publications, including the *Quick Start*, are available at http://publib.boulder.ibm.com/tividd/td/tdprodlist.html.

Prerequisites

Tivoli Storage Manager Version 5.4 or later is installed and operational (including devices) for use with OnDemand Version 8.3. OnDemand supports Tivoli Storage Manager in the following configurations:

- Standard library/object server plus Tivoli Storage Manager on one workstation. Install the Server, Clients, 64-bit Client API, Device Support Runtime, Server Runtime, and Licenses packages on the workstation.
- Library server only (where Tivoli Storage Manager resides on some other workstation than the library server). Install the 64-bit Clients and 64-bit API packages on the library server workstation.
- Object server plus Tivoli Storage Manager on some other workstation than the library server. Install the Server, 64-bit Clients, 64-bit API, Device Support Runtime, Server Runtime, and Licenses packages on the object server workstation.

OnDemand uses the Tivoli Storage Manager API client to store data into the Tivoli Storage Manager server. The Tivoli Storage Manager server is managed and administered independently of Content Manager OnDemand. The Tivoli Storage Manager administrator must ensure that the following conditions are met:

- All the normal requirements for Tivoli Storage Manager storage are monitored and managed accordingly
- All required Tivoli Storage Manager policies, management classes, storage pools, and volumes are defined accordingly
- All required Tivoli Storage Manager storage pools and volumes are online
- All Tivoli Storage Manager storage pools and volumes have sufficient storage space to satisfy the needs of Content Manager OnDemand
- The Tivoli Storage Manager server is active when OnDemand needs to read from or write to its storage repository

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If your Tivoli Storage Manager configuration cannot support OnDemand, system requests (that require Tivoli Storage Manager services) will fail. The Tivoli Storage Manager administrator should examine the system to ensure that it will support the storage and retrieval of data by OnDemand.

Procedure

This section provides general information and examples about how to configure Tivoli Storage Manager to maintain Content Manager OnDemand data in archive storage. Tivoli Storage Manager can maintain the reports that you load into Content Manager OnDemand, can maintain migrated index data, and can maintain DB2 archived log files and backup image files.

Before you begin, you should familiarize yourself with Configuring and Managing Server Storage in the *IBM Tivoli Storage Manager for Sun Solaris: Administrator's Guide*. In addition, the *IBM Tivoli Storage Manager for Sun Solaris: Administrator's Reference* provides detailed information about all of the commands used in this section and should be your primary reference when you work with Tivoli Storage Manager. See the Tivoli Storage Manager publications if you encounter problems configuring Tivoli Storage Manager or if the examples in this section do not provide the information that you need to define your server storage devices, policies, and operations.

Complete these steps to set up Tivoli Storage Manager for Content Manager OnDemand on a Solaris workstation:

__ 1. Define the Tivoli Storage Manager server options
__ 2. Define the Tivoli Storage Manager server
__ 3. Define the Tivoli Storage Manager client options
__ 4. Register Tivoli Storage Manager licenses
__ 5. Register Tivoli Storage Manager administrators
__ 6. Define other Tivoli Storage Manager server options
__ 7. Starting, halting, and restarting Tivoli Storage Manager the server
__ 8. Increase Tivoli Storage Manager database and recovery log sizes
__ 9. Define a storage library
__ 10. Define policy domains
__ 11. Register client nodes
__ 12. Prepare storage pool volumes
__ 13. (Optional) Configure Tivoli Storage Manager to maintain DB2 archived log files and backup image files
__ 14. Define a backup device for the Tivoli Storage Manager database
__ 15. Configure the ARS_ADSM program
__ 16. Back up the Tivoli Storage Manager database and critical files

Tivoli Storage Manager objects created during a typical installation

Table 13 on page 173 lists the objects that should be defined to the Tivoli Storage Manager server after you update the Tivoli Storage Manager configuration for Content Manager OnDemand in the sections that follow. The objects defined to the Tivoli Storage Manager server will depend on the number and types of devices that you configure on the system. The information in the table assumes that you will configure one automated library on the system (such as an IBM 3995-C68

optical library with four optical drives) and add one client node to hold Content Manager OnDemand data for seven years.

Table 13. Tivoli Storage Manager objects created during a typical installation

Object	Name
Automated Library	archlib0
Drive 1	optdrv0
Drive 2	optdrv1
Drive 3	optdrv2
Drive 4	optdrv3
Storage Pool	odstgp1
Device Class	opt1
Client Node	OD7YRPRI
Policy Domain	OD7YRPD
Policy Set	OD7YRPS
Management Class	OD7YRMG
Copy Group	STANDARD
Administrative Clients	root archive

Defining the Tivoli Storage Manager server options

Update the DSMSERV.OPT server options file from the installed server options file. The installed server options file can be found in the `/opt/tivoli/tsm/server/bin` directory.

Update the server options file to enable TCP/IP as the communications protocol and set the port address of the server, specify a maximum of 255 simultaneous client sessions, establish values for the database and recovery log buffer pools, expire data once a day, keep mount requests from being preempted except by a backup database command, and specify the names of volume and device configuration files. For example:

```
COMMmethod TCPIP
TCPPort 1500
COMMmethod HTTP
HTTPPORT 1580
TCPWindowsize 0
MAXSessions 255
COMMTimeout 30
IDLETimeout 60
BUFPoolsize 512
LOGPoolsize 256
EXPInterval 12
NOPREEMPT
VOLUMEHistory volhist.out
DEVCONFig devcnfg.out
```

Defining the Tivoli Storage Manager server

Create a DSM.SYS servers file from the installed servers file. The installed servers file can be found in the `/opt/tivoli/tsm/server/bin` directory.

Update the servers file to identify the name of the server and the fully qualified TCP/IP host name of the workstation on which the Tivoli Storage Manager server runs, enable TCP/IP as the communications protocol, set the TCP/IP port address of the server, and turn off compression. For example:

```
SErvername         archive
TCPServeraddress   fully.qualified.tcpip.host.name
COMMmethod         TCPip
TCPPort            1500
COMPRESSION OFF
```

Defining the Tivoli Storage Manager client options

Create a DSM.OPT client options file by copying the installed sample options file. The installed sample options file can be found at /usr/tivoli/tsm/client/api/bin64/dsm.opt.smp. Specify the full path to your DSM.OPT in the &odShort; ARS.CFG file under the DSMI_CONFIG parameter. See "Specifying the ARS.CFG file for the instance" on page 196 for more information.

Update the client options file to identify the name of the server and set the processing mode. The name that you specify must be the same as the name of the server that you specified in the DSM.SYS file (see "Defining the Tivoli Storage Manager server" on page 173). for example:

```
SErvername         archive
QUIET
```

Registering Tivoli Storage Manager licenses

Register your Tivoli Storage Manager licenses. When you install Tivoli Storage Manager, your system is licensed for the base Tivoli Storage Manager support, which provides the following:

- An unlimited number of administrative clients
- One backup-archive client
- Certain types of removable media devices

License certificate files are included with your server package in the server installation directory. Each license certificate file licenses the server for a single option or feature. For current information about devices supported by Tivoli Storage Manager, contact the IBM Support Center. To register any Tivoli Storage Manager licenses beyond the base support, issue the REGISTER LICENSE command to read in a license certificate file. For example, to license the TSM server for Data Retention Protection functionality, run the following commands from the Tivoli Storage Manager Server command line interface:

```
register license file=tsmee.lic
register license file=dataret.lic
```

Registering Tivoli Storage Manager administrators

Register additional Tivoli Storage Manager administrators. The administrative user can start and stop the server and use the administrative client to do other Tivoli Storage Manager administrative tasks. You should also register the `root` user as an administrative user. The following example shows how to register users from the Tivoli Storage Manager Server command line interface. (In the example, the password for the `archive` user is `archive1`; the password for the `root` user is

xxxxxxxx.) See the *IBM Tivoli Storage Manager for Sun Solaris: Administrator's Reference* for information about the commands, including the parameters and options you can specify.

```
register admin archive archive1
register admin root xxxxxxxx
grant authority archive classes=system
grant authority root classes=system
```

Defining other Tivoli Storage Manager server options

Define other Tivoli Storage Manager server options. Set the password expiration to the maximum permitted value and set the activity log retention period to one year by running the following commands from the Tivoli Storage Manager Server command line interface:

```
set passexp 9999
set actlogretention 365
```

Starting, halting, and restarting Tivoli Storage Manager the server

Tivoli Storage Manager administrators can manage server operations. These operations include such tasks as starting and halting the server, adding or updating server options, defining devices and policies, managing removable media, and monitoring server information.

Starting the server

To start the server:

1. Change to the `/opt/tivoli/tsm/server/bin` directory.
2. Start the server:

   ```
   dsmserv
   ```

   When the server is started, Tivoli Storage Manager displays information about product licensing, server options, the database and recovery log, storage pools, and progress messages and any errors encountered during server initialization.

You can capture Tivoli Storage Manager server console messages to a user log file with the Tivoli Storage Manager `dsmulog` program. See the Tivoli Storage Manager documentation for more information.

Starting the Tivoli Storage Manager server command line interface

In this section, most examples illustrate how to perform tasks by using the Tivoli Storage Manager server command line interface. To start the Tivoli Storage Manager server command line interface, enter:

```
dsmadmc
```

Tivoli Storage Manager provides you with a number of methods to monitor processes and messages:

- Use the console mode from an administrative client to monitor processes and messages:

  ```
  dsmadmc -consolemode
  ```

  While the system is running in console mode, you cannot enter any administrative commands from the client session. You can, however, start another administrative client session for entering commands.

- Specify the OUTFILE option to write all terminal output to a file. For example:

  ```
  dsmadmc -consolemode -outfile=adsm.out
  ```

- From the command line interface, query the activity log for status information and possible error messages:

  ```
  query actlog
  ```

See the Tivoli Storage Manager documentation for more information about managing client sessions.

Halting the server

When you halt the server, all processes are abruptly stopped and client sessions are canceled, even if they are not completed. Any in-progress transactions are rolled back when the server is restarted. When the server is halted, administrator activity is not possible. If possible, halt the server only after current administrative and client node sessions have completed or canceled. To shut down the server without severely impacting administrative and client node activity with the server, follow the instructions in the Tivoli Storage Manager documentation.

To halt the server and shut down all server operations, enter `halt` at the Tivoli Storage Manager server command line interface.

Restarting the server

To start the server after it has been halted, follow the instructions in "Starting, halting, and restarting Tivoli Storage Manager the server" on page 175.

When you restart the server after it has been halted, Tivoli Storage Manager rolls back any operations that had been in process to ensure that the database remains in a consistent state.

Increasing Tivoli Storage Manager database and recovery log sizes

When you initially install Tivoli Storage Manager, the installation procedure creates a default 17 MB database volume (`db.dsm`) and a default 9 MB recovery log volume (`log.dsm`).

The database size is determined by the amount of data that you plan to store on the system. The recovery log might need to be increased depending on the current utilization. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* provides formulas that you can use to estimate the database and recovery log sizes. You should start by increasing the database by 256 MB and the recovery log by 72 MB. As you load data on the system, you can monitor the utilization and increase or decrease the database and recovery log sizes accordingly.

To increase the size of the database or recovery log, do the following:

1. Select storage volumes with sufficient free space to hold the database and recovery log.
2. Format and define a 256 MB database volume and a 72 MB recovery log volume and extend the database and recovery log, by entering the following at the Tivoli Storage Manager server command line interface:

   ```
   define dbvolume db2.dsm formatsize=256
   define logvolume log2.dsm formatsize=72

   extend db 256
   extend log 72
   ```

Defining a storage library

When you add an optical or tape library to the system, you must define it to Tivoli Storage Manager. When you define a library to Tivoli Storage Manager, you define a device class for the library and define the library and the drives contained in the library. You also define a storage pool for the collection of storage volumes that belong to the library.

The following example shows how to define an optical library, device class, and storage pool as the destination for files archived from the Content Manager OnDemand system. You can use this example as a guide when defining other libraries and storage pools. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation.

Define the library

The following example shows how to define a SCSI-attached library:

```
def library archlib0 libtype=scsi
def path archive archlib0 srctype=server desttype=library device=/dev/lb0
```

The string `archlib0` is an arbitrary name that you assign to the library. Make sure that the name is not already defined to Tivoli Storage Manager. The `device` parameter gives the device name for the library.

Define the drives

The following example shows how to define the drives in a library that contains four drives, such as an IBM 3995-C68 optical storage library:

```
def drive archlib0 optdrv0 element=1
def drive archlib0 optdrv1 element=2
def drive archlib0 optdrv2 element=3
def drive archlib0 optdrv3 element=4
def path archive optdrv0 srctype=server desttype=drive -
         library=archlib0 device=/dev/rop0
def path archive optdrv1 srctype=server desttype=drive -
         library=archlib0 device=/dev/rop1
def path archive optdrv2 srctype=server desttype=drive -
         library=archlib0 device=/dev/rop2
def path archive optdrv3 srctype=server desttype=drive -
         library=archlib0 device=/dev/rop3
```

The drives belong to the `archlib0` library. The strings `optdrv1`, `optdrv2`, `optdrv3`, and `optdrv4` are arbitrary names you assign to the optical disk drives. Make sure that the names are not already defined to Tivoli Storage Manager. The `device` parameter gives the device name for the drive. The `element` parameter identifies the physical location of the drive within the library.

Define the device class

The following example shows how to define a device class for optical devices that use the 2600 recording format. The library contains four drives. Tivoli Storage Manager keeps idle optical platters in the drives for ten minutes before dismounting them:

```
    def devclass opt1 devtype=optical format=2600MB   -
                 mountlimit=4 library=archlib9        -
                 estcapacity=2600M mountretention=10
```

The string opt1 is an arbitrary name that you assign to the optical device class. Make sure that the name is not already defined to Tivoli Storage Manager.

Define the storage pool

The following example shows how to define a storage pool to use the devices in the opt1 device class.

```
define stgpool ODSTGP1 opt1                          -
               desc='Storage pool for OnDemand data' -
               collocate=no reclaim=60               -
               maxscratch=1 reusedelay=30
```

The string ODSTGP1 is an arbitrary name that you assign to the storage pool. Make sure that the name is not already defined to Tivoli Storage Manager.

Defining policy domains

The Tivoli Storage Manager policy domain links data with media in a storage pool. A policy domain supports a single storage pool, which in turn supports a single library.

The following example shows how to define a policy domain to maintain data for a period of seven years (2557 days). You can use this example as a guide when defining other policy domains. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation. Enter the commands at the Tivoli Storage Manager server command line interface.

1. Define the domain:

   ```
   define domain OD7YRPD desc='OnDemand Policy Domain'
   ```

   Replace the string OD7YRPD with the name of a Tivoli Storage Manager domain that you plan to use to manage storage for Content Manager OnDemand. Make sure that the name is not already defined to Tivoli Storage Manager.

2. Define the policy set:

   ```
   define policyset OD7YRPD OD7YRPS desc='OnDemand Policy Set'
   ```

   Replace the string OD7YRPD with the name of the domain. Replace the string OD7YRPS with the name of the policy set. Make sure that the name is not already defined to Tivoli Storage Manager.

3. Define the management class:

   ```
   define mgmtclass OD7YRPD OD7YRPS OD7YRMG -
                    desc='OnDemand Management Class'
   ```

   Replace the string OD7YRPD with the name of the policy domain. Replace the string OD7YRPS with the name of the policy set. Replace the string OD7YRMG with the name of the management class. Make sure that the name is not already defined to Tivoli Storage Manager.

4. Define an archive copy group. The archive copy group identifies the name of the storage pool where Tivoli Storage Manager stores the data and the length of time that Tivoli Storage Manager maintains the data:

   ```
   define copygroup OD7YRPD OD7YRPS OD7YRMG standard -
                    type=archive dest=odstgp1 retver=2557
   ```

   Replace the string OD7YRPD with the name of the policy domain. Replace the string OD7YRPS with the name of the policy set . Replace the string OD7YRMG with

the name of the management class. Replace the string odstgp1 with the name of a storage pool. Replace the string 2557 with the length of time (in days) that you want Tivoli Storage Manager to maintain data in the storage pool.

Important: When you create an application group, you specify the length of time that Content Manager OnDemand maintains data stored in the application group. If you plan to store application group data in Tivoli Storage Manager, then you must make sure that the retention period in Tivoli Storage Manager (the value of the retver parameter in the archive copy group) is equal to or greater than the Life of Data and Indexes value that you specify for the application group.

5. To check what you have defined, enter the following commands:

```
query domain
query policyset
query mgmtclass
query copygroup
```

6. After you define your policy sets and the management classes they contain, you must assign a default management class for each policy set. To assign the OD7YMG management class as the default management class for the OD7YRPS policy set in the OD7YRPD policy domain, enter:

```
assign defmgmtclass OD7YRPD OD7YRPS OD7YRMG
```

   Replace the string OD7YRPD with the name of the policy domain. Replace the string OD7YRPS with the name of the policy set. Replace the string OD7YRMG with the name of the management class.

7. After you define a default management class for the policy set, validate and activate the policy set:

```
validate policyset OD7YRPD OD7YRPS
activate policyset OD7YRPD OD7YRPS
```

   Replace the string OD7YRPD with the name of the policy domain. Replace the string OD7YRPS with the name of the policy set.

Registering client nodes

A client node links clients and their data with storage volumes and devices. Before Content Manager OnDemand can store data in Tivoli Storage Manager storage, you must register at least one client node. You must register at least one client node in each policy domain that will contain Content Manager OnDemand data. You can use the example that follows as a guide when registering client nodes. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation. Enter the command at the Tivoli Storage Manager server command line interface.

To register the client node PRI7YR and password password and assign the client node to the OD7YPD policy domain, and specify that the client node should be able to delete its own archive files from the server, enter:

```
register node PRI7YR password domain=OD7YRPD archdel=yes contact='your name'
```

The archdel=yes parameter is required for Content Manager OnDemand processing.

Note: When you define an Content Manager OnDemand storage node (by using the Content Manager OnDemand facilities), specify a Tivoli Storage Manager client node and client node password to “link” the Content Manager OnDemand storage node to archive storage.

Preparing storage pool volumes

You need to perform some steps to prepare removable media for initial use by Tivoli Storage Manager. This section provides general information and examples showing how to label storage pool volumes and check them into an automated library. For details about these tasks and important information about managing removable media operations, see the Tivoli Storage Manager documentation.

In general, to prepare a storage volume you:

- Label the volume. Any volumes associated with optical or tape devices must be labeled before Tivoli Storage Manager can use them.
- For storage pools in automated libraries, check the volume into the library.

You can use the LABEL LIBVOL command to label and check in a volume in one operation:

- To label storage volumes and check them into a library that is filled with blank storage volumes, use the following format of the command:

  ```
  label libvol archlib0 search=yes overwrite=yes checkin=scratch     -
        labelsource=prompt
  ```

  The label command will search all of the storage slots in the `archlib0` library for volumes and try to label each one that it finds. After labeling a storage volume, Tivoli Storage Manager keeps it in a storage slot inside the library. Because the example assumes new storage volumes, it is acceptable to overwrite an existing volume label.
- To label storage volumes and check them into a library by manually inserting each new storage volume when prompted, use the following format of the command:

  ```
  label libvol archlib0 search=bulk overwrite=yes checkin=scratch     -
       labelsource=prompt
  ```

  The label command will prompt you to insert a new storage volume into the `archlib0` library and then prompt you for the label of the volume. After labeling the storage volume, Tivoli Storage Manager keeps it in a storage slot inside the library and prompts you to insert the next storage volume to be labeled. Because the example assumes new storage volumes, it is acceptable to overwrite an existing volume label.

Wait for the LABEL LIBVOL operation to complete. Because the label and check in commands involve device access, it might take a long time to complete.

When you have completed labeling and checking in all the storage volumes, enter the following command to list the storage volumes in the `archlib0` library:

```
query libvol archlib0
```

Configuring Tivoli Storage Manager to maintain DB2 files

You can use Tivoli Storage Manager to maintain DB2 archived log files and backup image files. This capability means that you do not have to manually maintain these files on disk. The tasks in this section are optional, and are only recommended for customers who need to use Tivoli Storage Manager facilities to backup and restore the Content Manager OnDemand database in DB2. For more information about

using Tivoli Storage Manager to manage DB2 files, see *IBM DB2 Universal Database: Data Recovery and High Availability Guide and Reference*, SC09-4831.

The following topics describe how to configure Tivoli Storage Manager to maintain DB2 files:

- Defining server options
- Defining client options
- Defining storage objects
- Registering the client node
- Setting the client node password
- Space requirements
- Backup considerations
- Protecting data with the data retention protection (DRP) protocol

Defining server options

The DSM.SYS file on the Content Manager OnDemand library server identifies Tivoli Storage Manager servers and specifies server options.

If you installed and configured Tivoli Storage Manager to maintain report data, then you defined at least one Tivoli Storage Manager server (see "Defining the Tivoli Storage Manager server" on page 173). Most customers usually define one Tivoli Storage Manager server to maintain report data and a different server to maintain the DB2 files.

The following example shows a DSM.SYS file that identifies two Tivoli Storage Manager servers on the same workstation:

```
* The following server manages Content Manager OnDemand report data
SERVERNAME archive
COMMmethod tcpip
TCPPORT 1500
TCPSERVERADDRESS server1.company.xyz.com
COMPRESSION no

* The following server manages DB2 log files and backup images
SERVERNAME dbbackup
COMMmethod tcpip
TCPPORT 1500
TCPSERVERADDRESS server1.company.xyz.com
COMPRESSION yes
PASSWORDACCESS generate
```

- The first section identifies the server that maintains the Content Manager OnDemand report data.
- The second section identifies the server that maintains the DB2 files. The `SERVERNAME` parameter identifies the Tivoli Storage Manager server. The `TCPSERVERADDRESS` identifies the fully qualified TCP/IP host name of the workstation on which the Tivoli Storage Manager server is running. When defining a Tivoli Storage Manager server to maintain DB2 files, you must set the `COMPRESSION` parameter to `YES` and the `PASSWORDACCESS` parameter to `GENERATE`.

After you finish making your changes, save the DSM.SYS file in the directory named by the `DSM_CONFIG` parameter in the ARS.CFG file. See "Specifying the ARS.CFG file for the instance" on page 196 for more information.

Defining client options

The DSM.DB2.OPT file on the Content Manager OnDemand library server identifies the Tivoli Storage Manager server that maintains the DB2 files. The SERVERNAME parameter identifies the Tivoli Storage Manager server you defined in "Defining server options" on page 181. For example:

```
* The following server manages DB2 log files and backup images
SERVERNAME dbbackup
quiet
```

After you create the DSM.DB2.OPT file, save it in the directory named by the ARS_DB2_ADSM_CONFIG parameter in the ARS.CFG file. See "Specifying the ARS.CFG file for the instance" on page 196 for more information.

Defining storage objects

You must define the storage objects that Tivoli Storage Manager uses to maintain the DB2 files. The storage objects include a storage library, device class, storage pool, and policy domain:

- If you plan to use an existing storage pool to maintain the DB2 files, you do not need to define a storage library or device class. You should use dedicated hardware and storage objects to maintain the DB2 files.
- If you plan to use an existing policy domain to maintain the DB2 files, the domain must include an archive copy group and a backup copy group. See "Define the archive copy group" on page 183 and "Define the backup copy group" on page 183 for details.
- If you plan to define new storage objects to maintain the DB2 files, you must define a storage library, device class, storage pool, and policy domain, including the archive and backup copy groups. See "Defining a storage library" on page 177 for an example of how to define a storage library, device class, and storage pool. See "Define the domain" on page 110 for an example of how to define a domain. See "Define the domain" for an example of how to define a domain. See "Define the archive copy group" on page 183 and "Define the backup copy group" on page 183 for an example of how to define an archive copy group and a backup copy group.

Important: The storage pool where Tivoli Storage Manager maintains the DB2 files must use rewriteable optical media (not WORM) or tape.

Define the storage objects on the object server on which you installed Tivoli Storage Manager to maintain the DB2 files. Define the storage objects to the Tivoli Storage Manager server that maintains the DB2 files (this is the server that you identified in "Defining client options").

Define the domain

The following example shows how to define a policy domain to Tivoli Storage Manager. You must provide a name that is unique to Tivoli Storage Manager. The name in the example implies that Tivoli Storage Manager will maintain the files for one year. The length of time that Tivoli Storage Manager actually maintains the files depends on how you define the archive and backup copy groups.

```
define domain 1YRPD -
              desc='Domain for DB2 file storage'
```

The following example shows how to define a policy set to Tivoli Storage Manager. You must provide a name that is unique to Tivoli Storage Manager. The policy set identifies the policy domain.

```
define policyset 1YRPD 1YRPS -
                desc='Policy set for DB2 file storage'
```

The following example shows how to define a management class to Tivoli Storage Manager. You must provide a name that is unique to Tivoli Storage Manager. The management class identifies the policy domain and the policy set.

```
define mgmtclass 1YRPD 1YRPS 1YRMG -
                desc='Management class for DB2 file storage'
```

Define the archive copy group

The archive copy group determines several Tivoli Storage Manager options for the DB2 archived log files, including the number of days that Tivoli Storage Manager maintains the files. The DB2 archived log files must be maintained until they are no longer needed for database or table space recovery. Log files are valid between full, offline backup images of the database. When you create a full, offline backup image of the database, the log files created prior to the backup image can be deleted. For example, if you create a full, offline backup image of the database every thirty days, then you must keep log files for at least thirty days. If you do not create full, online backup images of the database, you should maintain the log files indefinitely.

The following example shows how to define an archive copy group. The archive copy group identifies the policy domain, policy set, and management class. The archive copy group also identifies the storage pool where Tivoli Storage Manager maintains the DB2 archived log files and the length of time that Tivoli Storage Manager maintains them. In the example, Tivoli Storage Manager maintains each log file stored in the storage pool for 366 days:

```
define copygroup 1YRPD 1YRPS 1YRMG standard -
                type=archive dest=ODSTGP2 retver=366
```

Define the backup copy group

The backup copy group determines Tivoli Storage Manager options for the DB2 backup images, including the number of versions of each backup image maintained and the length of time that Tivoli Storage Manager maintains them. You should plan to save one version of each backup image. By default, Tivoli Storage Manager maintains files in a backup copy group until they are deleted by an administrator.

The following example shows how to define a backup copy group. The backup copy group identifies the policy domain, policy set, and management class. The backup copy group also identifies the storage pool where Tivoli Storage Manager manages the DB2 backup images and the number of versions of each backup image that Tivoli Storage Manager maintains. In the example, Tivoli Storage Manager maintains one version of each DB2 backup image file indefinitely:

```
define copygroup 1YRPD 1YRPS 1YRMG standard -
                type=backup dest=ODSTGP2 verexists=1
```

Assign a default management class

After you define the policy set, the management classes it contains, and the copy groups, you must assign a default management class for the policy set. The following example shows how to assign a default management class:

```
assign defmgmtclass 1YRPD 1YRPS 1YRMG
```

Validate the policy set

After you define a default management class, validate the policy set:

```
validate policyset 1YRPD 1YRPS
```

Activate the policy set

Finally, you must activate the policy set to make the definitions available to Tivoli Storage Manager:

```
activate policyset 1YRPD 1YRPS
```

Registering the DB2 client node

You must register a client node in Tivoli Storage Manager for DB2 to use when it archives log files and creates backup image files. When you register the client node, you identify the policy used by Tivoli Storage Manager to maintain the files. The client node name must be unique to Tivoli Storage Manager. You must also supply a password for the client node.

You must register the client node on the object server on which you installed Tivoli Storage Manager to maintain the DB2 files. Register the client node to the Tivoli Storage Manager server that maintains the DB2 files (this is the server that you identified in "Defining client options" on page 182).

The following example shows how to register the client node `dbbackup` and assign it to the `1YRPD` policy domain. The node password is `password`. You must specify the `archdel=yes` and `backdel=yes` parameters so that the client node is permitted to delete its own archive and backup files from the server.

```
register node dbbackup password domain=1YRPD      -
         archdel=yes backdel=yes contact='your name'
```

Setting the client node password in DB2

Before DB2 can use Tivoli Storage Manager to maintain archived log files and backup image files, you must set the Tivoli Storage Manager client node password in DB2 on the library server. You established the client node password when you registered the client node in Tivoli Storage Manager (see "Registering the DB2 client node").

Use the `dsmapipw` command to set the client node password in DB2. The `dsmapipw` command is provided with the DB2 software. The `dsmapipw` command is installed in the `INSTHOME/sqllib/adsm` directory of the instance owner. By default, the instance owner is `archive`.

To set the client node password:

1. On the library server, log on as the `root` user.
2. Open a terminal window.
3. Set the DSMI_DIR and DSMI_CONFIG parameters. These parameters identify the user-defined directory that contains the API trusted agent file and the full path name of the options file that Tivoli Storage Manager uses to identify the server that maintains the DB2 files. You defined the options file in "Defining client options" on page 182.

   For example:

   ```
   export DSMI_DIR=/usr/tivoli/tsm/client/api/bin64
   export DSMI_CONFIG=/usr/tivoli/tsm/client/api/bin64/dsm.db2.opt
   ```

4. Run the `dsmapipw` command. For example:

   ```
   /home/archive/sqllib/adsm/dsmapipw
   ```

5. The `dsmapipw` command prompts you for the following information:

   `old password`, which is the current password for the client node. This is the password that you specified when you registered the client node in Tivoli Storage Manager (see "Registering the DB2 client node").

`new password`, which is the password that will be stored in DB2. You will be prompted twice for the password. Unless you have a good reason for **not** doing so, specify the `old password` when prompted.

6. Close the terminal window.
7. If DB2 is running, you should stop and restart DB2.

Important: If you change the client node password in Tivoli Storage Manager, remember to run the `dsmapipw` command to set the new password in DB2.

Space requirements

The storage pool where Tivoli Storage Manager maintains the DB2 files must contain enough storage to hold the files needed to recover the database. Because you should maintain the files indefinitely, you must plan to allocate a sufficient number of storage volumes to meet these needs. For example, a single log file requires approximately 1.3 MB of storage space. Depending on the amount of data that you store in Content Manager OnDemand and the frequency of full database backups, you might need to maintain hundreds of log files in storage managed by Tivoli Storage Manager. Depending on the frequency and type of backup images that you create, you might need to maintain several database and table space backup images. Depending on the size of your database and tables, each backup image may require several storage volumes. Finally, if you plan to migrate large tables of application group data to their own table spaces, DB2 requires storage for a backup image of each table that you migrate.

Backup considerations

Depending on the size of the database and the frequency of backups, you might need to regularly initialize and load scratch storage volumes into the storage library. If Tivoli Storage Manager determines that there is not enough space available in the storage pool, then it can request a mount for a scratch storage volume. However, the backup command cannot complete until the mount request is satisfied. If you operate in an unattended environment, this could have an adverse affect on system availability, especially when running an offline backup.

In addition to storing the DB2 files in Tivoli Storage Manager, you should regularly back up the Tivoli Storage Manager database and the Tivoli Storage Manager control files. Doing so can help prevent prolonged system outages in the event that you need to recover the database. You can schedule a task in Tivoli Storage Manager that automatically starts the backup process. See the Tivoli Storage Manager documentation for help with defining a schedule to Tivoli Storage Manager.

Defining a backup device for the Tivoli Storage Manager database

You can back up the Tivoli Storage Manager database to a file on disk or to tape. If you choose to back up the database to a file on disk, Tivoli Storage Manager supports the use of disk storage as volumes (files) that store data sequentially (as on tape volumes). These volumes are useful when you need to transfer the data for purposes such as electronic vaulting.

Defining a disk device class

The following example shows how to define a disk device class to Tivoli Storage Manager. You can use this example as a guide when you define your disk device class. The example presents the procedure with a minimum of customization. If

you want to do more, refer to the Tivoli Storage Manager documentation. Enter the command at the Tivoli Storage Manager server command line interface.

To define a disk device class for database backup:

```
define devclass DUMPFILEDEV devtype=file directory=/dsmdump mountlimit=2
```

The `directory` parameter identifies an existing directory where Tivoli Storage Manager stores database backup files. The directory must contain enough space to hold at least one copy of the database backup.

Defining a tape device

The following example shows how to define a manual tape drive to Tivoli Storage Manager. You can use this example as a guide when you define your manual tape device. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation. Enter the commands at the Tivoli Storage Manager server command line interface.

1. Define the manual library:

   ```
   def library dumplib libtype=manual
   ```

   The string `dumplib` is an arbitrary name that you assign to the library. Make sure that the name is not already defined to Tivoli Storage Manager. The library type is `manual` because an operator must mount the tapes.

2. Define the drive. For example:

   ```
   def drive dumplib dumpdrive device=/dev/rmt/mt0
   ```

   In the example, the drive belongs to the `dumplib` library. The string `dumpdrive` is an arbitrary name that you assign to the drive. Make sure that the name is not already defined to Tivoli Storage Manager. The `device` parameter gives the special device name for the drive.

3. Classify the drive according to type by defining the Tivoli Storage Manager device class. For example, the following command shows how to define a device class named `DUMPTAPEDEV` for the `dumplib` library:

   ```
   def devclass DUMPTAPEDEV devtype=generictape library=dumplib
   ```

4. Create a storage pool to use the devices in the device class you just defined:

   ```
   def stgpool dumppool DUMPTAPEDEV maxscratch=20
   ```

   The string `dumppool` is an arbitrary name that you assign to the storage pool. Make sure that the name is not already defined to Tivoli Storage Manager.

   Note: The `maxscratch` parameter can be used to allow Tivoli Storage Manager to choose from the scratch volumes available in a library, without further action on your part. If you do not allow scratch volumes, you must perform the extra step of explicitly defining each volume to be used in a storage pool. Refer to the Tivoli Storage Manager documentation for more information.

5. To check what you have defined, enter the following commands:

   ```
   query library
   query drive
   query devclass
   query stgpool
   ```

Backing up the Tivoli Storage Manager database and critical files

After you configure Tivoli Storage Manager, you should backup the database and save the server files that contain important information. The backup copy of the database can be used if you need to recover the database. You should save the backup copy until the next time that you create a full backup of the database. The server files contain important information that you must have if you need to recover the database. **Note:** You should backup the database and save the server files whenever you make changes to the database. The database is modified whenever the system stores data in storage managed by Tivoli Storage Manager and whenever you make changes to the Tivoli Storage Manager environment, such as defining new devices and managing removable media operations.

Backing up the database

Before you backup the database, you must define the backup storage objects to Tivoli Storage Manager and label at least one tape storage volume. You can define one device class for full backups and a different device class for incremental backups. For example, you can write full backups to a tape device and incremental backups to a disk device. At a minimum, you should define a tape backup device, device class, library, and storage pool. See "Defining a backup device for the Tivoli Storage Manager database" on page 185 for information about defining backup storage objects to Tivoli Storage Manager.

After you have defined the backup storage objects, label a tape storage volume. See the Tivoli Storage Manager documentation for help with labeling storage volumes.

After you have defined the backup storage objects to Tivoli Storage Manager and labeled a tape storage volume, you can backup the database. First, place a labeled tape storage volume in the drive. Then enter the backup command at the Tivoli Storage Manager server command line interface. For example:

```
backup db type=full devclass=dumptapedev
```

Replace the string `dumptapedev` with the name of the device class that you defined for tape backup. The backup command issues several messages, concluding with "Database dump process completed", after successfully creating the database backup.

Make a record of the information about the database backup, including the date and time that the backup was taken and the label of the storage volume label. Keep the backup copy of the database in a safe location, preferably offsite. Save the backup copy at least until the next time that you create another full backup copy of the database.

Saving critical files

The following files contain important information that you must have if you need to recover the Tivoli Storage Manager database:

- The server options file (DSMSERV.OPT)
- The volume history file (VOLHIST.OUT)
- The device configuration file (DEVCNFG.OUT)
- The Tivoli Storage Manager database and recovery log location file (DSMSERV.DSK)

Save a copy of the files on removable media and keep the copy in a safe location, preferably offsite. Save the copy at least until the next time that you create another backup copy of the files.

Protecting data with the data retention protection (DRP) protocol

To avoid the accidental erasure or overwriting of critical data, Content Manager OnDemand supports the Tivoli Storage Manager APIs related to data retention.

Data retention protection (DRP)
Prohibits the explicit deletion of documents until their specified retention criterion is met. Although documents can no longer be explicitly deleted, they can still expire.

Important: DRP is permanent. After it is turned on, it cannot be turned off.

Event-based retention policy
Retention based on an external event other than the storage of data. For Content Manager OnDemand, the retention event is the call to delete the data. A load, unload, application group delete, or expiration of data triggers the retention event.

Restriction: Content Manager OnDemand does not support *deletion hold*, which is a feature that prevents stored data from being deleted until the hold is released.

If you decide to use these policies in Tivoli Storage Manager, then the following scenarios result:

Table 14. Scenarios of using data retention protection

	Creation-based object expiration policy	**Event-based retention object expiration policy**
Data retention protection off	Content Manager OnDemand issues a delete object command through the Tivoli Storage Manager API. Objects are deleted during the next inventory expiration. If an Content Manager OnDemand application group is being deleted, a `delete filespace` command is issued, and the object file space is immediately deleted with the file space.	Content Manager OnDemand issues an event trigger command through the Tivoli Storage Manager API. The status of the objects that are affected are changed from PENDING to STARTED, and the objects are expired by Tivoli Storage Manager based on their retention parameters. If the retention parameters are set to `NOLIMIT`, then the objects never expire. If an OnDemand application group is being deleted, a `delete filespace` command is issued instead, and the objects are immediately deleted along with the file space.

Table 14. Scenarios of using data retention protection (continued)

	Creation-based object expiration policy	**Event-based retention object expiration policy**
Data retention protection on	Content Manager OnDemand issues no commands to Tivoli Storage Manager. The objects are effectively orphaned by Content Manager OnDemand and are expired by Tivoli Storage Manager based on their retention parameters. If the retention parameters are set to `NOLIMIT`, then the objects never expire.	Content Manager OnDemand issues an event trigger command through the Tivoli Storage Manager API. The event status of the objects that are affected are changed from PENDING to STARTED and the objects will be expired by Tivoli Storage Manager based on their retention parameters. If the retention parameters are set to `NOLIMIT`, then the objects never expire. If an Content Manager OnDemand application group is being deleted, then a `delete filespace` cannot be used with DRP enabled, therefore, the operation is treated the same as if a delete were indicated. The status of all the affected objects is changed from PENDING to STARTED, and they will be expired by Tivoli Storage Manager based on their retention parameters. Because this leaves the file space entries in TSM, you must manually delete these entries when the file space is empty (even with DRP enabled).

Recommendations:

- Set up the application groups to expire by load.
- Define the Tivoli Storage Manager archive copy groups to be event-based, and retain data for 0 days.
- Run the Tivoli Storage Manager inventory expiration regularly to ensure that expired data is removed.

Additionally, Content Manager OnDemand supports the following devices:

IBM DR450 and DR550
Disk-based system that contains a Tivoli Storage Manager that runs DRP.

EMC Centera
Disk-based system that is treated as a device by Tivoli Storage Manager. Tivoli Storage Manager must run DRP.

Chapter 31. Installing the Content Manager OnDemand software on Solaris

You must install a copy of the Content Manager OnDemand software on each workstation or node that is part of the Content Manager OnDemand system.

Prerequisite:

1. You need approximately 200 MB of free space in the /opt file system to install the software.
2. By default, the installation is carried out in the GUI mode, therefore, the X windows support is required for the GUI install.

Complete the following steps to install the Content Manager OnDemand product files on a Solaris workstation:

1. Insert the Content Manager OnDemand for Solaris server CD-ROM into the drive. The steps that follow assume that the CD-ROM is mounted on directory /cdrom.
2. Log in as the root user.
3. Go to the /cdrom/server/sun/ directory.
4. Enter this command:

   ```
   ./odsun
   ```
5. Read the Welcome screen and then click **Next**. The License Agreement window appears.
6. Select **I accept the terms in the license agreement** to accept the license agreement. Click **Next**.
7. Accept the default directory name. Click **Next**.
8. When the process completes, this question **Would you like to display the product ReadMe file?** appears. The location of the product readme file is displayed also. On Solaris, the readme file is located in the /opt/ondemand directory.
9. If you want to view the readme file now, click **Yes**. Otherwise, click **No**. Click **Next**.
10. Read the information in the window, and click **Next**.
11. Click **Finish**.
12. After installing the software from the CD-ROM, apply the latest service update for Content Manager OnDemand. You can obtain the latest service update from IBM service at http://www.ibm.com/eserver/support/fixes/.
13. After the installation completes successfully, eject the CD-ROM from the drive.

Optionally, the install can be performed in the character based console mode. To install the Content Manager OnDemand for Solaris server in the console mode, enter the following command from the directory which contains the installer:

```
./odsun -i console
```

and follow the instructions on the installation panels.

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Installing optional Content Manager OnDemand software

The command to install the Content Manager OnDemand Web Enablement Kit is:

```
./odweksun
```

or

```
./odweksun -i console
```

The command to install the Content Manager OnDemand Advanced Function Presentation Transformations for Multiplatforms feature is:

```
./afp2web
```

or

```
./afp2web -i console
```

The command to install the Content Manager OnDemand Enhanced Retention Management feature is:

```
./oderm
```

or

```
./oderm -i console
```

The command to install the Content Manager OnDemand PDF Indexing feature is:

```
./odpdf
```

or

```
./odpdf -i console
```

The command to install the IBM Content Manager OnDemand Report Distribution for Multiplatforms feature is:

```
./odrdf
```

or

```
./odrdf -i console
```

Chapter 32. Configuring instances on Solaris

Overview

An Content Manager OnDemand instance is a logical server environment made up of a database, a library server, and one or more object servers. An instance is defined in the ARS.INI file by naming the instance, identifying the name of the database used by the instance, and identifying the library server on which the database will be maintained. When you configure an object server, you identify its library server in the ARS.CFG file on the object server. An instance has its own table space file systems for the database and cache file systems. The table space file systems are defined in the ARS.DBFS file on the library server. The cache file systems are defined in the ARS.CACHE file on each object server. All of the servers that belong to an instance run in a single code page and on the same TCP/IP port number.

You can run multiple instances on the same workstation, with each instance configured differently:

- To have separate test and production environments
- To have databases using different code pages

Each instance has different security from other instances on the same workstation. You must define users and groups to each instance and set application group and folder permissions for users of each instance. Each instance has its own system log.

Each additional instance requires additional system resources, such as virtual storage and disk space, and more administration.

If you plan to run more than one instance on the same workstation:

- The ARS.INI file must contain one section for each instance. Each section identifies the ARS.CFG file, ARS.DBFS file, and ARS.CACHE file used by the instance.
- You must create a unique copy of the ARS.CFG file for each instance.
- You should maintain separate table space file systems and cache storage file systems for each instance, as in a ARS.DBFS file and ARS.CACHE file for each instance.
- Each instance must run on its own unique TCP/IP port number. The port for each instance is configured in the ARS.INI file.

Procedure

To configure an instance, follow these steps:

__ 1. Specify the instance in the ARS.INI file.
__ 2. Specify the ARS.CFG file for the instance.
__ 3. Specify the ARS.DBFS file for the instance.
__ 4. Specify the ARS.CACHE file for the instance.

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Specifying the instance in the ARS.INI file

Overview

The ARS.INI file contains information about Content Manager OnDemand instances. When you install the Content Manager OnDemand software, the ARS.INI file contains information about a default instance named archive. Most customers will use the default instance for their first or only instance of Content Manager OnDemand.

The information in the ARS.INI file is organized in sections with a header line that identifies each section. The header line can be identified by the brackets [ ] that delimit the beginning and end of the line.

The first section in the ARS.INI file contains information about the default instance. The following shows the default instance as provided by IBM:

```
[@SRV@_ARCHIVE]
HOST=platte
PROTOCOL=2
PORT=0
SRVR_INSTANCE=archive
SRVR_INSTANCE_OWNER=root
SRVR_OD_CFG=/opt/ondemand/config/ars.cfg
SRVR_DB_CFG=/opt/ondemand/config/ars.dbfs
SRVR_SM_CFG=/opt/ondemand/config/ars.cache
```

The HOST parameter identifies the host name alias, IP address, or fully qualified host name of the workstation on which the library server is running. The PROTOCOL parameter identifies the communications protocol used by the instance. The PORT parameter identifies the TCP/IP port number that the instance monitors for client requests. The stanza name ([@SRV@_ARCHIVE]) identifies the name of the Content Manager OnDemand instance. The SRVR_INSTANCE parameter identifies the name of the Content Manager OnDemand database. The SRVR_INSTANCE_OWNER parameter identifies the userid of the Content Manager OnDemand instance owner. The SRVR_OD_CFG parameter identifies the ARS.CFG file used by the instance. The SRVR_DB_CFG parameter identifies the ARS.DBFS file used by the instance. The SRVR_SM_CFG parameter identifies the ARS.CACHE file used by the instance.

When adding an instance to the ARS.INI file, remember that each instance must specify a unique instance name. For example, to add an instance for testing new applications, you might add an instance named *test*. When you work with more than one instance, you must identify the instance name when you run Content Manager OnDemand programs (such as ARSDB, ARSLOAD, and ARSSOCKD) and database commands (such as connecting to the database). The following shows an example of a second instance in the ARS.INI file:

```
[@SRV@_TEST]
HOST=rhone
PROTOCOL=2
PORT=1444
SRVR_INSTANCE=test
SRVR_INSTANCE_OWNER=root
SRVR_OD_CFG=/opt/ondemand/config/ars.test.cfg
SRVR_DB_CFG=/opt/ondemand/config/ars.test.dbfs
SRVR_SM_CFG=/opt/ondemand/config/ars.test.cache
```

The header line for the definition of the instance is TEST. The HOST statement identifies the host name alias of the library server. The instance communicates over

TCP/IP port number 1444. The name of the Content Manager OnDemand database is test. The name of the Content Manager OnDemand instance is test. The userid of the Content Manager OnDemand instance owner is root. The instance identifies its server configuration file (ARS.TEST.CFG), table space file systems file (ARS.TEST.DBFS), and cache file systems file (ARS.TEST.CACHE).

Procedure

To specify the instance in the ARS.INI file, follow these steps:

1. Log in to the server as the root user.
2. Change to the /opt/ondemand/config directory.
3. Make a backup copy of the file provided by IBM.
4. Edit the ARS.INI file with a standard text editor such as vi.
5. Most customers will use the default instance named ARCHIVE for their first or only instance of Content Manager OnDemand. Verify the following parameters and values.
   __ a. The header line contains a string that identifies the name of the instance. Unless you specify otherwise, the first or only instance is named ARCHIVE.
   __ b. The HOST parameter identifies the host name alias, IP address, or fully qualified host name of the library server.
   __ c. The PROTOCOL parameter identifies the communications protocol used by the instance. The number 2 identifies TCP/IP, and is the only valid value.
   __ d. The PORT parameter identifies the TCP/IP port number that the instance monitors for client requests (the number 0 means that the instance monitors port number 1445). If you use a port number other than 1445 on the library server, enter that number instead of 0 (zero). **For customers running more than one instance:** Each instance that runs on the same workstation must specify a different port number. If you configure a separate object server, ensure that the port number of the object server matches the port number of the library server.
   __ e. The stanza name ([@SRV@_ARCHIVE]) identifies the name of the Content Manager OnDemand instance. This value should match the name of the Content Manager OnDemand database (see “Installing DB2” on page 167 or “Installing Oracle” on page 169). The instance name can be from one to eight characters in length, and can include the A through Z and 0 through 9 characters.
   __ f. The SRVR_INSTANCE_OWNER parameter identifies the userid of the Content Manager OnDemand instance owner. This is the userid that is permitted to run the Content Manager OnDemand server programs, such as ARSSOCKD, ARSLOAD, and ARSMAINT. **For customers configuring the system to run under a user other than root:** See Chapter 28, “Creating a user for the Content Manager OnDemand instance owner on Solaris,” on page 165.
   __ g. The SRVR_OD_CFG parameter identifies the ARS.CFG configuration file used by the instance. See “Specifying the ARS.CFG file for the instance” on page 196.
   __ h. The SRVR_DB_CFG parameter identifies the ARS.DBFS table space file system file used by the instance. See “Specifying the ARS.DBFS file for the instance” on page 207.

__ i. The SRVR_SM_CFG parameter identifies the ARS.CACHE cache file system file used by the instance. See "Specifying the ARS.CACHE file for the instance" on page 208.

6. **Note for distributed library/object servers:** Configure one copy of the ARS.INI file on each workstation that is part of the Content Manager OnDemand system. Verify that the information specified in the ARS.INI file is consistent on all workstations that are part of the instance. In addition:
   a. Ensure that the port number of the object server matches the port number of the library server.
   b. Verify that the HOST parameter on the object server must specify the host name alias, IP address, or fully qualified host name of the library server.
7. Save the file and exit the text editor.
8. You should control access to the ARS.INI file by changing the file permissions so that only the Content Manager OnDemand instance owner has read or write access to the file.

Specifying the ARS.CFG file for the instance

The ARS.CFG file contains information about the instance, such as identifying the object servers that belong to the instance, the language settings for the instance, and information that is used by database, storage, and print manager programs.

Before you create the Content Manager OnDemand database, start Content Manager OnDemand, use archive storage, use the server print function, migrate tables to table spaces, or import tables from archive storage to the database, you should review the parameters in the ARS.CFG file. The values that IBM provides are sufficient for most customers. However, you might need to change some of the values for your environment.

Procedure

To specify the ARS.CFG file for the instance, follow these steps:

1. Log in to the server as the `root` user.
2. Change to the `/opt/ondemand/config` directory.
3. Make a backup copy of the file provided by IBM.
4. Edit the ARS.CFG file with a standard text editor such as vi.
5. **Note for distributed library/object servers:** Some parameters in the ARS.CFG file are not used on object servers. For example, an object server does not use the license parameters, server print parameters, and database parameters. See the sections that follow for more information. Configure one copy of the ARS.CFG file on each workstation that is part of the Content Manager OnDemand system. Set the ARS_SRVR parameter to the TCP/IP host name alias, fully qualified host name, or IP address of the library server and set the ARS_ARS_LOCAL_SRVR parameter to the TCP/IP host name alias, fully qualified host name, or IP address of the object server. Some parameters in the ARS.CFG file are not used on object servers. For example, an object server does not use the license parameters, server print parameters, and database parameters. See the sections that follow for more information.
6. Save the file and exit the text editor.
7. You should control access to the ARS.CFG file by changing the file permissions so that only the Content Manager OnDemand instance owner has read or write access to the file.

See the following topics for more information:

- ARS_CODEPAGE
- ARS_DB_ENGINE
- ARS_DB_IMPORT
- ARS_DB_PARTITION
- ARS_DB_TABLESPACE
- ARS_DB_TABLESPACE_USEREXIT
- ARS_DB2_ARCHIVE_LOGPATH
- ARS_DB2_DATABASE_PATH
- ARS_DB2_LOG_NUMBER
- ARS_DB2_LOGFILE_SIZE
- ARS_DB2_PRIMARY_LOGPATH
- ARS_DB2_TSM_CONFIG
- ARS_LANGUAGE
- ARS_LDAP_ALLOW_ANONYMOUS
- ARS_LDAP_BASE_DN
- ARS_LDAP_BIND_ATTRIBUTE
- ARS_LDAP_BIND_DN
- ARS_LDAP_BIND_DN_PWD
- ARS_LDAP_BIND_MESSAGES_FILE
- ARS_LDAP_MAPPED_ATTRIBUTE
- ARS_LDAP_PORT
- ARS_LDAP_SERVER
- ARS_LOCAL_SRVR
- ARS_MESSAGE_OF_THE_DAY
- ARS_NUM_DBSRVR
- ARS_NUM_LICENSE
- ARS_ORACLE_HOME
- ARS_ORACLE_PASSWORD
- ARS_ORACLE_USERID
- ARS_PRINT_PATH
- ARS_SRVR
- ARS_STORAGE_MANAGER
- ARS_TMP
- DB_ENGINE
- DB2INSTANCE
- DSM_CONFIG
- DSM_DIR
- DSM_LOG
- DSMG_CONFIG
- DSMG_DIR
- DSMG_LOG
- DSMI_CONFIG
- DSMI_DIR
- DSMI_LOG

- DSMSERV_CONFIG
- DSMSERV_DIR

ARS_CODEPAGE

The ARS_CODEPAGE parameter identifies the code page of the Content Manager OnDemand database. The ARS_CODEPAGE parameter need be specified only if the locale of the system on which the Content Manager OnDemand server is running is different than the code page of the Content Manager OnDemand database. OnDemand uses the locale of the system on which the Content Manager OnDemand server is running as the default value. This parameter may be specified on the library server and on object servers.

ARS_DB_ENGINE parameter

The database manager product that you installed on the library server. You can specify DB2 or ORACLE. The default value is DB2. The ARS_DB_ENGINE parameter is ignored on object servers.

ARS_DB_IMPORT parameter

The method that Content Manager OnDemand uses to migrate index data to table spaces and import tables from archive storage to the database. The default value is `0` (zero). The ARS_DB_IMPORT parameter is ignored on object servers.

If you are configuring a library server, then you must set the ARS_DB_IMPORT parameter to one of the following values:

0 Content Manager OnDemand uses the EXPORT and IMPORT commands to migrate table data. This method requires disk space to hold log records generated when exporting existing table data and importing data to the new table space. This is the default migration method.

1 Content Manager OnDemand uses the EXPORT and LOAD commands to migrate table data. This method requires disk space to hold log records generated when exporting existing table data. The LOAD command generates a backup image of the new table space. The image file is stored in Tivoli Storage Manager-managed storage. This is the recommended migration method.

Note: Before you can use Tivoli Storage Manager to manage DB2 backup image files, you must install and configure Tivoli Storage Manager. See Chapter 30, “Installing and configuring Tivoli Storage Manager on Solaris,” on page 171 for details.

2 Content Manager OnDemand uses the EXPORT and LOAD commands to migrate the table data. This method requires disk space to hold log records generated when exporting existing table data. The LOAD command generates a backup image of the new table space. The image file is stored in the file system identified by the ARS_TMP parameter (see “ARS_TMP parameter” on page 205).

ARS_DB_PARTITION parameter

Determines whether you can partition the database across nodes or systems. By default, you cannot partition the database. If the database manager product that you are using with Content Manager OnDemand supports partitioning, then you can specify that you want to partition the database by changing the value of this parameter to 1 (one). Currently, partitioning is supported only by DB2 Universal

Database Extended Enterprise Edition. To store application group index data in partitions, your application groups must specify a *partition field*. The ARS_DB_PARTITION parameter is ignored on object servers.

ARS_DB_TABLESPACE parameter

The name of the table space for the Content Manager OnDemand system tables. The value of this parameter must match an existing table space name in the database. You must have created the table space in DB2 or Oracle.

ARS_DB_TABLESPACE_USEREXIT parameter

Determines if the Content Manager OnDemand table space creation exit will be invoked. The Content Manager OnDemand table space creation exit allows an installation to take action when OnDemand creates a table space, table, or index tables that will be used to store application index data. The exit is not called for the Content Manager OnDemand system tables.

The following statement must exist in the ARS.CFG file that is associated with the instance so that the ARSUTBL DLL can be invoked:

```
ARS_DB_TABLESPACE_USEREXIT=absolute path name
```

For the sample ARSUTBL, you would specify the following statement in the ARS.CFG file:

```
ARS_DB_TABLESPACE_USEREXIT=/opt/ondemand/bin/exits/arsutbl
```

Appendix I, "Table space creation exit," on page 393 provides information about the exit point that gets invoked when OnDemand creates table spaces, tables, and indexes for the Content Manager OnDemand data tables.

ARS_DB2_ARCHIVE_LOGPATH parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 198) to DB2 (the default), the location that will hold the offline archived log files. The default value is `/arsdb_archivelog`. The ARS_DB2_ARCHIVE_LOGPATH is ignored if you use Tivoli Storage Manager to maintain the DB2 archived log files. The ARS_DB2_ARCHIVE_LOGPATH parameter is ignored on object servers.

The DB2UEXIT.DISK program copies the online archived log files from the primary log file directory to the archive log file directory. An archived log file becomes *offline* when it is no longer stored in the primary log file directory. After creating a backup image of the database, the ARSDB program deletes the offline archived log files. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* can help you estimate the amount of space required to hold the offline archived log files.

ARS_DB2_DATABASE_PATH parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 198) to DB2 (the default), the base file system in which the Content Manager OnDemand database will reside. You must make sure that the specified location contains enough space to hold the system tables, the USERSPACE1 table space, and any application group tables that are not stored in their own table spaces. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* contains information

to help you estimate the amount of space required to hold the database. The default value is /arsdb. The ARS_DB2_DATABASE_PATH parameter is ignored on object servers.

ARS_DB2_LOG_NUMBER parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 198) to DB2 (the default), the number of primary log files. The default value is 40. The ARS_DB2_LOG_NUMBER parameter is ignored on object servers.

The values of the ARS_DB2_LOGFILE_SIZE and ARS_DB2_LOG_NUMBER parameters determine the total amount of space available for DB2 to log changes to the database. The values that you specify must support the largest single report that you plan to load (or unload). DB2 will fail if there is not enough log file space available to hold the changes to the database. The default values allocate 160 MB of space. See the *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* for information about estimating the amount of storage space required to hold the DB2 log files.

ARS_DB2_LOGFILE_SIZE parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 198) to DB2 (the default), the size of a log file, in 4 KB blocks. The default value is 1000. The ARS_DB2_LOGFILE_SIZE parameter is ignored on object servers.

The values of the ARS_DB2_LOGFILE_SIZE and ARS_DB2_LOG_NUMBER parameters determine the total amount of space available for DB2 to log changes to the database. The values that you specify must support the largest single report that you plan to load (or unload). DB2 will fail if there is not enough log file space available to hold the changes to the database. The default values allocate 160 MB of space. See the *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* for information about estimating the amount of storage space required to hold the DB2 log files.

ARS_DB2_PRIMARY_LOGPATH parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 198) to DB2 (the default), the location that will hold the active archived log files. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* can help you estimate the amount of space required to hold the active archived log files. The default value is /arsdb_primarylog. The ARS_DB2_PRIMARY_LOGPATH parameter is ignored on object servers.

ARS_DB2_TSM_CONFIG parameter

If you are configuring the Content Manager OnDemand library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 198) to DB2 (the default) and you plan to use Tivoli Storage Manager to maintain DB2 archived log files and backup image files, the full path name of the Tivoli Storage Manager options file that identifies the Tivoli Storage Manager server that will maintain the DB2 files. For example: /opt/tivoli/tsm/client/ba/bin/dsm.db2.opt.

The ARS_DB2_TSM_CONFIG parameter is ignored on object servers. "Configuring Tivoli Storage Manager to maintain DB2 files" on page 180 provides information to help you configure Tivoli Storage Manager to maintain DB2 files.

ARS_LANGUAGE parameter

The national language environment used to create the database. Content Manager OnDemand uses a three-character *language code* to derive the locale and code set for the server operating system. The default value is ENU (US English). See Appendix J, "National Language Support," on page 397 for a list of the language codes and information about configuring the system for national language character support. The ARS_LANGUAGE parameter is ignored on object servers.

Important: You must provide the correct language code for your operating environment **before** you create the Content Manager OnDemand database.

ARS_LDAP_ALLOW_ANONYMOUS parameter

Specifies whether or not anonymous bind connections are allowed on this LDAP server. Valid values are TRUE and FALSE. If FALSE, you must also specify ARS_LDAP_BIND_DN and ARS_LDAP_BIND_DN_PWD.

ARS_LDAP_BASE_DN parameter

Specifies the base distinguished name to use. This parameter is required for LDAP authentication.

Example 1:

```
ARS_LDAP_BASE_DN=ou=mycity,o=xyzcompany
```

Example 2:

```
ARS_LDAP_BASE_DN=dc=ondemand,dc=xyzcompany
```

ARS_LDAP_BIND_ATTRIBUTE parameter

Specifies the attribute being bound and is the attribute name to be searched on the LDAP server. This parameter is required for LDAP authentication.

Example:

```
ARS_LDAP_BIND_ATTRIBUTE=mail
```

ARS_LDAP_BIND_DN parameter

Specifies the distinguished name to use if anonymous connections are not allowed for binding. Used with ARS_LDAP_ALLOW_ANONYMOUS set to FALSE.

ARS_LDAP_BIND_DN_PWD parameter

Specifies the distinguished name password to use if anonymous connections are not allowed for binding. Used with ARS_LDAP_ALLOW_ANONYMOUS set to FALSE.

ARS_LDAP_BIND_MESSAGES_FILE parameter

Specifies the location of a file containing the LDAP message strings the Content Manager OnDemand server looks for during login. This is used for issuing messages when the user's password is about to expire, or their LDAP account is locked. ARS_LDAP_BIND_MESSAGES_FILE is used in conjunction with the ARSLDAP.INI file to implement this functionality.

ARS_LDAP_MAPPED_ATTRIBUTE parameter

Specifies the attribute being returned to Content Manager OnDemand as a user ID. This is the attribute name to be returned from the LDAP server once the bind attribute name is found. It can be the same as the bind attribute or different. This parameter is required for LDAP authentication.

Example:

```
ARS_LDAP_MAPPED_ATTRIBUTE=sAMAccountName
```

ARS_LDAP_PORT parameter

Specifies the port on which LDAP is listening. The default value is 389. This parameter is optional.

ARS_LDAP_SERVER parameter

Specifies the IP address or the fully-qualified hostname of the LDAP server. This parameter is required for LDAP authentication.

ARS_LOCAL_SRVR parameter

The name of the object server. The ARS_LOCAL_SRVR parameter is ignored on library servers. However, if you are configuring a library server, you must either omit this parameter from the ARS.CFG file or set this parameter to a blank value, that is: `ARS_LOCAL_SRVR=` .

If you are configuring an object server, set this parameter to the TCP/IP host name alias, fully qualified host name, or IP address of the object server. If the object server is running on a node of a multi-processor workstation, then set this parameter to the external IP address of the node on which you installed the object server.

When you add an Content Manager OnDemand storage node to an object server, you must use the value of the ARS_LOCAL_SRVR parameter to name the storage node.

ARS_MESSAGE_OF_THE_DAY parameter

Use to show the message of the day. Set to the full path name of a file that contains the message that you want to show. For example:

```
ARS_MESSAGE_OF_THE_DAY=/opt/ondemand/tmp/message.txt
```

The contents of the message file can contain a maximum of 1024 characters of text. The administrative client and the Windows client show the message after the user logs on to the server. To close the message box and continue, the user must click OK. If you do not specify a message file, then the normal client processing occurs.

ARS_NUM_DBSRVR parameter

Determines the number of processes that Content Manager OnDemand starts on the library server to handle connections to the database. The ARS_NUM_DBSRVR parameter is ignored on object servers.

In addition to database connections by Content Manager OnDemand client programs, the value that you specify must support the number of active Content Manager OnDemand commands and daemons such as ARSLOAD, ARSDOC, ARSDB, ARSMAINT, and ARSADMIN.

Each connection to the database requires a database agent. Content Manager OnDemand can start a database agent for each connection. However, each agent requires its own private memory and some portion of application shared memory. You can use the ARS_NUM_DBSRVR parameter to optimize the way that Content Manager OnDemand handles the database load. For example, you can define ARS_NUM_DBSRVR so that Content Manager OnDemand starts a fixed number of database agents, regardless of the number of concurrent database requests. While this might appear restrictive, database requests typically process very quickly. For example, ten database agents can handle a heavy database request load, while balancing the impact on system resources.

You should specify a value for the ARS_NUM_DBSRVR parameter that supports the peak number of concurrent database connections that you expect the library server to handle. A low value limits access to the database during periods of high database activity. A high value requires more system resources during periods of high database activity. The value that you choose also depends on the characteristics of the queries. For example, general queries typically keep a connection open longer than a more specific query.

ARS_NUM_LICENSE parameter

The maximum number of concurrent users allowed on the system. The default value is 1 (one). The ARS_NUM_LICENSE parameter is ignored on object servers.

You must acquire an authorization for each concurrent user. See the license information provided with the Content Manager OnDemand product package for more information.

To monitor the number of users on your system, search the System Log folder for message numbers 201 and 202. To determine whether your system has exceeded the allowed number of users, search the System Log for messages that indicate that the number of users accessing the system exceeds the maximum allowed (as specified by the ARS_NUM_LICENSE parameter).

ARS_ORACLE_HOME parameter

Use to specify the base installation directory for Oracle. The default value is:

```
ARS_ORACLE_HOME=/oracle
```

Replace the string `/oracle` with the name of the directory in which Oracle was installed.

ARS_ORACLE_PASSWORD parameter

Specifies the password of the Content Manager OnDemand user in Oracle (root). This value must match the userid of the Content Manager OnDemand user in Oracle that was specified in “Installing Oracle” on page 169.

Example:

```
ARS_ORACLE_PASSWORD=xxxxxxxxxx
```

Replace the string `xxxxxxxxxx` with the password of the Content Manager OnDemand user in Oracle.

ARS_ORACLE_USERID parameter

Specifies the userid of the Content Manager OnDemand user in Oracle (root). This value must match the userid of the Content Manager OnDemand user in Oracle that was specified in "Installing Oracle" on page 169.

Example:

```
ARS_ORACLE_USERID=root
```

Replace the string `root` with the userid of the Content Manager OnDemand user in Oracle.

ARS_PRINT_PATH parameter

The location where the Content Manager OnDemand server print function temporarily stores print data. You must make sure that there is enough space in the specified location to hold the print files for the maximum number of concurrent print requests that the server will handle. The default value is `/tmp`. The ARS_PRINT_PATH parameter is ignored on object servers.

You should dedicate a file system to hold the print files. The file system contain at least 500 MB of free space at all times. If your storage configuration permits, you should allocate 1 GB or more of free space to the specified file system.

The permissions for the file system must be `drwxrwxrwt`. You can use the CHMOD command to set the permissions. For example, the command `chmod 1777 /tmp` sets the permissions for the `/tmp` file system.

ARS_SRVR parameter

The name of the library server. The ARS_SRVR parameter is ignored on library servers. However, if you are configuring a library server, you must either omit this parameter from the ARS.CFG file or set this parameter to a blank value, that is: `ARS_SRVR= .`

If you are configuring an object server, set the ARS_SRVR parameter to the TCP/IP host name alias, fully qualified host name, or IP address of the library server. If the library server is running on a node of a multi-processor workstation, then set this parameter to the external IP address of the node on which you installed the library server.

ARS_STORAGE_MANAGER parameter

Determines whether the server program is linked to a cache-only storage manager or an archive storage manager. You must specify this parameter on library and object servers.

You can specify one of the following values:

CACHE_ONLY
Link the server program to a cache-only storage manager.

TSM Link the server program to an archive storage manager. This is the default value in the ARS.CFG file that is provided by IBM.

Note: Before Content Manager OnDemand can work with an archive storage manager to maintain data, you must install and configure the archive storage manager software.

ADSM

Deprecated. This option has been replaced by TSM. ADSM is still supported for existing customers.

ARS_SUPPORT_CFSOD parameter

If you plan to use Content Federation Services for OD, you must set this parameter equal to 1.

ARS_TMP parameter

The location where Content Manager OnDemand programs temporarily store data. You must allocate sufficient free space in the specified file system to support tasks such as migrating and importing index data. The default value is: `/tmp`. You must specify the ARS_TMP parameter on the library server and on all object servers.

You should dedicate a file system to temporary storage. The file system should contain at least 500 MB of free space at all times. If your storage configuration permits, you should allocate 1 GB or more of free space to the specified file system.

The permissions for the file system must be `drwxrwxrwt`. You can use the CHMOD command to set the permissions. For example, the command `chmod 1777 /tmp` sets the permissions for the `/tmp` file system.

DB_ENGINE parameter

Deprecated. This parameter has been replaced by ARS_DB_ENGINE. However, the DB_ENGINE parameter is still supported for existing customers.

DB2INSTANCE parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 198) to DB2 (the default), the name of the database instance owner that you created when you installed DB2 (see "Installing DB2" on page 167). The default value is `archive`. The DB2INSTANCE parameter is ignored on object servers.

DSM_CONFIG parameter

If you plan to use Tivoli Storage Manager, the full path name of the Tivoli Storage Manager client options file. For example: `/opt/tivoli/tsm/client/ba/bin/dsm.opt`

You must set the DSM_CONFIG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSM_DIR parameter

If you plan to use Tivoli Storage Manager, the directory that contains the Tivoli Storage Manager client files. For example: `/opt/tivoli/tsm/client/ba/bin`.

You must set the DSM_DIR parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSM_LOG parameter

If you plan to use Tivoli Storage Manager, the directory in which Tivoli Storage Manager stores the space management client error log. The default value is `/tmp`.

You must set the DSM_LOG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMG_CONFIG parameter

If you plan to use Tivoli Storage Manager, the full path name of the Tivoli Storage Manager administrative client options file. For example: `/opt/tivoli/tsm/client/admin/bin/dsm.opt`.

You must set the DSMG_CONFIG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMG_DIR parameter

If you plan to use Tivoli Storage Manager, the directory that contains the Tivoli Storage Manager administrative client files. For example: `/opt/tivoli/tsm/client/admin/bin`.

You must set the DSMG_DIR parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMG_LOG parameter

If you plan to use Tivoli Storage Manager, the directory in which Tivoli Storage Manager stores the administrative client error log. The default value is `/tmp`. You must set the DSMG_LOG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMI_CONFIG parameter

If you plan to use Tivoli Storage Manager, the full path name of the Tivoli Storage Manager API options file. For example: `/usr/tivoli/tsm/client/api/bin64/dsm.opt`.

You must set the DSMI_CONFIG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMI_DIR

If you plan to use Tivoli Storage Manager, the directory that contains the Tivoli Storage Manager API files. For example: `/usr/tivoli/tsm/client/api/bin64`.

You must set the DSMI_DIR parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMI_LOG parameter

If you plan to use Tivoli Storage Manager, the directory in which Tivoli Storage Manager stores the Tivoli Storage Manager API error log. The default value is `/tmp`. You must set the DSMI_LOG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMSERV_CONFIG parameter

If you plan to use Tivoli Storage Manager, the full path name of the Tivoli Storage Manager server options file. For example: `/opt/tivoli/tsm/server/bin/dsmserv.opt`.

You must set the DSMSERV_CONFIG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMSERV_DIR parameter

If you plan to use Tivoli Storage Manager, the directory that contains the Tivoli Storage Manager server files. For example: `/opt/tivoli/tsm/server/bin`.

You must set the DSMSERV_DIR parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

Specifying the ARS.DBFS file for the instance

Overview

The ARS.DBFS file lists the file systems on the library server that can be used by the database manager to maintain index data in table spaces. The rules for using table space file systems are:

- You should store only Content Manager OnDemand application group data in the table space file systems.
- You should define a minimum of two table space file systems. (In general, the more table space file systems that you define, the better for performance and recovery.)
- You should allocate equal amounts of disk space to each table space file system. If you increase the amount of space in one table space file system, you should increase the amount of space in the other table space file systems by an equal amount.

Each line in the ARS.DBFS file identifies the name of a file system that Content Manager OnDemand can use to store table spaces and specifies the type of table spaces created in the file system.

When naming table space file systems, you should use the following convention:

```
/filesystem SMS
```

Where `filesystem` is the name of the file system and `SMS` indicates the type of table spaces created in the file system. The name of the file system should identify the type of table spaces that can be created in the file system. For example, the following line identifies an SMS table space file system:

```
/arsdb/db1/SMS SMS
```

The following shows an example of an ARS.DBFS file that defines three SMS table space file systems:

```
/arsdb/db1/SMS SMS
/arsdb/db2/SMS SMS
/arsdb/db3/SMS SMS
```

Procedure

To create (or edit) the ARS.DBFS file for the instance:

1. Log in to the server as the `root` user.
2. Change to the `/opt/ondemand/config` directory.
3. Create (or edit) the ARS.DBFS file using a standard text editor such as vi.
4. Add one line for each file system that Content Manager OnDemand can use for table spaces.

5. Save the file and exit the editor.
6. A table space file system must be owned by the database instance owner and group. The suggested defaults are `archive` (instance owner) and `sysadm1` (group). You specified the instance owner and group when you installed the database manager product (see Chapter 29, "Installing the database manager on Solaris," on page 167). Make sure that the user and group file permissions are set correctly. For example:

   ```
   drwxrws---  3 archive sysadm1  512 May 17 12:58 /arsdb/db1/SMS
   ```

   You can use the CHOWN command to set the ownership permissions. For example, the following command changes the owner of all file systems in the `/arsdb` tree to the `archive` user and the `sysadm1` group:

   ```
   chown -R archive:sysadm1 /arsdb*
   ```

7. You can use the CHMOD command to set the file permissions. For example, the following commands set the correct permissions for the `/arsdb/db1/SMS` filesystem:

   ```
   chmod 2770 /arsdb/db1/SMS
   chmod g+s /arsdb/db1/SMS
   ```

Specifying the ARS.CACHE file for the instance

The ARS.CACHE file lists the file systems on the object server that can be used by Content Manager OnDemand for cache storage.

If there are multiple file systems in the ARS.CACHE file, OnDemand uses the file system with the greatest amount of space free to store the objects.

The following example shows an ARS.CACHE file that defines five cache storage file systems:

```
/arscache/cache1
/arscache/cache2
/arscache/cache3
/arscache/cache4
/arscache/cache5
```

Procedure

To create the ARS.CACHE file for the instance:

1. Log in to the server as the `root` user.
2. Change to the `/opt/ondemand/config` directory.
3. Create (or edit) the ARS.CACHE file using a standard text editor such as vi.
4. Insert one line in the file for each file system on the server that Content Manager OnDemand can use for cache storage. **Important:** The first entry in the ARS.CACHE file identifies the base cache storage file system. Content Manager OnDemand stores control information in the base cache storage file system. After you define the base cache storage file system to Content Manager OnDemand, you cannot add or remove it from Content Manager OnDemand. It must remain as the first entry.
5. Save the file and exit the editor.
6. Cache file systems must be owned by the Content Manager OnDemand instance owner and the `system` group Make sure that only the user file permissions are set, not the group or other file permissions. For example:

   ```
   drwx------  3 root root  512 Sep 22 13:08 /arscache/cache1
   ```

7. Use the CHOWN command to set the ownership permissions. The following example shows how to change the user ownership of all file systems in the /arscache tree:

   ```
   chown -R root:root /arscache*
   ```

8. Use the CHMOD command to set the file permissions. For example, the following commands set the correct permissions for the /arscache/cache1 file system:

   ```
   chmod 700 /arscache/cache1
   chmod g-s /arscache/cache1
   ```

Content Manager OnDemand cache storage files and subdirectories should have the following permissions:

```
drwx------ for every subdirectory (700)
-r-------- for every object that has been migrated to archive storage (400)
-rw------- for every object that has not yet been migrated (600)
-rwxrwxrwx for every symbolic link under the retr and migr directories (777)
```

The ARSLDAP.INI file

The ARS_LDAP_BIND_MESSAGES_FILE parameter enables Content Manager OnDemand to customize message text returned from an LDAP server that is used to alert users that their LDAP password is about to expire or their LDAP account is locked.

The messages displayed to users are contained in the file referenced by this parameter. To enable this user-configurable message functionality, create a file with the appropriate message strings, and set ARS_LDAP_BIND_MESSAGES_FILE to the full path of the file. The ARSLDAP.INI file is provided with example message strings that can be used by the ARS_LDAP_BIND_MESSAGES_FILE parameter.

The ARSLDAP.INI file contains the following three sections:

```
[BIND_MESSAGES]
PASSWORD_EXPIRED="/usr/lpp/ars/config/password_expired.txt"
ACCOUNT_LOCKED="/usr/lpp/ars/config/account_locked.txt"

[PASSWORD_EXPIRED]
TDS6="Password has expired"
AD="data 532"
UDEF1=
UDEF2=
UDEF3=

[ACCOUNT_LOCKED]
TDS6="Account is locked"
AD="data 775"
UDEF1=
UDEF2=
UDEF3=
```

The BIND_MESSAGES section specifies the path to the files containing the user-configurable message text that is displayed to users when their LDAP password is about to expire, or their LDAP account is locked. Generic files are supplied, and should be customized to reflect your actual Content Manager OnDemand environment.

An example message that would be displayed to a user:

```
Your LDAP password has expired and needs to be changed.
Log into <company intranet> for password setting instructions.
```

The entries in the PASSWORD_EXPIRED and ACCOUNT_LOCKED sections are for Tivoli Directory Server Version 6.x and Microsoft Active Directory (AD). These sections also contain three user-defined entries (UDEFx), allowing you to enter your own pattern strings for LDAP servers that are not directly supported.

The LDAP server may return additional information when the user's bind operation fails. When an error is returned from the LDAP server, Content Manager OnDemand reads the file referenced by the ARS_LDAP_BIND_MESSAGES_FILE parameter and searches under the two stanzas, [PASSWORD_EXPIRED] and [ACCOUNT_LOCKED], for user-defined text that matches the LDAP server error. If a match is found, Content Manager OnDemand will display the text found in the files defined under the [BIND_MESSAGES] stanza.

If the ARS_LDAP_BIND_MESSAGES_FILE parameter is not defined, has no file referenced, or the PASSWORD_EXPIRED or ACCOUNT_LOCKED files do not exist, the user will receive a default 'The server failed while attempting to logon' message.

Note: Currently only two error conditions can be handled: PASSWORD_EXPIRED and ACCOUNT_LOCKED. The section titles for these two conditions cannot be changed, but you can change the pattern strings and message text presented to the user to define any two error conditions.

Chapter 33. Creating an instance of Content Manager OnDemand on Solaris

You create an instance of Content Manager OnDemand by running the ARSDB program on the library server. The ARSDB program initializes the base system tables that are required by Content Manager OnDemand. You initialize other system tables by running the ARSSYSCR program on the library server. The ARSSYSCR program initializes the system tables that are required to support the system log, system migration, and other Content Manager OnDemand functions.

Prerequisites

Before you create the instance, you must have completed the following:

__ 1. Installed and configured the database software (DB2 or Oracle), and created a database instance (DB2) or database (Oracle) for Content Manager OnDemand.

__ 2. Installed and configured the Content Manager OnDemand software, including the following files:

- ARS.INI
- ARS.CFG
- ARS.DBFS
- ARS.CACHE

Procedure

To create the instance, follow these steps:

__ 1. Specify permissions for the database directories.

__ 2. Create the instance by running the ARSDB program.

__ 3. Initialize the system logging facility by running the ARSSYSCR program. See "Initialize the system load logging facility" on page 214.

__ 4. (Optional) Initialize the system migration facility by running the ARSSYSCR program.

Specifying permissions for the database directories

The group that the instance owner belongs to must have write access to the database directory names that are specified in the ARS.CFG file (the ARS_DB2_DATABASE_PATH, ARS_DB2_PRIMARY_LOGPATH, and ARS_DB2_ARCHIVE_LOGPATH parameters). You created the instance owner and group when you installed the database manager (see Chapter 29, "Installing the database manager on Solaris," on page 167). See "Specifying the ARS.CFG file for the instance" on page 196 for help with configuring the ARS.CFG file.

Procedure

To change the owner of the directories:

1. Log in to the server as the `root` user.
2. Use the CHOWN command to change directory ownership. For example, to change the owner and group of all file systems in the `/arsdb` tree to the `archive` owner and the `sysadm1` group, enter the following command:

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```
chown -R archive:sysadm1 /arsdb*
```

Run the CHOWN command once to change the ownership of each of the database directories that are specified in the ARS.CFG file (the ARS_DB2_DATABASE_PATH, ARS_DB2_PRIMARY_LOGPATH, and ARS_DB2_ARCHIVE_LOGPATH parameters).

Creating the instance

Overview

You should use the ARSDB program to create the instance. The ARSDB program does the following to create the instance:

- Updates the database configuration
- Verifies the directories for the primary and archived log files
- Creates a link to the database user exit program

  If the database user exit program encounters errors when copying files, it creates the `db2uexit.err` file in the temporary data directory. (By default, `/tmp`. See "ARS_TMP parameter" on page 205 for details.) If this file exists, it usually means that you did not set the correct permissions for the log file directories or there is not enough free space to hold the archived log files. See "Specifying permissions for the database directories" on page 211 for information about setting permissions. See your operating system documentation for information about increasing the size of a file system.
- Creates a backup of the database
- Builds the Content Manager OnDemand system tables and indexes
- Binds the database to Content Manager OnDemand

The ARSDB program creates the database using standard SQL commands. See the documentation provided with the database manager product for information about the SQL commands issued by the ARSDB program and messages printed at the console.

Procedure

To create an instance of Content Manager OnDemand:

1. You must provide the correct locale, code set, and code page **before** you create the database. These values are derived from the ARS_LANGUAGE parameter in the ARS.CFG file. See "ARS_LANGUAGE parameter" on page 201 for details.
2. **For Oracle users:** You must create the database by using the Oracle utilities **before** you create the Content Manager OnDemand instance. See "Installing Oracle" on page 169.
3. Log in to the server as the `root` user.
4. **DB2 users:** Type the following command at the prompt:

   ```
   /opt/ondemand/bin/arsdb -I archive -gcv
   ```

   Where `archive` is the name of the Content Manager OnDemand instance.
5. **Oracle users:** Type the following command at the prompt:

   ```
   /opt/ondemand/bin/arsdb -I archive -rtv
   ```

   Where `archive` is the name of the Content Manager OnDemand instance.
6. Press the Enter key.

7. The ARSDB program prompts you before creating a link to the database user exit program:
   - If you maintain DB2 archived log files on disk, enter 1 when prompted
   - If you use Tivoli Storage Manager to maintain the DB2 archived log files, enter 2 when prompted
8. Content Manager OnDemand creates the instance, makes a backup image of the database, and restores the Content Manager OnDemand system tables to the database. This process will take several minutes.

   The ARSDB program generates a series of messages. For example:

```
Creating the DB2 ARSDBASE database
Creating table ARSSERVR.arsag
Creating index ARSSERVR.arsag_name_idx
Creating index ARSSERVR.arsag_agid_idx
..... .. . . . . . . . . . . . . . . . . . .
..... .. . . . . . . . . . . . . . . . . . .
..... .. . . . . . . . . . . . . . . . . . .
Updating runstat statistics for table ARSSERVR.arsusrgrp
Creating table ARSSERVR.arsusrgrpid
Creating index ARSSERVR.arsusrgrpid_idx
Updating runstat statistics for table ARSSERVR.arsusrgrpid
```

Initializing the system logging facility

After you have successfully created the instance of Content Manager OnDemand, run the ARSSYSCR program to initialize the Content Manager OnDemand system logging facility for the instance.

To initialize the Content Manager OnDemand system logging facility:

1. Log in to the server as the `root` user.
2. Type the following command at the prompt:

   ```
   /opt/ondemand/bin/arssyscr -I archive -l
   ```

   Where `archive` is the name of the Content Manager OnDemand instance.
3. Press the Enter key.
4. Content Manager OnDemand creates the tables that support the system logging facility. This process may take several minutes.

   The ARSSYSCR program generates a series of messages. For example:

```
arssyscr: Updating ARSSERVR.ARSSYS
arssyscr: Adding to ARSSERVR.ARSAG with Storage Set Id = 0
arssyscr: Adding to ARSSERVR.ARSAGPERMS
arssyscr: Adding to ARSSERVR.ARSAGFLD
arssyscr: Adding to ARSSERVR.ARSAGFLDALIAS
arssyscr: Adding to ARSSERVR.ARSAG2FOL
arssyscr: Adding to ARSSERVR.ARSAPPUSR
arssyscr: Adding to ARSSERVR.ARSAPP
arssyscr: Adding to ARSSERVR.ARSFOL
arssyscr: Adding to ARSSERVR.ARSFOLPERMS
arssyscr: Adding to ARSSERVR.ARSFOLFLD
arssyscr: Adding to ARSSERVR.ARSFOLFLDUSR
arssyscr: Creation of System Log information was successful
```

Initialize the system load logging facility

OnDemand provides a logging facility to enable tracking OnDemand loading activity. When you enable load logging, OnDemand stores the messages that are generated by OnDemand load programs in the system load log. You use one of the Content Manager OnDemand client programs to search for and filter messages by load date, application group name, load ID, input file name, and other parameters.

Before you start OnDemand for the first time, you must initialize the system load logging facility:

1. Log in to the server as the `root` user.
2. Type the following command at the prompt:
   ```
   /opt/ondemand/bin/arssyscr -I archive  -a
   ```
3. Press the Enter key.
4. Content Manager OnDemand creates the tables that support the system load logging facility. This process may take several minutes.

   The ARSSYSCR program generates a series of messages. For example:
   ```
   arssyscr: Updating ARSSERVR.ARSSYS
   arssyscr: Adding to ARSSERVR.ARSAG with Storage Set Id = 0
   arssyscr: Adding to ARSSERVR.ARSAGPERMS
   arssyscr: Adding to ARSSERVR.ARSAGFLD
   arssyscr: Adding to ARSSERVR.ARSAGFLDALIAS
   arssyscr: Adding to ARSSERVR.ARSAG2FOL
   arssyscr: Adding to ARSSERVR.ARSAPPUSR
   arssyscr: Adding to ARSSERVR.ARSAPP
   arssyscr: Adding to ARSSERVR.ARSFOL
   arssyscr: Adding to ARSSERVR.ARSFOLPERMS
   arssyscr: Adding to ARSSERVR.ARSFOLFLD
   arssyscr: Adding to ARSSERVR.ARSFOLFLDUSR
   arssyscr: Creation of System Load information was successful
   ```

Initializing the system migration facility

The system migration facility is required only by customers who plan to migrate application group index data from the database to archive storage.

After you have successfully created the instance of Content Manager OnDemand, run the ARSSYSCR program to initialize the Content Manager OnDemand system migration facility for the instance.

To initialize the Content Manager OnDemand system migration facility:

1. Log in to the server as the `root` user.
2. Type the following command at the prompt:
   ```
   /opt/ondemand/bin/arssyscr -I archive -a
   ```

   Where `archive` is the name of the Content Manager OnDemand instance.
3. Press the Enter key.
4. Content Manager OnDemand creates the tables that support the system migration facility. This process may take several minutes.

   The ARSSYSCR program generates a series of messages. For example:
   ```
   arssyscr: Updating ARSSERVR.ARSSYS
   arssyscr: Adding to ARSSERVR.ARSAG with Storage Set Id = 0
   arssyscr: Adding to ARSSERVR.ARSAGPERMS
   arssyscr: Adding to ARSSERVR.ARSAGFLD
   arssyscr: Adding to ARSSERVR.ARSAGFLDALIAS
   ```

```
arssyscr: Adding to ARSSERVR.ARSAG2FOL
arssyscr: Adding to ARSSERVR.ARSAPPUSR
arssyscr: Adding to ARSSERVR.ARSAPP
arssyscr: Adding to ARSSERVR.ARSFOL
arssyscr: Adding to ARSSERVR.ARSFOLPERMS
arssyscr: Adding to ARSSERVR.ARSFOLFLD
arssyscr: Adding to ARSSERVR.ARSFOLFLDUSR
arssyscr: Creation of System Migration information was successful
```

Chapter 34. Automating instance operations on Solaris

This section describes how to use operating system facilities to automatically start or schedule instance operations.

You can automatically start these instance operations whenever the system is initialized:

__ 1. Start the database on the library server
__ 2. Start the instance on the library server
__ 3. Start the instance on an object server
__ 4. Start the data loading programs

You can schedule these instance operations to begin automatically on a regular schedule:

__ 1. Schedule application group maintenance on the library server
__ 2. Schedule application group maintenance on an object server
__ 3. Schedule system table maintenance
__ 4. Schedule a backup of the Content Manager OnDemand database
__ 5. Schedule a backup of the Tivoli Storage Manager database

Starting the database

You can start the database on the library server using the ARSDB program:

```
su - archive "-c /opt/ondemand/bin/arsdb -gkv"  >> /tmp/arsdb.log 2>&1
```

Alternatively, you can start DB2 manually with the db2start command.

The following example shows an INIT record to automatically start the database when the operating system is initialized on the library server:

```
ars2:2:wait:su - archive "-c /opt/ondemand/bin/arsdb -gkv"  >> /tmp/arsdb.log 2>&1
```

Important: If the DB2 installation program adds a record to the INIT facility to automatically start the DB2 services, make sure that you place the ARSDB record after the record that starts the DB2 services.

Starting the instance on the library server

You must start an instance before clients can connect to the server or the database for the instance.

The ARSSOCKD program controls an Content Manager OnDemand instance on the library server. The ARSSOCKD program runs on the library server. The data loading program (ARSLOAD) and the maintenance programs (such as ARSADMIN and ARSMAINT) will fail and clients will be unable to connect to the instance if the ARSSOCKD program is not running on the library server.

To manually start the archive instance, you can enter the command:

```
/opt/ondemand/bin/arssockd archive
```

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The following example shows an INIT record that automatically starts the instance named `archive` when the operating system is initialized on the library server:

```
ars3:2:once:/opt/ondemand/bin/arssockd archive
```

Starting the instance on an object server

The ARSOBJD program controls an Content Manager OnDemand instance on an object server. Content Manager OnDemand programs that work with an instance on an object server will fail if the ARSOBJD program is not running on the object server.

The ARSOBJD program should be started only on object servers that are running on some other workstation than the library server.

To manually start the archive instance, you can enter the command:

```
/opt/ondemand/bin/arsobjd archive
```

The following example shows an INIT record that automatically starts the instance named `archive` when the operating system is initialized on an object server:

```
ars4:2:once:/opt/ondemand/bin/arsobjd archive
```

Starting the data loading programs

This section describes how to use operating system facilities to automatically start the Content Manager OnDemand data loading programs.

The Content Manager OnDemand data loading programs are:

- ARSJESD, to receive data from z/OS systems and store the data in file systems on the server
- ARSLOAD, to create index data and load the data into the system

ARSJESD

The ARSJESD program is the Content Manager OnDemand program that monitors a TCP/IP port for data transmitted to the Content Manager OnDemand server by Download for the z/OS feature from a host system. The ARSJESD program receives the data transmitted by Download for the z/OS feature and stores the data in file systems on the server. See *PSF for z/OS: Download for z/OS* for details about configuring and operating Download for z/OS feature on the host system.

The following example shows an INIT record that automatically starts the ARSJESD program during operating system initialization:

```
ars5:2:once:/opt/ondemand/bin/arsjesd -p 6001 -d /arsacif/acif1
-d /arsacif/acif2 -d /arsacif/acif3 >> /tmp/arsjesd.log 2>&1
```

In the example, the ARSJESD program monitors TCP/IP port number `6001` and stores transmitted data in the specified directories. The ARSJESD program writes output messages to the `arsjesd.log` file in the `/tmp` directory.

You must verify the TCP/IP port number that the ARSJESD program monitors. Replace the string `6001` with the port number that is valid on the server that you are configuring. The ARSJESD program and Download on the z/OS system must specify the same port number. The port number that the ARSJESD program monitors is different than the TCP/IP port number that the Content Manager OnDemand server uses to communicate with clients.

You must verify the names of the directories in which the ARSJESD program can put the data. Replace the strings `/arsacif/acif1`, `/arsacif/acif2`, and `/arsacif/acif3` with the names of directories that are valid on the server that you are configuring.

See the ARSJESD command reference in the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the options and parameters that you can specify.

ARSLOAD

The ARSLOAD program is the main Content Manager OnDemand data loading and indexing program. You can configure the ARSLOAD program to monitor specific file systems for report data downloaded from other systems. If the data needs to be indexed, then the ARSLOAD program calls the indexing program that is specified in the Content Manager OnDemand application. The ARSLOAD program then works with the database manager to load the index data into the database and works with the storage manager to load the report data and resources on to storage volumes.

The Content Manager OnDemand instance (started by using ARSSOCKD or ARSOBJD) must be running, otherwise the ARSLOAD program will fail.

Configuring the ARSLOAD.CFG file

To load a report into the system with the ARSLOAD program, you must specify a userid that has administrator authority for the application group into which you want to load the data. You must also specify a password for the userid. There are several ways that you can specify the userid and password:

- Specify the `-u` and `-p` parameters each time that you run the ARSLOAD program.
- Specify the `-U` parameter and name an input file each time that you run the ARSLOAD program. The input file contains the userid and password.
- Configure the ARSLOAD.CFG file with a system administrator userid and password. The values in the ARSLOAD.CFG file will be used when you run ARSLOAD program, unless you specify otherwise with the `-u` and `-p` parameters or the `-U` parameter. **Important:** Any time that you change the specified user's password in Content Manager OnDemand, remember to change it in the ARSLOAD.CFG file; otherwise the load will fail. The ARSLOAD program can accept an expired password. However, the ARSLOAD program will fail if you specify an incorrect password.

Follow these steps to configure the ARSLOAD.CFG file with a system administrator userid and password.

1. Log on as the `root` user.
2. Change to the `/opt/ondemand/config` directory.
3. Make a copy of the ARSLOAD.CFG file that was supplied by IBM:

   ```
   cp arsload.cfg arsload.cfg.orig
   ```

   Make changes to the ARSLOAD.CFG file with a standard text editor such as vi.
4. Change the userid and password. Table 15 on page 220 lists the values in the ARSLOAD.CFG file that was supplied by IBM.

Table 15. ARSLOAD.CFG file

Variable	Meaning	Default
USERID	Content Manager OnDemand system administrator user. A system administrator user can load data into any application group defined to Content Manager OnDemand.	admin
PASSWD	Password for the Content Manager OnDemand system administrator user	

5. Save your changes and exit the editor.
6. Set the user file permissions so that only the `root` user can access the ARSLOAD.CFG file. Clear the group and other file permissions. Set the Read Only user file permission for the ARSLOAD.CFG file. The permissions should appear as follows:

```
-r-------- 1 root system 1832 Sep 02 13:13 arsload.cfg
```

Automating the ARSLOAD program

The following example shows an INIT record that automatically starts the ARSLOAD program for the instance named `archive` during operating system initialization:

```
ars6:2:once:/opt/ondemand/bin/arsload -v -c /arsacif/acif4 -d /arsacif/acif1
-d /arsacif/acif2 -d /arsacif/acif3 -I archive
```

In the example, the ARSLOAD program checks for input files in the specified directories every ten minutes (the default polling time). An input file must have a file type of .ARD or .PDF to initiate the load process. If an input file needs to be indexed, the ARSLOAD program stores the index data in the specified index directory.

You must verify the names of the directories. Replace the strings `/arsacif/acif1`, `/arsacif/acif2`, `/arsacif/acif3`, and `/arsacif/acif4` with the names of directories that are valid on the server that you are configuring.

The example uses the Content Manager OnDemand userid and password that was specified in the ARSLOAD.CFG file. See "Configuring the ARSLOAD.CFG file" on page 219 for information about specifying the userid and password in the ARSLOAD.CFG file.

After indexing the data, the ARSLOAD program deletes the input files, unless you specify otherwise. Any output or error messages that are generated by the ARSLOAD program are written to `stdout`, `stderr`, and the system log.

See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSLOAD program.

Scheduling application group maintenance on the library server

You can run the ARSMAINT program on the library server to maintain application group data in the database and cache storage. See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSMAINT program.

The instance must be started by the ARSSOCKD program, otherwise the ARSMAINT program will fail.

The following is an example of a CRON record that automatically starts the ARSMAINT program every day at 4 am for the instance named `archive`. The ARSMAINT program will migrate and delete application group index data, optimize application group index data, copy report data from cache storage to archive storage, delete report data from cache storage, and inspect and verify the cache file systems. This format of the command is typically used for a library/object server with Tivoli Storage Manager on one workstation.

```
00 4 * * * /opt/ondemand/bin/arsmaint -cdeimrsv -I archive
```

Scheduling application group maintenance on an object server

You can run the ARSMAINT program on an object server to maintain application group data in cache storage. See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSMAINT program.

The instance must be started by the ARSOBJD program, otherwise the ARSMAINT program will fail.

The following is an example of a CRON record that automatically starts the ARSMAINT program every day at 4 am for the instance named `archive`. The ARSMAINT program will maintain application group data in cache storage, including copying report data to archive storage. This format of the command is typically used for an object server with Tivoli Storage Manager on some other workstation than the library server.

```
00 4 * * * /opt/ondemand/bin/arsmaint -cmsv
```

Scheduling system table maintenance

You can run the ARSDB program to maintain the Content Manager OnDemand system tables on the library server. See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSDB program.

The instance must be started by the ARSSOCKD program, otherwise the ARSDB program will fail.

The following is an example of a CRON record that automatically starts the ARSDB program to maintain the Content Manager OnDemand system tables for the instance named `archive`. The ARSDB program will run twice a month, on the 7th and 14th of each month, beginning at 5 am.

```
00 5 7,14 * * /opt/ondemand/bin/arsdb -mv -I archive >> /tmp/arsdb.log 2>&1
```

Scheduling the Content Manager OnDemand database backup

You can use the ARSDB program to create a backup image of the Content Manager OnDemand database. The ARSDB program supports table space backups and full database backups, online backups and offline backups, and the use of Tivoli Storage Manager to maintain the backup image files. See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSDB program.

The following is an example of a CRON record that automatically starts the ARSDB program to create a full online backup image of the Content Manager OnDemand database for the instance named `archive` every day beginning at 5:30

am. The backup image is written to a tape in the device /dev/rmt0. A tape must be mounted in the device before the ARSDB program begins.

```
30 5 * * * /opt/ondemand/bin/arsdb -v -z /dev/rmt0 -I archive >> /tmp/arsdb.log 2>&1
```

Chapter 35. Your next step on Solaris

After you have installed the Content Manager OnDemand and related software on the system, configured the instance of Content Manager OnDemand, created the instance, and automated instance operations, you are now ready to verify the installation on Content Manager OnDemand. See Chapter 55, “Verifying the installation,” on page 349.

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Part 5. Installing Content Manager OnDemand on Linux servers

This part of the *IBM Content Manager OnDemand for Multiplatforms: Installation and Configuration Guide* explains how to install and configure Content Manager OnDemand on a Linux server and how to install and configure related software to work with Content Manager OnDemand. There are five basic phases to the installation, which are illustrated in Figure 17:

- Preparing for the installation
- Installing and configuring Content Manager OnDemand and related software
- Verifying the installation
- Preparing the system for use
- Adding optional software

You will find checklists for each of these phases in Chapter 36, "Checklist for installation on Linux," on page 227.

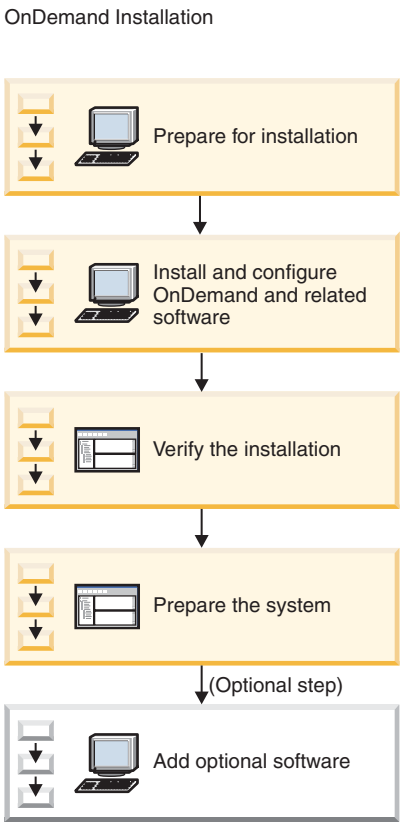

Figure 17. Installing Content Manager OnDemand on a Linux server

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Chapter 36. Checklist for installation on Linux

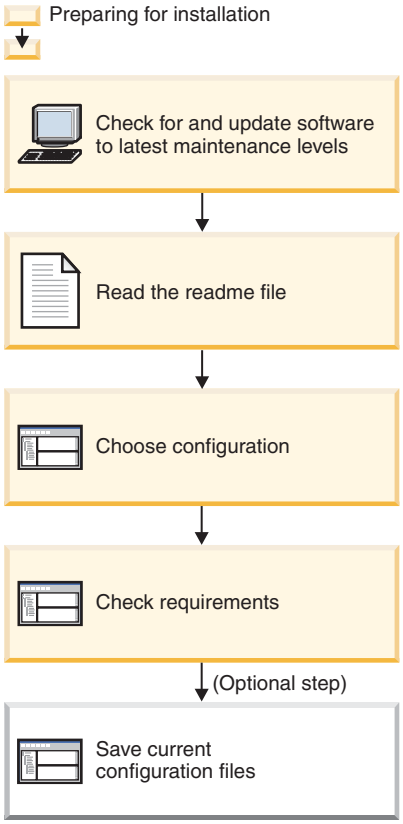

Figure 18. Pre-installation tasks

Before beginning the installation, you should complete the following tasks:

__ 1. Contact the IBM Support Center for the latest maintenance levels of DB2, Content Manager OnDemand, and optionally, Tivoli Storage Manager and IBM Infoprint Manager (Infoprint).

__ 2. Obtain a copy of the latest Content Manager OnDemand README file. Print and read the entire file before you begin.

__ 3. Check the Content Manager OnDemand prerequisites and verify the required and optional hardware and software products (see Chapter 37, "Linux server requirements," on page 233).

__ 4. Check the hardware and software requirements for all system components and features. See http://www.ibm.com/support/docview.wss?rs=129 &uid=swg27016455 or search for 7016455 at http://www.ibm.com/.

__ 5. Determine the type of system configuration that you need to install (see Chapter 2, "Choosing a configuration," on page 5).

__ 6. If you are upgrading to a new version of Content Manager OnDemand, save the configuration files used by the system (see Chapter 38, "Saving configuration files on Linux," on page 235).

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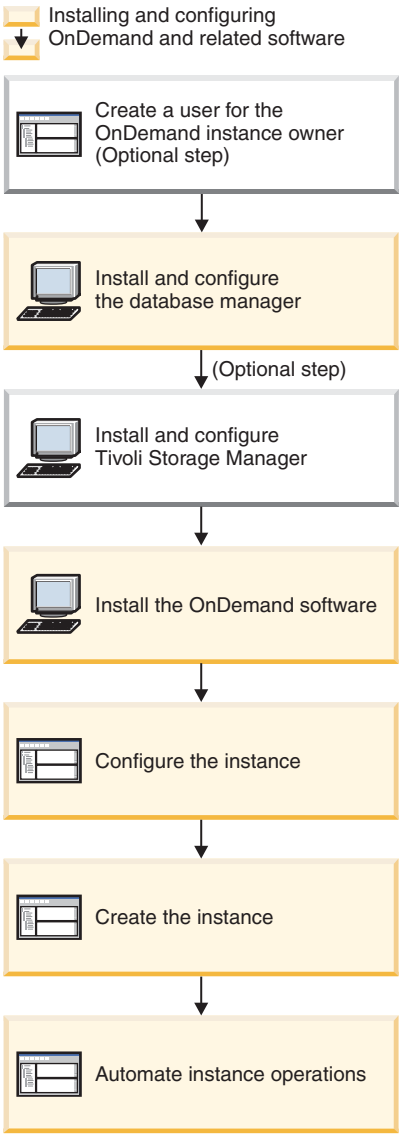

Figure 19. Installing Content Manager OnDemand and related software

Configuring an Content Manager OnDemand system typically requires that you do the following:

__ 1. (Optional) Create a user account for the Content Manager OnDemand instance owner (see Chapter 39, "Creating a user for the Content Manager OnDemand instance owner on Linux," on page 237).

__ 2. Install and configure the database manager product on the library server (see Chapter 40, "Installing the database manager on Linux," on page 239).

__ 3. If you plan to maintain data in archive storage, install and configure Tivoli Storage Manager on the library server or on each object server that will be used to maintain data in archive storage (see Chapter 41, "Installing and configuring Tivoli Storage Manager on Linux," on page 243).

__ 4. Install the Content Manager OnDemand software on each workstation that is part of the Content Manager OnDemand system (see Chapter 42, "Installing the Content Manager OnDemand software on Linux," on page 263).

__ 5. Configure an instance of Content Manager OnDemand on each workstation that is part of the Content Manager OnDemand system (see Chapter 43, "Configuring instances on Linux," on page 265). This step includes the following:

   __ a. Specify the instance in the ARS.INI file (see "Specifying the instance in the ARS.INI file" on page 266)

   __ b. Specify the ARS.CFG file for the instance (see "Specifying the ARS.CFG file for the instance" on page 268)

   __ c. Specify the ARS.DBFS file for the instance (see "Specifying the ARS.DBFS file for the instance" on page 278)

   __ d. Specify the ARS.CACHE file for the instance (see "Specifying the ARS.CACHE file for the instance" on page 279)

__ 6. Create the instance of Content Manager OnDemand (see Chapter 44, "Creating an instance of Content Manager OnDemand on Linux," on page 283). This step includes the following:

   __ a. Specify permissions for the database directories (see "Specifying permissions for the database directories" on page 283)

   __ b. Create the instance by running the ARSDB program (see "Creating the instance" on page 284)

   __ c. Initialize the system logging facility by running the ARSSYSCR program (see "Initializing the system logging facility" on page 285)

   __ d. (Optional) Initialize the system migration facility by running the ARSSYSCR program (see "Initializing the system migration facility" on page 286)

__ 7. Automate instance operations (see Chapter 45, "Automating instance operations on Linux," on page 289). This step includes the following:

   __ a. Start the database on the library server (see "Starting the database" on page 289)

   __ b. Start the instance on the library server (see "Starting the instance on the library server" on page 289)

   __ c. Start the instance on an object server (see "Starting the instance on an object server" on page 290)

   __ d. Start the data loading programs (see "Starting the data loading programs" on page 290)

   __ e. Schedule application group maintenance on the library server (see "Scheduling application group maintenance on the library server" on page 292)

   __ f. Schedule application group maintenance on an object server (see "Scheduling application group maintenance on an object server" on page 293)

   __ g. Schedule system table maintenance (see "Scheduling system table maintenance" on page 293)

   __ h. Schedule a backup of the Content Manager OnDemand database (see "Scheduling the Content Manager OnDemand database backup" on page 293)

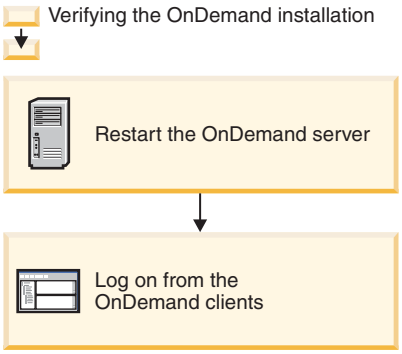

Figure 20. Verifying the installation

Verify the installation of Content Manager OnDemand (see Chapter 55, "Verifying the installation," on page 349):

__ 1. After installing and configuring each Content Manager OnDemand server, restart the system. The operating system reinitializes and starts the services required by Content Manager OnDemand.

__ 2. Log in to the library server with an Content Manager OnDemand client program. (To access the system, you must install at least one of the Content Manager OnDemand client programs on a PC running Microsoft Windows. See the *IBM Content Manager OnDemand: Client Installation Guide* for installation information about the Content Manager OnDemand client or the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for installation information about the Content Manager OnDemand administrative client.)

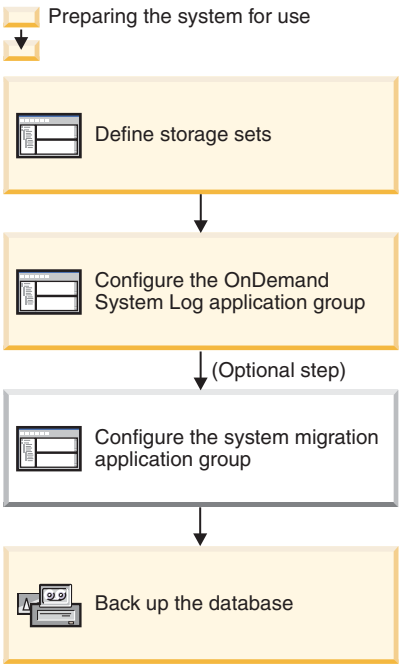

Figure 21. Preparing the system for use

Prepare the system for use:

__ 1. Define storage sets (see Chapter 56, “Defining storage sets,” on page 351). Before you add application groups or load data into the system, you must define storage sets.

__ 2. Configure the System Log application group (see Chapter 57, “Configuring the System Log application group,” on page 353). Before you define reports to the system, load data, or let users access the system, you should configure the System Log application group.

__ 3. If you plan to migrate index data to archive storage, configure the System Migration application group (see Chapter 59, “Configuring the System Migration application group,” on page 361).

__ 4. Back up the databases (see Chapter 60, “Backing up the Content Manager OnDemand database,” on page 363 and “Backing up the Tivoli Storage Manager database and critical files” on page 259). After configuring the system, you should create a full backup image of the Content Manager OnDemand database and the Tivoli Storage Manager database.

Installing and configuring optional software:

1. If you plan to use Download for the z/OS feature (Download) to transmit data from z/OS systems to Content Manager OnDemand servers, then you must install and configure Download. Follow the instructions in *PSF for z/OS: Download for z/OS* to plan, install, configure, and verify the installation of the Download software. Then configure Download on each Content Manager OnDemand server. Complete the following tasks:
   __ a. Obtain a copy of *PSF for z/OS: Download for z/OS*.
   __ b. Check the prerequisites and verify the z/OS and TCP/IP software levels for Download.
   __ c. Install and configure the Download software.
   __ d. Configure Download on each Content Manager OnDemand server that will receive datasets from an z/OS system. (see “Starting the data loading programs” on page 290).
2. If you plan to reprint documents using the Content Manager OnDemand server print function, you must install Infoprint on a workstation that belongs to the same network as the Content Manager OnDemand library server. Follow the instructions in the Infoprint documentation for your operating system to plan, install, configure, and verify the installation of the Infoprint software. Then configure the server print function on the library server. Complete the following tasks:
   __ a. Obtain a copy of the Infoprint documentation for the server operating system.
   __ b. Install and configure Infoprint.
   __ c. Verify that all of the resources and fonts that your organization requires to reprint the reports that you plan to store in Content Manager OnDemand are installed on the Infoprint server.
   __ d. Define the print queues and devices that Infoprint uses to manage the Content Manager OnDemand server print environment.
   __ e. Obtain the TCP/IP host name or IP address of the Infoprint server.
   __ f. On the library server, edit the ARSPRT file and insert the host name or IP address of the Infoprint server. The ARSPRT file can be found in the `/opt/ondemand/bin` directory.
   __ g. Define a server printer on the Content Manager OnDemand library server with the administrative client.

3. If you need to customize and enhance the standard functionality within the product, see the user exit documentation in the Appendix of this publication. A user exit is a point during processing that enables you to run a user-written program and return control of processing after your user-written program ends. OnDemand provides the following user exit points:
   __ a. Download user exit
   __ b. Report specifications archive definition user exit
   __ c. Retrieval preview user exit
   __ d. Security user exit
   __ e. System log user exit
   __ f. Table space creation user exit

Chapter 37. Linux server requirements

The exact hardware and software configuration that you need for Content Manager OnDemand to support your organization depends on the volume of data that you plan to maintain on the system, the number of concurrent users that the system must support, the backup and recovery requirements of your organization, and the performance levels that the system must meet. At a minimum, you need one processor for a standard OnDemand library/object server.

Restriction: Linux is designed as a server-only platform, and requires Windows to run the system administration client.

For all Linux server requirements, see http://www.ibm.com/support/docview.wss?rs=129&uid=swg27016455 or search for 7016455 at http://www.ibm.com/.

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Chapter 38. Saving configuration files on Linux

When you install software on an Content Manager OnDemand server, the installation programs copy program files, configuration files, and other types of files from the distribution media to directories on the server. When you configure a server to meet the specific requirements of your environment, you make changes to configuration files and you might customize other files, such as user-defined files and font initialization files.

Before you upgrade to a new version of Content Manager OnDemand or upgrade the database manager software or other software related to Content Manager OnDemand, you should save a copy of the files listed in this section. You can save a copy of the files in a temporary directory, such as `/tmp`.

After you upgrade the software, you will probably need to reconfigure the files for your environment. To reconfigure the files, you can restore the copies of the files that you saved or make changes to the updated files, using the configuration information in the files that you saved as a guide.

Content Manager OnDemand files

Save a copy of the Content Manager OnDemand configuration files listed in Table 16.

Table 16. Content Manager OnDemand configuration files to save

File	Location	Purpose
ars.cache	/opt/ondemand/config	Define cache storage file systems. Changes described in “Specifying the ARS.CACHE file for the instance” on page 279.
ars.cfg	/opt/ondemand/config	Content Manager OnDemand server configuration file. Changes described in “Specifying the ARS.CFG file for the instance” on page 268.
ars.dbfs	/opt/ondemand/config	Define DB2 table space file systems. Changes described in “Specifying the ARS.DBFS file for the instance” on page 278.
ars.ini	/opt/ondemand/config	Configure Content Manager OnDemand instances. Changes described in “Specifying the instance in the ARS.INI file” on page 266.
arsload.cfg	/opt/ondemand/config	Define a default Content Manager OnDemand system administrator userid and password for the ARSLOAD program. Changes described in “Configuring the ARSLOAD.CFG file” on page 291.

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Table 16. Content Manager OnDemand configuration files to save (continued)

File	Location	Purpose
arslog	/opt/ondemand/bin	The System Log user exit program. Described in Appendix H, "System log user exit," on page 389.
arsprt	/opt/ondemand/bin	Server print program.

Tivoli Storage Manager files

If you use Tivoli Storage Manager to maintain OnDemand data in archive storage, save a copy of the Tivoli Storage Manager configuration files listed in Table 17.

Table 17. Tivoli Storage Manager configuration files to save

File	Location	Purpose
dsmserv.dsk	/opt/tivoli/tsm/server/bin	Locations of the Tivoli Storage Manager database and recovery logs
history.dev	/opt/tivoli/tsm/server/bin	Tivoli Storage Manager device history file
history.vol	/opt/tivoli/tsm/server/bin	Tivoli Storage Manager storage volume history file
dsmserv.opt	/opt/tivoli/tsm/server/bin	Tivoli Storage Manager server options file
dsm.sys	/opt/tivoli/tsm/server/bin	Tivoli Storage Manager servers file
dsm.opt	/opt/tivoli/tsm/client/ba/bin	Tivoli Storage Manager client options file
dsm.db2.opt	The location for this file is user-defined and specified by the ARS_DB2_TSM_CONFIG parameter in ars.cfg.	Tivoli Storage Manager client options file for maintaining DB2 archived log files and backup image files
dsm.sys	/usr/tivoli/tsm/client/api/bin64	Tivoli Storage Manager client system options file

Chapter 39. Creating a user for the Content Manager OnDemand instance owner on Linux

Note: This publication was written assuming that OnDemand instances will be run under the root user. The information in this section is provided for customers who need to run instances of Content Manager OnDemand under a user other than the root user. Those customers should print the information in this section and have it available to assist them as they continue with the installation and configuration process.

New installations (instances) of Content Manager OnDemand can be configured to run under a user other than the root user. If you plan to run an instance under a user other than root, you must do the following:

- Create the user for the Content Manager OnDemand instance owner
- Set permissions for the cache storage file systems
- Set permissions for the Content Manager OnDemand configuration and script files
- Give the instance owner permission to write to the system console
- Specify the instance owner in the ARS.INI file

If you plan to run a distributed library/object server system, with one or more object servers on different workstations or nodes than the library server, then you should also configure Content Manager OnDemand on the object servers.

Configuring the library server

Create a user that is a member of the database owner's group. This group has administrator authority for the database and the database file systems. Give the Content Manager OnDemand instance owner the following authorities and permissions:

- Administrator authority for the database. You can do this by adding the Content Manager OnDemand instance owner to the database owner's group.
- Ownership of the cache storage file systems that are listed in the ARS.CACHE file. You can do this by running the Change Owner command for each file system that is listed in the ARS.CACHE file and specifying the user and group for the Content Manager OnDemand instance owner.
- Permission to read the Content Manager OnDemand configuration files. Make sure that the Content Manager OnDemand instance owner has permission to read the following files:
  - ARS.CACHE
  - ARS.CFG
  - ARS.DBFS
  - ARS.INI
- Permission to read and execute the Content Manager OnDemand script files. Make sure that the Content Manager OnDemand instance owner has permission to read and execute the following files:
  - ARSLOG
  - ARSPRT

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- Permission to write to the console. Make sure that the Content Manager OnDemand instance owner has permission to write to the system console.

Important: You cannot set the permissions to read and execute OnDemand files until you complete installation of the Content Manager OnDemand software. See Chapter 42, "Installing the Content Manager OnDemand software on Linux," on page 263 for instructions on installing the Content Manager OnDemand software on Linux.

You should specify a different user for each instance that you create. This allows for easier error recovery if a system error occurs.

Configuring an object server

If you plan to run a distributed library/object server system, with one or more object servers on different workstations or nodes than the library server, then you should also configure Content Manager OnDemand on each of the object servers.

To configure Content Manager OnDemand on the object servers, do the following:

- Create a group and user for the Content Manager OnDemand instance owner.
- Give ownership of the cache storage file systems listed in the ARS.CACHE file to the group and user for the Content Manager OnDemand instance owner.
- Give permission to read the following files to the Content Manager OnDemand instance owner:
  - ARS.CACHE
  - ARS.CFG
  - ARS.INI
- Give permission to write to the console to the Content Manager OnDemand instance owner.

Chapter 40. Installing the database manager on Linux

The Content Manager OnDemand library server maintains system information and user-defined index data in a relational database. You can use DB2 Universal Database or Oracle as the database manager. For either product, see the product documentation for complete installation instructions. This section provides installation and configuration information specific to Content Manager OnDemand for DB2 and Oracle.

Important: `db2setup` does not work on RedHat or SuSE Linux due to a java problem. For more information, see `http://www.ibm.com/support/docview.wss?uid=swg21169658` for a workaround.

Installing DB2

You must install DB2 or Oracle on the Content Manager OnDemand library server. This section describes how to install DB2. See "Installing Oracle" on page 241 for instructions on installing Oracle.

The DB2 Universal Database Enterprise Edition program CD-ROMs are provided with the Content Manager OnDemand program package. The DB2 technical information is available in HTML and PDF formats on separate CD-ROMs. The README file explains how to locate the information that you need. Follow the instructions in the *IBM DB2 Universal Database Quick Beginnings for DB2 Servers* to plan, install, configure, and verify the installation of DB2.

Installation notes

To install DB2 on the library server:

1. Install DB2 Universal Database Enterprise Edition.
2. When prompted, select Typical as the installation type, to install all DB2 components required to support OnDemand. You can take most default options (unless you have specific requirements of your own).
3. Create the DB2 instance for Content Manager OnDemand when you install DB2. Use the following values:

Parameter	Value
Instance Name or User	archive
Group Name	gname **Note:** The group must have SYSADM authority, and its name must be unique. The group name on your database might be something other than 'gname'. Ask your database administrator if you do not know the group name for your database.
Home Directory	/home/archive
Auto start DB2 instance at boot time	no
Create a sample database for DB2 instance	no

4. After you install the software from the CD-ROM, apply the latest service update for DB2. You can obtain the latest service update from IBM service at

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ftp://service.software.ibm.com/ps/products/db2/fixes. From the fixes directory, go to the directory for your language. Then go to the directory for your operating system and go to the fix pack directory. Print the README file. Follow the instructions in the README file to apply the service update. **Note:** After installing a service update, you might need to update your database instances (for example, `archive`). See the DB2 README for details.

Configuration notes

After installing DB2 on the library server:

1. Add the user that owns the Content Manager OnDemand instance to the DB2 instance owner's group.

   For example, if the DB2 instance owner's group is `sysadm1` and the Content Manager OnDemand instance owner is `root`, specified by the SRVR_INSTANCE_OWNER parameter in the ARS.INI, add the `root` user to the sysadm1 group.
2. Create links for the DB2 files. For example:

   ```
   /opt/IBM/db2/V9.5/cfg
   ```

   See the instructions in *IBM DB2 Universal Database Quick Beginnings for DB2 Servers* to create links to the DB2 files.
3. Optionally create a table space for the Content Manager OnDemand system tables. If you plan to store the system tables in their own table space, specify the name of the table space on the ARS_DB_TABLESPACE parameter in the ARS.CFG file. See "Specifying the ARS.CFG file for the instance" on page 268.
4. Verify the value of the DB2INSTANCE parameter in the ARS.CFG file. The value of the DB2INSTANCE parameter is case-sensitive. This value must specify the name of the DB2 instance that you created for Content Manager OnDemand. The default value is `archive`. See "Specifying the ARS.CFG file for the instance" on page 268.

Setting the DB2 operating environment

If you plan to use DB2 commands to work with the Content Manager OnDemand database, you must execute a script file to set the DB2 operating environment before you start the DB2 command line interface. For Bourne or Korn shell users, run the DB2PROFILE script file. For C shell users, run the DB2CSHRC script file.

The script files can be found in the `INSTHOME/sqllib` directory, where `INSTHOME` is the home directory of the instance owner. If you installed and configured the system using the suggested defaults, the instance owner is `archive` and the script files reside in the `sqllib` directory under `/home/archive`.

You should add the script file to your `.profile` or `.login` file. For example:

```
. /export/home/archive/sqllib/db2profile
```

After executing the script file, you can start the DB2 command line interface and connect to the database. For example:

```
$>db2
 .
 .
 .
```

To stop the DB2 command line interface, enter:

```
db2 =>quit
```

Installing Oracle

You must install either DB2 or Oracle on the Content Manager OnDemand library server. This section describes how to install Oracle. See “Installing DB2” on page 239 for instructions on installing DB2.

See your Oracle documentation for installation instructions. After you install the Oracle software, continue with “Configuration notes.”

Configuration notes

After you verify the installation of the Oracle software on the library server, you must configure it to work with Content Manager OnDemand. To configure Oracle to work with Content Manager OnDemand:

1. Configure login processing.

   the Content Manager OnDemand processes run under the UID of the root user. Verify the values of these parameters in the ARS.CFG file (see “Specifying the ARS.CFG file for the instance” on page 268).

   ARS_ORACLE_USERID
   The userid of the Content Manager OnDemand user in Oracle (root).

   ARS_ORACLE_PASSWD
   The password for the Content Manager OnDemand user (root) in Oracle.

2. Create the database.

   Create the Content Manager OnDemand database using the Oracle utilities. The name that you specify for the database should match the value that you specify for the SRVR_INSTANCE parameter in the ARS.INI file. See “Specifying the instance in the ARS.INI file” on page 266.

3. Create the userid of the Content Manager OnDemand instance owner in Oracle.

   This user will own all tables that Content Manager OnDemand creates. If you want to have a default Oracle table space for the user, specify the table space when you create the user.

   To create the Content Manager OnDemand user in Oracle, type:

   ```
   CREATE USER root IDENTIFIED BY xxxxxxxx ;
   GRANT dba to root ;
   ```

   `root` is the value of the ARS_ORACLE_USERID parameter in the ARS.CFG file and `xxxxxxxx` is the value of the ARS_ORACLE_PASSWD parameter in the ARS.CFG file (see “Specifying the ARS.CFG file for the instance” on page 268).

4. Specify the base Oracle installation directory on the ARS_ORACLE_HOME parameter in the ARS.CFG file. The default value is `/oracle`. See “Specifying the ARS.CFG file for the instance” on page 268.

5. Specify Oracle as the database manager on the ARS_DB_ENGINE parameter in the ARS.CFG file. See “Specifying the ARS.CFG file for the instance” on page 268.

6. Optionally create a table space for the Content Manager OnDemand system tables. If you plan to store the system tables in their own table space, specify the name of the table space on the ARS_DB_TABLESPACE parameter in the ARS.CFG file. See “Specifying the ARS.CFG file for the instance” on page 268.

Chapter 41. Installing and configuring Tivoli Storage Manager on Linux

Important: This section is for reference only. While optical libraries are used in the example, they are not supported on Linux.

Tivoli Storage Manager can be used with Content Manager OnDemand object servers to store report data on devices that are supported by Tivoli Storage Manager. Devices supported by Tivoli Storage Manager include optical libraries and tape media. The use of Tivoli Storage Manager is optional and is needed only if you want to provide long-term storage for your reports on devices other than the fixed disks attached to the object server. You can also use Tivoli Storage Manager facilities to maintain DB2 archived log files and backup image files.

You will need the *IBM Tivoli Storage Manager for Sun Solaris: Quick Start* publication to install and configure Tivoli Storage Manager. HTML and PDF versions of Tivoli Storage Manager publications, including the *Quick Start*, are available at http://publib.boulder.ibm.com/tividd/td/tdprodlist.html.

Prerequisites

OnDemand supports Tivoli Storage Manager in the following configurations:

- Standard library/object server plus Tivoli Storage Manager on one workstation. Install the Server, Clients, 64-bit Client API, Device Support Runtime, Server Runtime, and Licenses packages on the workstation.
- Library server only (where Tivoli Storage Manager resides on some other workstation than the library server). Install the 64-bit Clients and 64-bit API packages on the library server workstation.
- Object server plus Tivoli Storage Manager on some other workstation than the library server. Install the Server, 64-bit Clients, 64-bit API, Device Support Runtime, Server Runtime, and Licenses packages on the object server workstation.

OnDemand uses the Tivoli Storage Manager API client to store data into the Tivoli Storage Manager server. The Tivoli Storage Manager server is managed and administered independently of Content Manager OnDemand. The Tivoli Storage Manager administrator must ensure that the following conditions are met:

- All the normal requirements for Tivoli Storage Manager storage are monitored and managed accordingly
- All required Tivoli Storage Manager policies, management classes, storage pools, and volumes are defined accordingly
- All required Tivoli Storage Manager storage pools and volumes are online
- All Tivoli Storage Manager storage pools and volumes have sufficient storage space to satisfy the needs of Content Manager OnDemand
- The Tivoli Storage Manager server is active when OnDemand needs to read from or write to its storage repository

If your Tivoli Storage Manager configuration cannot support OnDemand, system requests (that require Tivoli Storage Manager services) will fail. The Tivoli Storage Manager administrator should examine the system to ensure that it will support the storage and retrieval of data by OnDemand.

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Procedure

This section provides general information and examples about how to configure Tivoli Storage Manager to maintain Content Manager OnDemand data in archive storage. Tivoli Storage Manager can maintain the reports that you load into Content Manager OnDemand, can maintain migrated index data, and can maintain DB2 archived log files and backup image files.

Before you begin, you should familiarize yourself with Configuring and Managing Server Storage in the *IBM Tivoli Storage Manager for Sun Solaris: Administrator's Guide*. In addition, the *IBM Tivoli Storage Manager for Sun Solaris: Administrator's Reference* provides detailed information about all of the commands used in this section and should be your primary reference when you work with Tivoli Storage Manager. See the Tivoli Storage Manager publications if you encounter problems configuring Tivoli Storage Manager or if the examples in this section do not provide the information that you need to define your server storage devices, policies, and operations.

Complete these steps to set up Tivoli Storage Manager for Content Manager OnDemand on a Linux workstation:

__ 1. Define the Tivoli Storage Manager server options
__ 2. Define the Tivoli Storage Manager server
__ 3. Define the Tivoli Storage Manager client options
__ 4. Register Tivoli Storage Manager licenses
__ 5. Register Tivoli Storage Manager administrators
__ 6. Define other Tivoli Storage Manager server options
__ 7. Starting, halting, and restarting Tivoli Storage Manager the server
__ 8. Increase Tivoli Storage Manager database and recovery log sizes
__ 9. Define a storage library
__ 10. Define policy domains
__ 11. Register client nodes
__ 12. Prepare storage pool volumes
__ 13. (Optional) Configure Tivoli Storage Manager to maintain DB2 archived log files and backup image files
__ 14. Define a backup device for the Tivoli Storage Manager database
__ 15. Configure the ARS_ADSM program
__ 16. Back up the Tivoli Storage Manager database and critical files

Tivoli Storage Manager objects created during a typical installation

Table 18 on page 245 lists the objects that should be defined to the Tivoli Storage Manager server after you update the Tivoli Storage Manager configuration for Content Manager OnDemand in the sections that follow. The objects defined to the Tivoli Storage Manager server will depend on the number and types of devices that you configure on the system. The information in the table assumes that you will configure one automated library on the system (such as an IBM 3995-C68 optical library with four optical drives) and add one client node to hold Content Manager OnDemand data for seven years.

Table 18. Tivoli Storage Manager objects created during a typical installation

Object	Name
Automated Library	archlib0
Drive 1	optdrv0
Drive 2	optdrv1
Drive 3	optdrv2
Drive 4	optdrv3
Storage Pool	odstgp1
Device Class	opt1
Client Node	OD7YRPRI
Policy Domain	OD7YRPD
Policy Set	OD7YRPS
Management Class	OD7YRMG
Copy Group	STANDARD
Administrative Clients	root archive

Defining the Tivoli Storage Manager server options

Update the DSMSERV.OPT server options file from the installed server options file. The installed server options file can be found in the `/opt/tivoli/tsm/server/bin` directory.

Update the server options file to enable TCP/IP as the communications protocol and set the port address of the server, specify a maximum of 255 simultaneous client sessions, establish values for the database and recovery log buffer pools, expire data once a day, keep mount requests from being preempted except by a backup database command, and specify the names of volume and device configuration files. For example:

```
COMMmethod TCPIP
TCPPort 1500
COMMmethod HTTP
HTTPPORT 1580
TCPWindowsize 0
MAXSessions 255
COMMTimeout 30
IDLETimeout 60
BUFPoolsize 512
LOGPoolsize 256
EXPInterval 12
NOPREEMPT
VOLUMEHistory volhist.out
DEVCONFig devcnfg.out
```

Defining the Tivoli Storage Manager server

Create a DSM.SYS servers file from the installed servers file. The installed servers file can be found in the `/opt/tivoli/tsm/server/bin` directory.

Update the client systems options file to identify the name of the server and the fully qualified TCP/IP host name of the workstation on which the Tivoli Storage

Manager server runs, enable TCP/IP as the communications protocol, set the TCP/IP port address of the server, and turn off compression. For example:

```
SErvername         archive
TCPServeraddress   fully.qualified.tcpip.host.name
COMMmethod         TCPip
TCPPort            1500
COMPRESSION OFF
```

Defining the Tivoli Storage Manager client options

Create a DSM.OPT client options file from the installed options file. The installed options file can be found in the `/opt/tivoli/tsm/client/ba/bin` directory.

Update the client options file to identify the name of the server and set the processing mode. The name that you specify must be the same as the name of the server that you specified in the DSM.SYS file (see "Defining the Tivoli Storage Manager server" on page 245). for example:

```
SErvername         archive
QUIET
```

Registering Tivoli Storage Manager licenses

Register your Tivoli Storage Manager licenses. When you install Tivoli Storage Manager, your system is licensed for the base Tivoli Storage Manager support, which provides the following:

- An unlimited number of administrative clients
- One backup-archive client
- Certain types of removable media devices

License certificate files are included with your server package in the server installation directory. Each license certificate file licenses the server for a single option or feature. For current information about devices supported by Tivoli Storage Manager, contact the IBM Support Center. To register any Tivoli Storage Manager licenses beyond the base support, issue the REGISTER LICENSE command to read in a license certificate file. For example, to license the TSM server for Data Retention Protection functionality, run the following commands from the Tivoli Storage Manager Server command line interface:

```
register license file=tsmee.lic
register license file=dataret.lic
```

Registering Tivoli Storage Manager administrators

Register additional Tivoli Storage Manager administrators. The administrative user can start and stop the server and use the administrative client to do other Tivoli Storage Manager administrative tasks. You should also register the `root` user as an administrative user. The following example shows how to register users from the Tivoli Storage Manager Server command line interface. (In the example, the password for the `archive` user is `archive1`; the password for the `root` user is `xxxxxxxx`.) See the *IBM Tivoli Storage Manager for Sun Solaris: Administrator's Reference* for information about the commands, including the parameters and options you can specify.

```
register admin archive archive1
register admin root xxxxxxxx
grant authority archive classes=system
grant authority root classes=system
```

Defining other Tivoli Storage Manager server options

Define other Tivoli Storage Manager server options. Set the password expiration to the maximum permitted value and set the activity log retention period to one year by running the following commands from the Tivoli Storage Manager Server command line interface:

```
set passexp 9999
set actlogretention 365
```

Starting, halting, and restarting Tivoli Storage Manager the server

Tivoli Storage Manager administrators can manage server operations. These operations include such tasks as starting and halting the server, adding or updating server options, defining devices and policies, managing removable media, and monitoring server information.

Starting the server

To start the server:

1. Change to the `/opt/tivoli/tsm/server/bin` directory.
2. Start the server:

   ```
   dsmserv
   ```

   When the server is started, Tivoli Storage Manager displays information about product licensing, server options, the database and recovery log, storage pools, and progress messages and any errors encountered during server initialization.

You can capture Tivoli Storage Manager server console messages to a user log file with the Tivoli Storage Manager `dsmulog` program. See the Tivoli Storage Manager documentation for more information.

Starting the Tivoli Storage Manager server command line interface

In this section, most examples illustrate how to perform tasks by using the Tivoli Storage Manager server command line interface. To start the Tivoli Storage Manager server command line interface, enter:

```
dsmadmc
```

Tivoli Storage Manager provides you with a number of methods to monitor processes and messages:

- Use the console mode from an administrative client to monitor processes and messages:

  ```
  dsmadmc -consolemode
  ```

  While the system is running in console mode, you cannot enter any administrative commands from the client session. You can, however, start another administrative client session for entering commands.
- Specify the OUTFILE option to write all terminal output to a file. For example:

  ```
  dsmadmc -consolemode -outfile=adsm.out
  ```
- From the command line interface, query the activity log for status information and possible error messages:

  ```
  query actlog
  ```

See the Tivoli Storage Manager documentation for more information about managing client sessions.

Halting the server

When you halt the server, all processes are abruptly stopped and client sessions are canceled, even if they are not completed. Any in-progress transactions are rolled back when the server is restarted. When the server is halted, administrator activity is not possible. If possible, halt the server only after current administrative and client node sessions have completed or canceled. To shut down the server without severely impacting administrative and client node activity with the server, follow the instructions in the Tivoli Storage Manager documentation.

To halt the server and shut down all server operations, enter `halt` at the Tivoli Storage Manager server command line interface.

Restarting the server

To start the server after it has been halted, follow the instructions in "Starting, halting, and restarting Tivoli Storage Manager the server" on page 247.

When you restart the server after it has been halted, Tivoli Storage Manager rolls back any operations that had been in process to ensure that the database remains in a consistent state.

Increasing Tivoli Storage Manager database and recovery log sizes

When you initially install Tivoli Storage Manager, the installation procedure creates a default 17 MB database volume (`db.dsm`) and a default 9 MB recovery log volume (`log.dsm`).

The database size is determined by the amount of data that you plan to store on the system. The recovery log might need to be increased depending on the current utilization. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* provides formulas that you can use to estimate the database and recovery log sizes. You should start by increasing the database by 256 MB and the recovery log by 72 MB. As you load data on the system, you can monitor the utilization and increase or decrease the database and recovery log sizes accordingly.

To increase the size of the database or recovery log, do the following:

1. Select storage volumes with sufficient free space to hold the database and recovery log.
2. Format and define a 256 MB database volume and a 72 MB recovery log volume and extend the database and recovery log, by entering the following at the Tivoli Storage Manager server command line interface:

```
define dbvolume db2.dsm formatsize=256
define logvolume log2.dsm formatsize=72

extend db 256
extend log 72
```

Defining a storage library

When you add an optical or tape library to the system, you must define it to Tivoli Storage Manager. When you define a library to Tivoli Storage Manager, you define a device class for the library and define the library and the drives contained in the library. You also define a storage pool for the collection of storage volumes that belong to the library.

The following example shows how to define an optical library, device class, and storage pool as the destination for files archived from the Content Manager OnDemand system. You can use this example as a guide when defining other libraries and storage pools. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation.

Define the library

The following example shows how to define a SCSI-attached library:

```
def library archlib0 libtype=scsi
def path archive archlib0 srctype=server desttype=library device=/dev/lb0
```

The string `archlib0` is an arbitrary name that you assign to the library. Make sure that the name is not already defined to Tivoli Storage Manager. The `device` parameter gives the device name for the library.

Define the drives

The following example shows how to define the drives in a library that contains four drives, such as an IBM 3995-C68 optical storage library:

```
def drive archlib0 optdrv0 element=1
def drive archlib0 optdrv1 element=2
def drive archlib0 optdrv2 element=3
def drive archlib0 optdrv3 element=4
def path archive optdrv0 srctype=server desttype=drive -
         library=archlib0 device=/dev/rop0
def path archive optdrv1 srctype=server desttype=drive -
         library=archlib0 device=/dev/rop1
def path archive optdrv2 srctype=server desttype=drive -
         library=archlib0 device=/dev/rop2
def path archive optdrv3 srctype=server desttype=drive -
         library=archlib0 device=/dev/rop3
```

The drives belong to the `archlib0` library. The strings `optdrv1`, `optdrv2`, `optdrv3`, and `optdrv4` are arbitrary names you assign to the optical disk drives. Make sure that the names are not already defined to Tivoli Storage Manager. The `device` parameter gives the device name for the drive. The `element` parameter identifies the physical location of the drive within the library.

Define the device class

The following example shows how to define a device class for optical devices that use the 2600 recording format. The library contains four drives. Tivoli Storage Manager keeps idle optical platters in the drives for ten minutes before dismounting them:

```
    def devclass opt1 devtype=optical format=2600MB   -
                 mountlimit=4 library=archlib9        -
                 estcapacity=2600M mountretention=10
```

The string opt1 is an arbitrary name that you assign to the optical device class. Make sure that the name is not already defined to Tivoli Storage Manager.

Define the storage pool

The following example shows how to define a storage pool to use the devices in the opt1 device class.

```
define stgpool ODSTGP1 opt1                          -
               desc='Storage pool for OnDemand data' -
               collocate=no reclaim=60               -
               maxscratch=1 reusedelay=30
```

The string ODSTGP1 is an arbitrary name that you assign to the storage pool. Make sure that the name is not already defined to Tivoli Storage Manager.

Defining policy domains

The Tivoli Storage Manager policy domain links data with media in a storage pool. A policy domain supports a single storage pool, which in turn supports a single library.

The following example shows how to define a policy domain to maintain data for a period of seven years (2557 days). You can use this example as a guide when defining other policy domains. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation. Enter the commands at the Tivoli Storage Manager server command line interface.

1. Define the domain:

   ```
   define domain OD7YRPD desc='OnDemand Policy Domain'
   ```

   Replace the string OD7YRPD with the name of a Tivoli Storage Manager domain that you plan to use to manage storage for Content Manager OnDemand. Make sure that the name is not already defined to Tivoli Storage Manager.

2. Define the policy set:

   ```
   define policyset OD7YRPD OD7YRPS desc='OnDemand Policy Set'
   ```

   Replace the string OD7YRPD with the name of the domain. Replace the string OD7YRPS with the name of the policy set. Make sure that the name is not already defined to Tivoli Storage Manager.

3. Define the management class:

   ```
   define mgmtclass OD7YRPD OD7YRPS OD7YRMG -
                    desc='OnDemand Management Class'
   ```

   Replace the string OD7YRPD with the name of the policy domain. Replace the string OD7YRPS with the name of the policy set. Replace the string OD7YRMG with the name of the management class. Make sure that the name is not already defined to Tivoli Storage Manager.

4. Define an archive copy group. The archive copy group identifies the name of the storage pool where Tivoli Storage Manager stores the data and the length of time that Tivoli Storage Manager maintains the data:

   ```
   define copygroup OD7YRPD OD7YRPS OD7YRMG standard -
                    type=archive dest=odstgp1 retver=2557
   ```

   Replace the string OD7YRPD with the name of the policy domain. Replace the string OD7YRPS with the name of the policy set . Replace the string OD7YRMG with

the name of the management class. Replace the string odstgp1 with the name of a storage pool. Replace the string 2557 with the length of time (in days) that you want Tivoli Storage Manager to maintain data in the storage pool.

Important: When you create an application group, you specify the length of time that Content Manager OnDemand maintains data stored in the application group. If you plan to store application group data in Tivoli Storage Manager, then you must make sure that the retention period in Tivoli Storage Manager (the value of the retver parameter in the archive copy group) is equal to or greater than the Life of Data and Indexes value that you specify for the application group.

5. To check what you have defined, enter the following commands:

```
query domain
query policyset
query mgmtclass
query copygroup
```

6. After you define your policy sets and the management classes they contain, you must assign a default management class for each policy set. To assign the OD7YMG management class as the default management class for the OD7YRPS policy set in the OD7YRPD policy domain, enter:

```
assign defmgmtclass OD7YRPD OD7YRPS OD7YRMG
```

   Replace the string OD7YRPD with the name of the policy domain. Replace the string OD7YRPS with the name of the policy set. Replace the string OD7YRMG with the name of the management class.

7. After you define a default management class for the policy set, validate and activate the policy set:

```
validate policyset OD7YRPD OD7YRPS
activate policyset OD7YRPD OD7YRPS
```

   Replace the string OD7YRPD with the name of the policy domain. Replace the string OD7YRPS with the name of the policy set.

Registering client nodes

A client node links clients and their data with storage volumes and devices. Before Content Manager OnDemand can store data in Tivoli Storage Manager storage, you must register at least one client node. You must register at least one client node in each policy domain that will contain Content Manager OnDemand data. You can use the example that follows as a guide when registering client nodes. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation. Enter the command at the Tivoli Storage Manager server command line interface.

To register the client node PRI7YR and password password and assign the client node to the OD7YPD policy domain, and specify that the client node should be able to delete its own archive files from the server, enter:

```
register node PRI7YR password domain=OD7YRPD archdel=yes contact='your name'
```

The archdel=yes parameter is required for Content Manager OnDemand processing.

Note: When you define an Content Manager OnDemand storage node (by using the Content Manager OnDemand facilities), specify a Tivoli Storage Manager client node and client node password to “link” the Content Manager OnDemand storage node to archive storage.

Preparing storage pool volumes

You need to perform some steps to prepare removable media for initial use by Tivoli Storage Manager. This section provides general information and examples showing how to label storage pool volumes and check them into an automated library. For details about these tasks and important information about managing removable media operations, see the Tivoli Storage Manager documentation.

In general, to prepare a storage volume you:

- Label the volume. Any volumes associated with optical or tape devices must be labeled before Tivoli Storage Manager can use them.
- For storage pools in automated libraries, check the volume into the library.

You can use the LABEL LIBVOL command to label and check in a volume in one operation:

- To label storage volumes and check them into a library that is filled with blank storage volumes, use the following format of the command:

  ```
  label libvol archlib0 search=yes overwrite=yes checkin=scratch     -
        labelsource=prompt
  ```

  The label command will search all of the storage slots in the `archlib0` library for volumes and try to label each one that it finds. After labeling a storage volume, Tivoli Storage Manager keeps it in a storage slot inside the library. Because the example assumes new storage volumes, it is acceptable to overwrite an existing volume label.
- To label storage volumes and check them into a library by manually inserting each new storage volume when prompted, use the following format of the command:

  ```
  label libvol archlib0 search=bulk overwrite=yes checkin=scratch     -
       labelsource=prompt
  ```

  The label command will prompt you to insert a new storage volume into the `archlib0` library and then prompt you for the label of the volume. After labeling the storage volume, Tivoli Storage Manager keeps it in a storage slot inside the library and prompts you to insert the next storage volume to be labeled. Because the example assumes new storage volumes, it is acceptable to overwrite an existing volume label.

Wait for the LABEL LIBVOL operation to complete. Because the label and check in commands involve device access, it might take a long time to complete.

When you have completed labeling and checking in all the storage volumes, enter the following command to list the storage volumes in the `archlib0` library:

```
query libvol archlib0
```

Configuring Tivoli Storage Manager to maintain DB2 files

You can use Tivoli Storage Manager to maintain DB2 archived log files and backup image files. This capability means that you do not have to manually maintain these files on disk. The tasks in this section are optional, and are only recommended for customers who need to use Tivoli Storage Manager facilities to backup and restore the Content Manager OnDemand database in DB2. For more information about

using Tivoli Storage Manager to manage DB2 files, see *IBM DB2 Universal Database: Data Recovery and High Availability Guide and Reference*, SC09-4831.

The following topics describe how to configure Tivoli Storage Manager to maintain DB2 files:

- Defining server options
- Defining client options
- Defining storage objects
- Registering the client node
- Setting the client node password
- Space requirements
- Backup considerations
- Protecting data with the data retention protection (DRP) protocol

Defining server options

The DSM.SYS file on the Content Manager OnDemand library server identifies Tivoli Storage Manager servers and specifies server options.

If you installed and configured Tivoli Storage Manager to maintain report data, then you defined at least one Tivoli Storage Manager server (see "Defining the Tivoli Storage Manager server" on page 245). Most customers usually define one Tivoli Storage Manager server to maintain report data and a different server to maintain the DB2 files.

The following example shows a DSM.SYS file that identifies two Tivoli Storage Manager servers on the same workstation:

```
* The following server manages Content Manager OnDemand report data
SERVERNAME archive
COMMmethod tcpip
TCPPORT 1500
TCPSERVERADDRESS server1.company.xyz.com
COMPRESSION no

* The following server manages DB2 log files and backup images
SERVERNAME dbbackup
COMMmethod tcpip
TCPPORT 1500
TCPSERVERADDRESS server1.company.xyz.com
COMPRESSION yes
PASSWORDACCESS generate
```

- The first section identifies the server that maintains the Content Manager OnDemand report data.
- The second section identifies the server that maintains the DB2 files. The `SERVERNAME` parameter identifies the Tivoli Storage Manager server. The `TCPSERVERADDRESS` identifies the fully qualified TCP/IP host name of the workstation on which the Tivoli Storage Manager server is running. When defining a Tivoli Storage Manager server to maintain DB2 files, you must set the `COMPRESSION` parameter to `YES` and the `PASSWORDACCESS` parameter to `GENERATE`.

After you finish making your changes, save the DSM.SYS file in the directory named by the `DSM_CONFIG` parameter in the ARS.CFG file. See "Specifying the ARS.CFG file for the instance" on page 268 for more information.

Defining client options

The DSM.DB2.OPT file on the Content Manager OnDemand library server identifies the Tivoli Storage Manager server that maintains the DB2 files. The SERVERNAME parameter identifies the Tivoli Storage Manager server you defined in "Defining server options" on page 253. For example:

```
* The following server manages DB2 log files and backup images
SERVERNAME dbbackup
quiet
```

After you create the DSM.DB2.OPT file, save it in the directory named by the ARS_DB2_ADSM_CONFIG parameter in the ARS.CFG file. See "Specifying the ARS.CFG file for the instance" on page 268 for more information.

Defining storage objects

You must define the storage objects that Tivoli Storage Manager uses to maintain the DB2 files. The storage objects include a storage library, device class, storage pool, and policy domain:

- If you plan to use an existing storage pool to maintain the DB2 files, you do not need to define a storage library or device class. You should use dedicated hardware and storage objects to maintain the DB2 files.
- If you plan to use an existing policy domain to maintain the DB2 files, the domain must include an archive copy group and a backup copy group. See "Define the archive copy group" on page 255 and "Define the backup copy group" on page 255 for details.
- If you plan to define new storage objects to maintain the DB2 files, you must define a storage library, device class, storage pool, and policy domain, including the archive and backup copy groups. See "Defining a storage library" on page 249 for an example of how to define a storage library, device class, and storage pool. See "Define the domain" on page 110 for an example of how to define a domain. See "Define the domain" for an example of how to define a domain. See "Define the archive copy group" on page 255 and "Define the backup copy group" on page 255 for an example of how to define an archive copy group and a backup copy group.

Important: The storage pool where Tivoli Storage Manager maintains the DB2 files must use rewriteable optical media (not WORM) or tape.

Define the storage objects on the object server on which you installed Tivoli Storage Manager to maintain the DB2 files. Define the storage objects to the Tivoli Storage Manager server that maintains the DB2 files (this is the server that you identified in "Defining client options").

Define the domain

The following example shows how to define a policy domain to Tivoli Storage Manager. You must provide a name that is unique to Tivoli Storage Manager. The name in the example implies that Tivoli Storage Manager will maintain the files for one year. The length of time that Tivoli Storage Manager actually maintains the files depends on how you define the archive and backup copy groups.

```
define domain 1YRPD -
              desc='Domain for DB2 file storage'
```

The following example shows how to define a policy set to Tivoli Storage Manager. You must provide a name that is unique to Tivoli Storage Manager. The policy set identifies the policy domain.

```
define policyset 1YRPD 1YRPS -
                desc='Policy set for DB2 file storage'
```

The following example shows how to define a management class to Tivoli Storage Manager. You must provide a name that is unique to Tivoli Storage Manager. The management class identifies the policy domain and the policy set.

```
define mgmtclass 1YRPD 1YRPS 1YRMG -
                desc='Management class for DB2 file storage'
```

Define the archive copy group

The archive copy group determines several Tivoli Storage Manager options for the DB2 archived log files, including the number of days that Tivoli Storage Manager maintains the files. The DB2 archived log files must be maintained until they are no longer needed for database or table space recovery. Log files are valid between full, offline backup images of the database. When you create a full, offline backup image of the database, the log files created prior to the backup image can be deleted. For example, if you create a full, offline backup image of the database every thirty days, then you must keep log files for at least thirty days. If you do not create full, online backup images of the database, you should maintain the log files indefinitely.

The following example shows how to define an archive copy group. The archive copy group identifies the policy domain, policy set, and management class. The archive copy group also identifies the storage pool where Tivoli Storage Manager maintains the DB2 archived log files and the length of time that Tivoli Storage Manager maintains them. In the example, Tivoli Storage Manager maintains each log file stored in the storage pool for 366 days:

```
define copygroup 1YRPD 1YRPS 1YRMG standard -
                type=archive dest=ODSTGP2 retver=366
```

Define the backup copy group

The backup copy group determines Tivoli Storage Manager options for the DB2 backup images, including the number of versions of each backup image maintained and the length of time that Tivoli Storage Manager maintains them. You should plan to save one version of each backup image. By default, Tivoli Storage Manager maintains files in a backup copy group until they are deleted by an administrator.

The following example shows how to define a backup copy group. The backup copy group identifies the policy domain, policy set, and management class. The backup copy group also identifies the storage pool where Tivoli Storage Manager manages the DB2 backup images and the number of versions of each backup image that Tivoli Storage Manager maintains. In the example, Tivoli Storage Manager maintains one version of each DB2 backup image file indefinitely:

```
define copygroup 1YRPD 1YRPS 1YRMG standard -
                type=backup dest=ODSTGP2 verexists=1
```

Assign a default management class

After you define the policy set, the management classes it contains, and the copy groups, you must assign a default management class for the policy set. The following example shows how to assign a default management class:

```
assign defmgmtclass 1YRPD 1YRPS 1YRMG
```

Validate the policy set

After you define a default management class, validate the policy set:

```
validate policyset 1YRPD 1YRPS
```

Activate the policy set

Finally, you must activate the policy set to make the definitions available to Tivoli Storage Manager:

```
activate policyset 1YRPD 1YRPS
```

Registering the DB2 client node

You must register a client node in Tivoli Storage Manager for DB2 to use when it archives log files and creates backup image files. When you register the client node, you identify the policy used by Tivoli Storage Manager to maintain the files. The client node name must be unique to Tivoli Storage Manager. You must also supply a password for the client node.

You must register the client node on the object server on which you installed Tivoli Storage Manager to maintain the DB2 files. Register the client node to the Tivoli Storage Manager server that maintains the DB2 files (this is the server that you identified in "Defining client options" on page 254).

The following example shows how to register the client node `dbbackup` and assign it to the `1YRPD` policy domain. The node password is `password`. You must specify the `archdel=yes` and `backdel=yes` parameters so that the client node is permitted to delete its own archive and backup files from the server.

```
register node dbbackup password domain=1YRPD      -
        archdel=yes backdel=yes contact='your name'
```

Setting the client node password in DB2

Before DB2 can use Tivoli Storage Manager to maintain archived log files and backup image files, you must set the Tivoli Storage Manager client node password in DB2 on the library server. You established the client node password when you registered the client node in Tivoli Storage Manager (see "Registering the DB2 client node").

Use the `dsmapipw` command to set the client node password in DB2. The `dsmapipw` command is provided with the DB2 software. The `dsmapipw` command is installed in the `INSTHOME/sqllib/adsm` directory of the instance owner. By default, the instance owner is `archive`.

To set the client node password:

1. On the library server, log on as the `root` user.
2. Open a terminal window.
3. Set the DSMI_DIR and DSMI_CONFIG parameters. These parameters identify the user-defined directory that contains the API trusted agent file and the full path name of the options file that Tivoli Storage Manager uses to identify the server that maintains the DB2 files. You defined the options file in "Defining client options" on page 254.

   For example:

   ```
   export DSMI_DIR=/usr/tivoli/tsm/client/api/bin64
   export DSMI_CONFIG=/usr/tivoli/tsm/client/api/bin64/dsm.db2.opt
   ```

4. Run the `dsmapipw` command. For example:

   ```
   /home/archive/sqllib/adsm/dsmapipw
   ```

5. The `dsmapipw` command prompts you for the following information:

   `old password`, which is the current password for the client node. This is the password that you specified when you registered the client node in Tivoli Storage Manager (see "Registering the DB2 client node").

`new password`, which is the password that will be stored in DB2. You will be prompted twice for the password. Unless you have a good reason for **not** doing so, specify the `old password` when prompted.

6. Close the terminal window.
7. If DB2 is running, you should stop and restart DB2.

Important: If you change the client node password in Tivoli Storage Manager, remember to run the `dsmapipw` command to set the new password in DB2.

Space requirements

The storage pool where Tivoli Storage Manager maintains the DB2 files must contain enough storage to hold the files needed to recover the database. Because you should maintain the files indefinitely, you must plan to allocate a sufficient number of storage volumes to meet these needs. For example, a single log file requires approximately 1.3 MB of storage space. Depending on the amount of data that you store in Content Manager OnDemand and the frequency of full database backups, you might need to maintain hundreds of log files in storage managed by Tivoli Storage Manager. Depending on the frequency and type of backup images that you create, you might need to maintain several database and table space backup images. Depending on the size of your database and tables, each backup image may require several storage volumes. Finally, if you plan to migrate large tables of application group data to their own table spaces, DB2 requires storage for a backup image of each table that you migrate.

Backup considerations

Depending on the size of the database and the frequency of backups, you might need to regularly initialize and load scratch storage volumes into the storage library. If Tivoli Storage Manager determines that there is not enough space available in the storage pool, then it can request a mount for a scratch storage volume. However, the backup command cannot complete until the mount request is satisfied. If you operate in an unattended environment, this could have an adverse affect on system availability, especially when running an offline backup.

In addition to storing the DB2 files in Tivoli Storage Manager, you should regularly back up the Tivoli Storage Manager database and the Tivoli Storage Manager control files. Doing so can help prevent prolonged system outages in the event that you need to recover the database. You can schedule a task in Tivoli Storage Manager that automatically starts the backup process. See the Tivoli Storage Manager documentation for help with defining a schedule to Tivoli Storage Manager.

Defining a backup device for the Tivoli Storage Manager database

You can back up the Tivoli Storage Manager database to a file on disk or to tape. If you choose to back up the database to a file on disk, Tivoli Storage Manager supports the use of disk storage as volumes (files) that store data sequentially (as on tape volumes). These volumes are useful when you need to transfer the data for purposes such as electronic vaulting.

Defining a disk device class

The following example shows how to define a disk device class to Tivoli Storage Manager. You can use this example as a guide when you define your disk device class. The example presents the procedure with a minimum of customization. If

you want to do more, refer to the Tivoli Storage Manager documentation. Enter the command at the Tivoli Storage Manager server command line interface.

To define a disk device class for database backup:

```
define devclass DUMPFILEDEV devtype=file directory=/dsmdump mountlimit=2
```

The `directory` parameter identifies an existing directory where Tivoli Storage Manager stores database backup files. The directory must contain enough space to hold at least one copy of the database backup.

Defining a tape device

The following example shows how to define a manual tape drive to Tivoli Storage Manager. You can use this example as a guide when you define your manual tape device. The example presents the procedure with a minimum of customization. If you want to do more, refer to the Tivoli Storage Manager documentation. Enter the commands at the Tivoli Storage Manager server command line interface.

1. Define the manual library:

   ```
   def library dumplib libtype=manual
   ```

   The string `dumplib` is an arbitrary name that you assign to the library. Make sure that the name is not already defined to Tivoli Storage Manager. The library type is `manual` because an operator must mount the tapes.

2. Define the drive. For example:

   ```
   def drive dumplib dumpdrive device=/dev/rmt/mt0
   ```

   In the example, the drive belongs to the `dumplib` library. The string `dumpdrive` is an arbitrary name that you assign to the drive. Make sure that the name is not already defined to Tivoli Storage Manager. The `device` parameter gives the special device name for the drive.

3. Classify the drive according to type by defining the Tivoli Storage Manager device class. For example, the following command shows how to define a device class named `DUMPTAPEDEV` for the `dumplib` library:

   ```
   def devclass DUMPTAPEDEV devtype=generictape library=dumplib
   ```

4. Create a storage pool to use the devices in the device class you just defined:

   ```
   def stgpool dumppool DUMPTAPEDEV maxscratch=20
   ```

   The string `dumppool` is an arbitrary name that you assign to the storage pool. Make sure that the name is not already defined to Tivoli Storage Manager.

   Note: The `maxscratch` parameter can be used to allow Tivoli Storage Manager to choose from the scratch volumes available in a library, without further action on your part. If you do not allow scratch volumes, you must perform the extra step of explicitly defining each volume to be used in a storage pool. Refer to the Tivoli Storage Manager documentation for more information.

5. To check what you have defined, enter the following commands:

   ```
   query library
   query drive
   query devclass
   query stgpool
   ```

Backing up the Tivoli Storage Manager database and critical files

After you configure Tivoli Storage Manager, you should backup the database and save the server files that contain important information. The backup copy of the database can be used if you need to recover the database. You should save the backup copy until the next time that you create a full backup of the database. The server files contain important information that you must have if you need to recover the database. **Note:** You should backup the database and save the server files whenever you make changes to the database. The database is modified whenever the system stores data in storage managed by Tivoli Storage Manager and whenever you make changes to the Tivoli Storage Manager environment, such as defining new devices and managing removable media operations.

Backing up the database

Before you backup the database, you must define the backup storage objects to Tivoli Storage Manager and label at least one tape storage volume. You can define one device class for full backups and a different device class for incremental backups. For example, you can write full backups to a tape device and incremental backups to a disk device. At a minimum, you should define a tape backup device, device class, library, and storage pool. See "Defining a backup device for the Tivoli Storage Manager database" on page 257 for information about defining backup storage objects to Tivoli Storage Manager.

After you have defined the backup storage objects, label a tape storage volume. See the Tivoli Storage Manager documentation for help with labeling storage volumes.

After you have defined the backup storage objects to Tivoli Storage Manager and labeled a tape storage volume, you can backup the database. First, place a labeled tape storage volume in the drive. Then enter the backup command at the Tivoli Storage Manager server command line interface. For example:

```
backup db type=full devclass=dumptapedev
```

Replace the string `dumptapedev` with the name of the device class that you defined for tape backup. The backup command issues several messages, concluding with "Database dump process completed", after successfully creating the database backup.

Make a record of the information about the database backup, including the date and time that the backup was taken and the label of the storage volume label. Keep the backup copy of the database in a safe location, preferably offsite. Save the backup copy at least until the next time that you create another full backup copy of the database.

Saving critical files

The following files contain important information that you must have if you need to recover the Tivoli Storage Manager database:

- The server options file (DSMSERV.OPT)
- The volume history file (VOLHIST.OUT)
- The device configuration file (DEVCNFG.OUT)
- The Tivoli Storage Manager database and recovery log location file (DSMSERV.DSK)

Save a copy of the files on removable media and keep the copy in a safe location, preferably offsite. Save the copy at least until the next time that you create another backup copy of the files.

Protecting data with the data retention protection (DRP) protocol

To avoid the accidental erasure or overwriting of critical data, Content Manager OnDemand supports the Tivoli Storage Manager APIs related to data retention.

Data retention protection (DRP)
Prohibits the explicit deletion of documents until their specified retention criterion is met. Although documents can no longer be explicitly deleted, they can still expire.

Important: DRP is permanent. After it is turned on, it cannot be turned off.

Event-based retention policy
Retention based on an external event other than the storage of data. For Content Manager OnDemand, the retention event is the call to delete the data. A load, unload, application group delete, or expiration of data triggers the retention event.

Restriction: Content Manager OnDemand does not support *deletion hold*, which is a feature that prevents stored data from being deleted until the hold is released.

If you decide to use these policies in Tivoli Storage Manager, then the following scenarios result:

Table 19. Scenarios of using data retention protection

	Creation-based object expiration policy	**Event-based retention object expiration policy**
Data retention protection off	Content Manager OnDemand issues a delete object command through the Tivoli Storage Manager API. Objects are deleted during the next inventory expiration. If an Content Manager OnDemand application group is being deleted, a `delete filespace` command is issued, and the object file space is immediately deleted with the file space.	Content Manager OnDemand issues an event trigger command through the Tivoli Storage Manager API. The status of the objects that are affected are changed from PENDING to STARTED, and the objects are expired by Tivoli Storage Manager based on their retention parameters. If the retention parameters are set to `NOLIMIT`, then the objects never expire. If an OnDemand application group is being deleted, a `delete filespace` command is issued instead, and the objects are immediately deleted along with the file space.

Table 19. Scenarios of using data retention protection (continued)

	Creation-based object expiration policy	**Event-based retention object expiration policy**
Data retention protection on	Content Manager OnDemand issues no commands to Tivoli Storage Manager. The objects are effectively orphaned by Content Manager OnDemand and are expired by Tivoli Storage Manager based on their retention parameters. If the retention parameters are set to `NOLIMIT`, then the objects never expire.	Content Manager OnDemand issues an event trigger command through the Tivoli Storage Manager API. The event status of the objects that are affected are changed from PENDING to STARTED and the objects will be expired by Tivoli Storage Manager based on their retention parameters. If the retention parameters are set to `NOLIMIT`, then the objects never expire. If an Content Manager OnDemand application group is being deleted, then a `delete filespace` cannot be used with DRP enabled, therefore, the operation is treated the same as if a delete were indicated. The status of all the affected objects is changed from PENDING to STARTED, and they will be expired by Tivoli Storage Manager based on their retention parameters. Because this leaves the file space entries in TSM, you must manually delete these entries when the file space is empty (even with DRP enabled).

Recommendations:

- Set up the application groups to expire by load.
- Define the Tivoli Storage Manager archive copy groups to be event-based, and retain data for 0 days.
- Run the Tivoli Storage Manager inventory expiration regularly to ensure that expired data is removed.

Additionally, Content Manager OnDemand supports the following devices:

IBM DR450 and DR550
Disk-based system that contains a Tivoli Storage Manager that runs DRP.

EMC Centera
Disk-based system that is treated as a device by Tivoli Storage Manager. Tivoli Storage Manager must run DRP.

Chapter 42. Installing the Content Manager OnDemand software on Linux

You must install a copy of the Content Manager OnDemand software on each workstation or node that is part of the Content Manager OnDemand system.

Prerequisite:

1. You need approximately 200 MB of free space in the /opt file system to install the software.
2. By default, the installation is carried out in the GUI mode, therefore, the X windows support is required for the GUI install.

Complete the following steps to install the Content Manager OnDemand product files on a Linux workstation:

1. Insert the Content Manager OnDemand for Linux server CD-ROM into the drive. The steps that follow assume that the CD-ROM is mounted on directory /cdrom.
2. Log in as the root user.
3. Go to the /cdrom/server/linux/ directory.
4. Enter this command:

   ```
   ./odlinux
   ```
5. Read the Welcome screen and then click **Next**. The License Agreement window appears.
6. Select **I accept the terms in the license agreement** to accept the license agreement. Click **Next**.
7. Accept the default directory name. Click **Next**.
8. When the process completes, this question **Would you like to display the product ReadMe file?** appears. The location of the product readme file is displayed also. On Linux, the readme file is located in the /opt/ondemand directory.
9. If you want to view the readme file now, click **Yes**. Otherwise, click **No**. Click **Next**.
10. Read the information in the window, and click **Next**.
11. Click **Finish**.
12. After installing the software from the CD-ROM, apply the latest service update for Content Manager OnDemand. You can obtain the latest service update from IBM service at http://www.ibm.com/eserver/support/fixes/.
13. After the installation completes successfully, eject the CD-ROM from the drive.

Optionally, the install can be performed in the character based console mode. To install the Content Manager OnDemand for Linux server in the console mode, enter the following command from the directory which contains the installer:

```
./odlinux -i console
```

and follow the instructions on the installation panels.

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Installing optional Content Manager OnDemand software

The command to install the Content Manager OnDemand Web Enablement Kit is:

```
./odweklinux
```

or

```
./odweklinux -i console
```

The command to install the Content Manager OnDemand Advanced Function Presentation Transformations for Multiplatforms feature is:

```
./afp2web
```

or

```
./afp2web -i console
```

The command to install the Content Manager OnDemand Enhanced Retention Management feature is:

```
./oderm
```

or

```
./oderm -i console
```

The command to install the Content Manager OnDemand PDF Indexing feature is:

```
./odpdf
```

or

```
./odpdf -i console
```

The command to install the IBM Content Manager OnDemand Report Distribution for Multiplatforms feature is:

```
./odrdf
```

or

```
./odrdf -i console
```

Chapter 43. Configuring instances on Linux

Overview

An Content Manager OnDemand instance is a logical server environment made up of a database, a library server, and one or more object servers. An instance is defined in the ARS.INI file by naming the instance, identifying the name of the database used by the instance, and identifying the library server on which the database will be maintained. When you configure an object server, you identify its library server in the ARS.CFG file on the object server. An instance has its own table space file systems for the database and cache file systems. The table space file systems are defined in the ARS.DBFS file on the library server. The cache file systems are defined in the ARS.CACHE file on each object server. All of the servers that belong to an instance run in a single code page and on the same TCP/IP port number.

You can run multiple instances on the same workstation, with each instance configured differently:

- To have separate test and production environments
- To have databases using different code pages

Each instance has different security from other instances on the same workstation. You must define users and groups to each instance and set application group and folder permissions for users of each instance. Each instance has its own system log.

Each additional instance requires additional system resources, such as virtual storage and disk space, and more administration.

If you plan to run more than one instance on the same workstation:

- The ARS.INI file must contain one section for each instance. Each section identifies the ARS.CFG file, ARS.DBFS file, and ARS.CACHE file used by the instance.
- You must create a unique copy of the ARS.CFG file for each instance.
- You should maintain separate table space file systems and cache storage file systems for each instance, as in a ARS.DBFS file and ARS.CACHE file for each instance.
- Each instance must run on its own unique TCP/IP port number. The port for each instance is configured in the ARS.INI file.

Procedure

To configure an instance, follow these steps:

__ 1. Specify the instance in the ARS.INI file.
__ 2. Specify the ARS.CFG file for the instance.
__ 3. Specify the ARS.DBFS file for the instance.
__ 4. Specify the ARS.CACHE file for the instance.

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Specifying the instance in the ARS.INI file

Overview

The ARS.INI file contains information about Content Manager OnDemand instances. When you install the Content Manager OnDemand software, the ARS.INI file contains information about a default instance named archive. Most customers will use the default instance for their first or only instance of Content Manager OnDemand.

The information in the ARS.INI file is organized in sections with a header line that identifies each section. The header line can be identified by the brackets [ ] that delimit the beginning and end of the line.

The first section in the ARS.INI file contains information about the default instance. The following shows the default instance as provided by IBM:

```
[@SRV@_ARCHIVE]
HOST=platte
PROTOCOL=2
PORT=0
SRVR_INSTANCE=archive
SRVR_INSTANCE_OWNER=root
SRVR_OD_CFG=/opt/ondemand/config/ars.cfg
SRVR_DB_CFG=/opt/ondemand/config/ars.dbfs
SRVR_SM_CFG=/opt/ondemand/config/ars.cache
```

The HOST parameter identifies the host name alias, IP address, or fully qualified host name of the workstation on which the library server is running. The PROTOCOL parameter identifies the communications protocol used by the instance. The PORT parameter identifies the TCP/IP port number that the instance monitors for client requests. The stanza name (`[@SRV@_ARCHIVE]`) identifies the name of the Content Manager OnDemand instance. The SRVR_INSTANCE parameter identifies the name of the Content Manager OnDemand database. The SRVR_INSTANCE_OWNER parameter identifies the userid of the Content Manager OnDemand instance owner. The SRVR_OD_CFG parameter identifies the ARS.CFG file used by the instance. The SRVR_DB_CFG parameter identifies the ARS.DBFS file used by the instance. The SRVR_SM_CFG parameter identifies the ARS.CACHE file used by the instance.

When adding an instance to the ARS.INI file, remember that each instance must specify a unique instance name. For example, to add an instance for testing new applications, you might add an instance named *test*. When you work with more than one instance, you must identify the instance name when you run Content Manager OnDemand programs (such as ARSDB, ARSLOAD, and ARSSOCKD) and database commands (such as connecting to the database). The following shows an example of a second instance in the ARS.INI file:

```
[@SRV@_TEST]
HOST=rhone
PROTOCOL=2
PORT=1444
SRVR_INSTANCE=test
SRVR_INSTANCE_OWNER=root
SRVR_OD_CFG=/opt/ondemand/config/ars.test.cfg
SRVR_DB_CFG=/opt/ondemand/config/ars.test.dbfs
SRVR_SM_CFG=/opt/ondemand/config/ars.test.cache
```

The header line for the definition of the instance is `TEST`. The HOST statement identifies the host name alias of the library server. The instance communicates over

TCP/IP port number 1444. The name of the Content Manager OnDemand database is test. The name of the Content Manager OnDemand instance is test. The userid of the Content Manager OnDemand instance owner is root. The instance identifies its server configuration file (ARS.TEST.CFG), table space file systems file (ARS.TEST.DBFS), and cache file systems file (ARS.TEST.CACHE).

Procedure

To specify the instance in the ARS.INI file, follow these steps:

1. Log in to the server as the root user.
2. Change to the /opt/ondemand/config directory.
3. Make a backup copy of the file provided by IBM.
4. Edit the ARS.INI file with a standard text editor such as vi.
5. Most customers will use the default instance named ARCHIVE for their first or only instance of Content Manager OnDemand. Verify the following parameters and values.
   __ a. The header line contains a string that identifies the name of the instance. Unless you specify otherwise, the first or only instance is named ARCHIVE.
   __ b. The HOST parameter identifies the host name alias, IP address, or fully qualified host name of the library server.
   __ c. The PROTOCOL parameter identifies the communications protocol used by the instance. The number 2 identifies TCP/IP, and is the only valid value.
   __ d. The PORT parameter identifies the TCP/IP port number that the instance monitors for client requests (the number 0 means that the instance monitors port number 1445). If you use a port number other than 1445 on the library server, enter that number instead of 0 (zero). **For customers running more than one instance:** Each instance that runs on the same workstation must specify a different port number.If you configure a separate object server, ensure that the port number of the object server matches the port number of the library server.
   __ e. The stanza name ([@SRV@_ARCHIVE]) identifies the name of the Content Manager OnDemand instance. This value should match the name of the Content Manager OnDemand database (see “Installing DB2” on page 239). The instance name can be from one to eight characters in length, and can include the A through Z and 0 through 9 characters.
   __ f. The SRVR_INSTANCE_OWNER parameter identifies the userid of the Content Manager OnDemand instance owner. This is the userid that is permitted to run the Content Manager OnDemand server programs, such as ARSSOCKD, ARSLOAD, and ARSMAINT. **For customers configuring the system to run under a user other than root:** See Chapter 39, “Creating a user for the Content Manager OnDemand instance owner on Linux,” on page 237.
   __ g. The SRVR_OD_CFG parameter identifies the ARS.CFG configuration file used by the instance. See “Specifying the ARS.CFG file for the instance” on page 268.
   __ h. The SRVR_DB_CFG parameter identifies the ARS.DBFS table space file system file used by the instance. See “Specifying the ARS.DBFS file for the instance” on page 278.
   __ i. The SRVR_SM_CFG parameter identifies the ARS.CACHE cache file system file used by the instance. See “Specifying the ARS.CACHE file for the instance” on page 279.

6. **Note for distributed library/object servers:** Configure one copy of the ARS.INI file on each workstation that is part of the Content Manager OnDemand system. Verify that the information specified in the ARS.INI file is consistent on all workstations that are part of the instance. In addition:
   a. Ensure that the port number of the object server matches the port number of the library server.
   b. Verify that the HOST parameter on the object server must specify the host name alias, IP address, or fully qualified host name of the library server.
7. Save the file and exit the text editor.
8. You should control access to the ARS.INI file by changing the file permissions so that only the Content Manager OnDemand instance owner has read or write access to the file.

Specifying the ARS.CFG file for the instance

The ARS.CFG file contains information about the instance, such as identifying the object servers that belong to the instance, the language settings for the instance, and information that is used by database, storage, and print manager programs.

Before you create the Content Manager OnDemand database, start Content Manager OnDemand, use archive storage, use the server print function, migrate tables to table spaces, or import tables from archive storage to the database, you should review the parameters in the ARS.CFG file. The values that IBM provides are sufficient for most customers. However, you might need to change some of the values for your environment.

Procedure

To specify the ARS.CFG file for the instance, follow these steps:

1. Log in to the server as the `root` user.
2. Change to the `/opt/ondemand/config` directory.
3. Make a backup copy of the file provided by IBM.
4. Edit the ARS.CFG file with a standard text editor such as vi.
5. **Note for distributed library/object servers:** Some parameters in the ARS.CFG file are not used on object servers. For example, an object server does not use the license parameters, server print parameters, and database parameters. See the sections that follow for more information. Configure one copy of the ARS.CFG file on each workstation that is part of the Content Manager OnDemand system. Set the ARS_SRVR parameter to the TCP/IP host name alias, fully qualified host name, or IP address of the library server and set the ARS_ARS_LOCAL_SRVR parameter to the TCP/IP host name alias, fully qualified host name, or IP address of the object server. Some parameters in the ARS.CFG file are not used on object servers. For example, an object server does not use the license parameters, server print parameters, and database parameters. See the sections that follow for more information.
6. Save the file and exit the text editor.
7. You should control access to the ARS.CFG file by changing the file permissions so that only the Content Manager OnDemand instance owner has read or write access to the file.

See the following topics for more information:

- ARS_CODEPAGE
- ARS_DB_ENGINE

- ARS_DB_IMPORT
- ARS_DB_PARTITION
- ARS_DB_TABLESPACE
- ARS_DB_TABLESPACE_USEREXIT
- ARS_DB2_ARCHIVE_LOGPATH
- ARS_DB2_DATABASE_PATH
- ARS_DB2_LOG_NUMBER
- ARS_DB2_LOGFILE_SIZE
- ARS_DB2_PRIMARY_LOGPATH
- ARS_DB2_TSM_CONFIG
- ARS_LANGUAGE
- ARS_LDAP_ALLOW_ANONYMOUS
- ARS_LDAP_BASE_DN
- ARS_LDAP_BIND_ATTRIBUTE
- ARS_LDAP_BIND_DN
- ARS_LDAP_BIND_DN_PWD
- ARS_LDAP_BIND_MESSAGES_FILE
- ARS_LDAP_MAPPED_ATTRIBUTE
- ARS_LDAP_PORT
- ARS_LDAP_SERVER
- ARS_LOCAL_SRVR
- ARS_MESSAGE_OF_THE_DAY
- ARS_NUM_DBSRVR
- ARS_NUM_LICENSE
- ARS_PRINT_PATH
- ARS_SRVR
- ARS_STORAGE_MANAGER
- ARS_TMP
- DB_ENGINE
- DB2INSTANCE
- DSM_CONFIG
- DSM_DIR
- DSM_LOG
- DSMG_CONFIG
- DSMG_DIR
- DSMG_LOG
- DSMI_CONFIG
- DSMI_DIR
- DSMI_LOG
- DSMSERV_CONFIG
- DSMSERV_DIR

ARS_CODEPAGE

The ARS_CODEPAGE parameter identifies the code page of the &odShort; database. The ARS_CODEPAGE parameter need be specified only if the locale of

the system on which the &odShort; server is running is different than the code page of the Content Manager OnDemand database. OnDemand uses the locale of the system on which the Content Manager OnDemand server is running as the default value. This parameter may be specified on the library server and on object servers.

ARS_DB_ENGINE parameter

The database manager product that you installed on the library server. The default value is DB2. The ARS_DB_ENGINE parameter is ignored on object servers.

ARS_DB_IMPORT parameter

The method that Content Manager OnDemand uses to migrate index data to table spaces and import tables from archive storage to the database. The default value is `0` (zero). The ARS_DB_IMPORT parameter is ignored on object servers.

If you are configuring a library server, then you must set the ARS_DB_IMPORT parameter to one of the following values:

0 Content Manager OnDemand uses the EXPORT and IMPORT commands to migrate table data. This method requires disk space to hold log records generated when exporting existing table data and importing data to the new table space. This is the default migration method.

1 Content Manager OnDemand uses the EXPORT and LOAD commands to migrate table data. This method requires disk space to hold log records generated when exporting existing table data. The LOAD command generates a backup image of the new table space. The image file is stored in Tivoli Storage Manager-managed storage. This is the recommended migration method.

Note: Before you can use Tivoli Storage Manager to manage DB2 backup image files, you must install and configure Tivoli Storage Manager. See Chapter 41, “Installing and configuring Tivoli Storage Manager on Linux,” on page 243 for details.

2 Content Manager OnDemand uses the EXPORT and LOAD commands to migrate the table data. This method requires disk space to hold log records generated when exporting existing table data. The LOAD command generates a backup image of the new table space. The image file is stored in the file system identified by the ARS_TMP parameter (see “ARS_TMP parameter” on page 276).

ARS_DB_PARTITION parameter

Determines whether you can partition the database across nodes or systems. By default, you cannot partition the database. If the database manager product that you are using with Content Manager OnDemand supports partitioning, then you can specify that you want to partition the database by changing the value of this parameter to 1 (one). Currently, partitioning is supported only by DB2 Universal Database Extended Enterprise Edition. To store application group index data in partitions, your application groups must specify a *partition field*. The ARS_DB_PARTITION parameter is ignored on object servers.

ARS_DB_TABLESPACE parameter

The name of the table space for the Content Manager OnDemand system tables. The value of this parameter must match an existing table space name in the database. You must have created the table space in DB2.

ARS_DB_TABLESPACE_USEREXIT parameter

Determines if the Content Manager OnDemand table space creation exit will be invoked. The Content Manager OnDemand table space creation exit allows an installation to take action when OnDemand creates a table space, table, or index tables that will be used to store application index data. The exit is not called for the Content Manager OnDemand system tables.

The following statement must exist in the ARS.CFG file that is associated with the instance so that the ARSUTBL DLL can be invoked:

```
ARS_DB_TABLESPACE_USEREXIT=absolute path name
```

For the sample ARSUTBL, you would specify the following statement in the ARS.CFG file:

```
ARS_DB_TABLESPACE_USEREXIT=/opt/ondemand/bin/exits/arsutbl
```

Appendix I, “Table space creation exit,” on page 393 provides information about the exit point that gets invoked when OnDemand creates table spaces, tables, and indexes for the Content Manager OnDemand data tables.

ARS_DB2_ARCHIVE_LOGPATH parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see “ARS_DB_ENGINE parameter” on page 270) to DB2 (the default), the location that will hold the offline archived log files. The default value is `/arsdb_archivelog`. The ARS_DB2_ARCHIVE_LOGPATH is ignored if you use Tivoli Storage Manager to maintain the DB2 archived log files. The ARS_DB2_ARCHIVE_LOGPATH parameter is ignored on object servers.

The DB2UEXIT.DISK program copies the online archived log files from the primary log file directory to the archive log file directory. An archived log file becomes *offline* when it is no longer stored in the primary log file directory. After creating a backup image of the database, the ARSDB program deletes the offline archived log files. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* can help you estimate the amount of space required to hold the offline archived log files.

ARS_DB2_DATABASE_PATH parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see “ARS_DB_ENGINE parameter” on page 270) to DB2 (the default), the base file system in which the Content Manager OnDemand database will reside. You must make sure that the specified location contains enough space to hold the system tables, the USERSPACE1 table space, and any application group tables that are not stored in their own table spaces. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* contains information to help you estimate the amount of space required to hold the database. The default value is `/arsdb`. The ARS_DB2_DATABASE_PATH parameter is ignored on object servers.

ARS_DB2_LOG_NUMBER parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 270) to DB2 (the default), the number of primary log files. The default value is `40`. The ARS_DB2_LOG_NUMBER parameter is ignored on object servers.

The values of the ARS_DB2_LOGFILE_SIZE and ARS_DB2_LOG_NUMBER parameters determine the total amount of space available for DB2 to log changes to the database. The values that you specify must support the largest single report that you plan to load (or unload). DB2 will fail if there is not enough log file space available to hold the changes to the database. The default values allocate 160 MB of space. See the *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* for information about estimating the amount of storage space required to hold the DB2 log files.

ARS_DB2_LOGFILE_SIZE parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 270) to DB2 (the default), the size of a log file, in 4 KB blocks. The default value is `1000`. The ARS_DB2_LOGFILE_SIZE parameter is ignored on object servers.

The values of the ARS_DB2_LOGFILE_SIZE and ARS_DB2_LOG_NUMBER parameters determine the total amount of space available for DB2 to log changes to the database. The values that you specify must support the largest single report that you plan to load (or unload). DB2 will fail if there is not enough log file space available to hold the changes to the database. The default values allocate 160 MB of space. See the *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* for information about estimating the amount of storage space required to hold the DB2 log files.

ARS_DB2_PRIMARY_LOGPATH parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 270) to DB2 (the default), the location that will hold the active archived log files. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* can help you estimate the amount of space required to hold the active archived log files. The default value is `/arsdb_primarylog`. The ARS_DB2_PRIMARY_LOGPATH parameter is ignored on object servers.

ARS_DB2_TSM_CONFIG parameter

If you are configuring the Content Manager OnDemand library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 270) to DB2 (the default) and you plan to use Tivoli Storage Manager to maintain DB2 archived log files and backup image files, the full path name of the Tivoli Storage Manager options file that identifies the Tivoli Storage Manager server that will maintain the DB2 files. For example: `/opt/tivoli/tsm/client/ba/bin/dsm.db2.opt`.

The ARS_DB2_TSM_CONFIG parameter is ignored on object servers. "Configuring Tivoli Storage Manager to maintain DB2 files" on page 252 provides information to help you configure Tivoli Storage Manager to maintain DB2 files.

ARS_LANGUAGE parameter

The national language environment used to create the database. Content Manager OnDemand uses a three-character *language code* to derive the locale and code set for the server operating system. The default value is ENU (US English). See Appendix J, "National Language Support," on page 397 for a list of the language codes and information about configuring the system for national language character support. The ARS_LANGUAGE parameter is ignored on object servers.

Important: You must provide the correct language code for your operating environment **before** you create the Content Manager OnDemand database.

ARS_LDAP_ALLOW_ANONYMOUS parameter

Specifies whether or not anonymous bind connections are allowed on this LDAP server. Valid values are TRUE and FALSE. If FALSE, you must also specify ARS_LDAP_BIND_DN and ARS_LDAP_BIND_DN_PWD.

ARS_LDAP_BASE_DN parameter

Specifies the base distinguished name to use. This parameter is required for LDAP authentication.

Example 1:

```
ARS_LDAP_BASE_DN=ou=mycity,o=xyzcompany
```

Example 2:

```
ARS_LDAP_BASE_DN=dc=ondemand,dc=xyzcompany
```

ARS_LDAP_BIND_ATTRIBUTE parameter

Specifies the attribute being bound and is the attribute name to be searched on the LDAP server. This parameter is required for LDAP authentication.

Example:

```
ARS_LDAP_BIND_ATTRIBUTE=mail
```

ARS_LDAP_BIND_DN parameter

Specifies the distinguished name to use if anonymous connections are not allowed for binding. Used with ARS_LDAP_ALLOW_ANONYMOUS set to FALSE.

ARS_LDAP_BIND_DN_PWD parameter

Specifies the distinguished name password to use if anonymous connections are not allowed for binding. Used with ARS_LDAP_ALLOW_ANONYMOUS set to FALSE.

ARS_LDAP_BIND_MESSAGES_FILE parameter

Specifies the location of a file containing the LDAP message strings the Content Manager OnDemand server looks for during login. This is used for issuing messages when the user's password is about to expire, or their LDAP account is locked. ARS_LDAP_BIND_MESSAGES_FILE is used in conjunction with the ARSLDAP.INI file to implement this functionality.

ARS_LDAP_MAPPED_ATTRIBUTE parameter

Specifies the attribute being returned to Content Manager OnDemand as a user ID. This is the attribute name to be returned from the LDAP server once the bind attribute name is found. It can be the same as the bind attribute or different. This parameter is required for LDAP authentication.

Example:

```
ARS_LDAP_MAPPED_ATTRIBUTE=sAMAccountName
```

ARS_LDAP_PORT parameter

Specifies the port on which LDAP is listening. The default value is 389. This parameter is optional.

ARS_LDAP_SERVER parameter

Specifies the IP address or the fully-qualified hostname of the LDAP server. This parameter is required for LDAP authentication.

ARS_LOCAL_SRVR parameter

The name of the object server. The ARS_LOCAL_SRVR parameter is ignored on library servers. However, if you are configuring a library server, you must either omit this parameter from the ARS.CFG file or set this parameter to a blank value, that is: `ARS_LOCAL_SRVR=` .

If you are configuring an object server, set this parameter to the TCP/IP host name alias, fully qualified host name, or IP address of the object server. If the object server is running on a node of a multi-processor workstation, then set this parameter to the external IP address of the node on which you installed the object server.

When you add an Content Manager OnDemand storage node to an object server, you must use the value of the ARS_LOCAL_SRVR parameter to name the storage node.

ARS_MESSAGE_OF_THE_DAY parameter

Use to show the message of the day. Set to the full path name of a file that contains the message that you want to show. For example:

```
ARS_MESSAGE_OF_THE_DAY=/opt/ondemand/tmp/message.txt
```

The contents of the message file can contain a maximum of 1024 characters of text. The administrative client and the Windows client show the message after the user logs on to the server. To close the message box and continue, the user must click OK. If you do not specify a message file, then the normal client processing occurs.

ARS_NUM_DBSRVR parameter

Determines the number of processes that Content Manager OnDemand starts on the library server to handle connections to the database. The ARS_NUM_DBSRVR parameter is ignored on object servers.

In addition to database connections by Content Manager OnDemand client programs, the value that you specify must support the number of active Content Manager OnDemand commands and daemons such as ARSLOAD, ARSDOC, ARSDB, ARSMAINT, and ARSADMIN.

Each connection to the database requires a database agent. Content Manager OnDemand can start a database agent for each connection. However, each agent requires its own private memory and some portion of application shared memory. You can use the ARS_NUM_DBSRVR parameter to optimize the way that Content Manager OnDemand handles the database load. For example, you can define ARS_NUM_DBSRVR so that Content Manager OnDemand starts a fixed number of database agents, regardless of the number of concurrent database requests. While this might appear restrictive, database requests typically process very quickly. For example, ten database agents can handle a heavy database request load, while balancing the impact on system resources.

You should specify a value for the ARS_NUM_DBSRVR parameter that supports the peak number of concurrent database connections that you expect the library server to handle. A low value limits access to the database during periods of high database activity. A high value requires more system resources during periods of high database activity. The value that you choose also depends on the characteristics of the queries. For example, general queries typically keep a connection open longer than a more specific query.

ARS_NUM_LICENSE parameter

The maximum number of concurrent users allowed on the system. The default value is 1 (one). The ARS_NUM_LICENSE parameter is ignored on object servers.

You must acquire an authorization for each concurrent user. See the license information provided with the Content Manager OnDemand product package for more information.

To monitor the number of users on your system, search the System Log folder for message numbers 201 and 202. To determine whether your system has exceeded the allowed number of users, search the System Log for messages that indicate that the number of users accessing the system exceeds the maximum allowed (as specified by the ARS_NUM_LICENSE parameter).

ARS_PRINT_PATH parameter

The location where the Content Manager OnDemand server print function temporarily stores print data. You must make sure that there is enough space in the specified location to hold the print files for the maximum number of concurrent print requests that the server will handle. The default value is `/tmp`. The ARS_PRINT_PATH parameter is ignored on object servers.

You should dedicate a file system to hold the print files. The file system contain at least 500 MB of free space at all times. If your storage configuration permits, you should allocate 1 GB or more of free space to the specified file system.

The permissions for the file system must be `drwxrwxrwt`. You can use the CHMOD command to set the permissions. For example, the command `chmod 1777 /tmp` sets the permissions for the `/tmp` file system.

ARS_SRVR parameter

The name of the library server. The ARS_SRVR parameter is ignored on library servers. However, if you are configuring a library server, you must either omit this parameter from the ARS.CFG file or set this parameter to a blank value, that is: `ARS_SRVR= .`

If you are configuring an object server, set the ARS_SRVR parameter to the TCP/IP host name alias, fully qualified host name, or IP address of the library server. If the library server is running on a node of a multi-processor workstation, then set this parameter to the external IP address of the node on which you installed the library server.

ARS_STORAGE_MANAGER parameter

Determines whether the server program is linked to a cache-only storage manager or an archive storage manager. You must specify this parameter on library and object servers.

You can specify one of the following values:

CACHE_ONLY
Link the server program to a cache-only storage manager.

TSM Link the server program to an archive storage manager. This is the default value in the ARS.CFG file that is provided by IBM.

Note: Before Content Manager OnDemand can work with an archive storage manager to maintain data, you must install and configure the archive storage manager software.

ADSM
Deprecated. This option has been replaced by TSM. ADSM is still supported for existing customers.

ARS_SUPPORT_CFSOD parameter

If you plan to use Content Federation Services for OD, you must set this parameter equal to 1.

ARS_TMP parameter

The location where Content Manager OnDemand programs temporarily store data. You must allocate sufficient free space in the specified file system to support tasks such as migrating and importing index data. The default value is: `/tmp`. You must specify the ARS_TMP parameter on the library server and on all object servers.

You should dedicate a file system to temporary storage. The file system should contain at least 500 MB of free space at all times. If your storage configuration permits, you should allocate 1 GB or more of free space to the specified file system.

The permissions for the file system must be `drwxrwxrwt`. You can use the CHMOD command to set the permissions. For example, the command `chmod 1777 /tmp` sets the permissions for the `/tmp` file system.

DB_ENGINE parameter

Deprecated. This parameter has been replaced by ARS_DB_ENGINE. However, the DB_ENGINE parameter is still supported for existing customers.

DB2INSTANCE parameter

If you are configuring the library server and you set the ARS_DB_ENGINE parameter (see "ARS_DB_ENGINE parameter" on page 270) to DB2 (the default), the name of the database instance owner that you created when you installed DB2

(see "Installing DB2" on page 239). The default value is `archive`. The DB2INSTANCE parameter is ignored on object servers.

DSM_CONFIG parameter

If you plan to use Tivoli Storage Manager, the full path name of the Tivoli Storage Manager client options file. For example: `/opt/tivoli/tsm/client/ba/bin/dsm.opt`

You must set the DSM_CONFIG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSM_DIR parameter

If you plan to use Tivoli Storage Manager, the directory that contains the Tivoli Storage Manager client files. For example: `/opt/tivoli/tsm/client/ba/bin`.

You must set the DSM_DIR parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSM_LOG parameter

If you plan to use Tivoli Storage Manager, the directory in which Tivoli Storage Manager stores the space management client error log. The default value is `/tmp`. You must set the DSM_LOG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMG_CONFIG parameter

If you plan to use Tivoli Storage Manager, the full path name of the Tivoli Storage Manager administrative client options file. For example: `/opt/tivoli/tsm/client/admin/bin/dsm.opt`.

You must set the DSMG_CONFIG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMG_DIR parameter

If you plan to use Tivoli Storage Manager, the directory that contains the Tivoli Storage Manager administrative client files. For example: `/opt/tivoli/tsm/client/admin/bin`.

You must set the DSMG_DIR parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMG_LOG parameter

If you plan to use Tivoli Storage Manager, the directory in which Tivoli Storage Manager stores the administrative client error log. The default value is `/tmp`. You must set the DSMG_LOG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMI_CONFIG parameter

If you plan to use Tivoli Storage Manager, the full path name of the Tivoli Storage Manager API options file. For example: `/usr/tivoli/tsm/client/api/bin64/dsm.opt`.

You must set the DSMI_CONFIG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMI_DIR

If you plan to use Tivoli Storage Manager, the directory that contains the Tivoli Storage Manager API files. For example: `/usr/tivoli/tsm/client/api/bin64`.

You must set the DSMI_DIR parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMI_LOG parameter

If you plan to use Tivoli Storage Manager, the directory in which Tivoli Storage Manager stores the Tivoli Storage Manager API error log. The default value is `/tmp`. You must set the DSMI_LOG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMSERV_CONFIG parameter

If you plan to use Tivoli Storage Manager, the full path name of the Tivoli Storage Manager server options file. For example: `/opt/tivoli/tsm/server/bin/dsmserv.opt`.

You must set the DSMSERV_CONFIG parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

DSMSERV_DIR parameter

If you plan to use Tivoli Storage Manager, the directory that contains the Tivoli Storage Manager server files. For example: `/opt/tivoli/tsm/server/bin`.

You must set the DSMSERV_DIR parameter on each object server that uses Tivoli Storage Manager to maintain Content Manager OnDemand data.

Specifying the ARS.DBFS file for the instance

Overview

The ARS.DBFS file lists the file systems on the library server that can be used by the database manager to maintain index data in table spaces. The rules for using table space file systems are:

- You should store only Content Manager OnDemand application group data in the table space file systems.
- You should define a minimum of two table space file systems. (In general, the more table space file systems that you define, the better for performance and recovery.)
- You should allocate equal amounts of disk space to each table space file system. If you increase the amount of space in one table space file system, you should increase the amount of space in the other table space file systems by an equal amount.

Each line in the ARS.DBFS file identifies the name of a file system that Content Manager OnDemand can use to store table spaces and specifies the type of table spaces created in the file system.

When naming table space file systems, you should use the following convention:

```
/filesystem SMS
```

Where `filesystem` is the name of the file system and `SMS` indicates the type of table spaces created in the file system. The name of the file system should identify the type of table spaces that can be created in the file system. For example, the following line identifies an SMS table space file system:

```
/arsdb/db1/SMS SMS
```

The following shows an example of an ARS.DBFS file that defines three SMS table space file systems:

```
/arsdb/db1/SMS SMS
/arsdb/db2/SMS SMS
/arsdb/db3/SMS SMS
```

Procedure

To create (or edit) the ARS.DBFS file for the instance:

1. Log in to the server as the `root` user.
2. Change to the `/opt/ondemand/config` directory.
3. Create (or edit) the ARS.DBFS file using a standard text editor such as vi.
4. Add one line for each file system that Content Manager OnDemand can use for table spaces.
5. Save the file and exit the editor.
6. A table space file system must be owned by the database instance owner and group. The suggested defaults are `archive` (instance owner) and `sysadm1` (group). You specified the instance owner and group when you installed the database manager product (see Chapter 40, "Installing the database manager on Linux," on page 239). Make sure that the user and group file permissions are set correctly. For example:

   ```
   drwxrws---  3 archive sysadm1  512 May 17 12:58 /arsdb/db1/SMS
   ```

   You can use the CHOWN command to set the ownership permissions. For example, the following command changes the owner of all file systems in the `/arsdb` tree to the `archive` user and the `sysadm1` group:

   ```
   chown -R archive:sysadm1 /arsdb*
   ```

7. You can use the CHMOD command to set the file permissions. For example, the following commands set the correct permissions for the `/arsdb/db1/SMS` filesystem:

   ```
   chmod 2770 /arsdb/db1/SMS
   chmod g+s /arsdb/db1/SMS
   ```

Specifying the ARS.CACHE file for the instance

The ARS.CACHE file lists the file systems on the object server that can be used by Content Manager OnDemand for cache storage.

If there are multiple file systems in the ARS.CACHE file, OnDemand uses the file system with the greatest amount of space free to store the objects.

The following example shows an ARS.CACHE file that defines five cache storage file systems:

```
/arscache/cache1
/arscache/cache2
/arscache/cache3
/arscache/cache4
/arscache/cache5
```

Procedure

To create the ARS.CACHE file for the instance:

1. Log in to the server as the `root` user.
2. Change to the `/opt/ondemand/config` directory.
3. Create (or edit) ARS.CACHE file using a standard text editor such as vi.
4. Insert one line in the file for each file system on the server that Content Manager OnDemand can use for cache storage. **Important:** The first entry in the ARS.CACHE file identifies the base cache storage file system. Content Manager OnDemand stores control information in the base cache storage file system. After you define the base cache storage file system to Content Manager OnDemand, you cannot add or remove it from Content Manager OnDemand. It must remain as the first entry.
5. Save the file and exit the editor.
6. Cache file systems must be owned by the Content Manager OnDemand instance owner and the `system` group. Make sure that only the user file permissions are set, not the group or other file permissions. For example:

   ```
   drwx------  3 root root  512 Sep 22 13:08 /arscache/cache1
   ```

7. Use the CHOWN command to set the ownership permissions. The following example shows how to change the user ownership of all file systems in the `/arscache` tree:

   ```
   chown -R root:root /arscache*
   ```

8. Use the CHMOD command to set the file permissions. For example, the following commands set the correct permissions for the `/arscache/cache1` file system:

   ```
   chmod 700 /arscache/cache1
   chmod g-s /arscache/cache1
   ```

Content Manager OnDemand cache storage files and subdirectories should have the following permissions:

```
drwx------ for every subdirectory (700)
-r-------- for every object that has been migrated to archive storage (400)
-rw------- for every object that has not yet been migrated (600)
-rwxrwxrwx for every symbolic link under the retr and migr directories (777)
```

The ARSLDAP.INI file

The ARS_LDAP_BIND_MESSAGES_FILE parameter enables Content Manager OnDemand to customize message text returned from an LDAP server that is used to alert users that their LDAP password is about to expire or their LDAP account is locked.

The messages displayed to users are contained in the file referenced by this parameter. To enable this user-configurable message functionality, create a file with the appropriate message strings, and set ARS_LDAP_BIND_MESSAGES_FILE to the full path of the file. The ARSLDAP.INI file is provided with example message strings that can be used by the ARS_LDAP_BIND_MESSAGES_FILE parameter.

The ARSLDAP.INI file contains the following three sections:

```
[BIND_MESSAGES]
PASSWORD_EXPIRED="/usr/lpp/ars/config/password_expired.txt"
ACCOUNT_LOCKED="/usr/lpp/ars/config/account_locked.txt"

[PASSWORD_EXPIRED]
TDS6="Password has expired"
```

```
AD="data 532"
UDEF1=
UDEF2=
UDEF3=

[ACCOUNT_LOCKED]
TDS6="Account is locked"
AD="data 775"
UDEF1=
UDEF2=
UDEF3=
```

The BIND_MESSAGES section specifies the path to the files containing the user-configurable message text that is displayed to users when their LDAP password is about to expire, or their LDAP account is locked. Generic files are supplied, and should be customized to reflect your actual Content Manager OnDemand environment.

An example message that would be displayed to a user:

```
Your LDAP password has expired and needs to be changed.
Log into <company intranet> for password setting instructions.
```

The entries in the PASSWORD_EXPIRED and ACCOUNT_LOCKED sections are for Tivoli Directory Server Version 6.x and Microsoft Active Directory (AD). These sections also contain three user-defined entries (UDEFx), allowing you to enter your own pattern strings for LDAP servers that are not directly supported.

The LDAP server may return additional information when the user's bind operation fails. When an error is returned from the LDAP server, Content Manager OnDemand reads the file referenced by the ARS_LDAP_BIND_MESSAGES_FILE parameter and searches under the two stanzas, [PASSWORD_EXPIRED] and [ACCOUNT_LOCKED], for user-defined text that matches the LDAP server error. If a match is found, Content Manager OnDemand will display the text found in the files defined under the [BIND_MESSAGES] stanza.

If the ARS_LDAP_BIND_MESSAGES_FILE parameter is not defined, has no file referenced, or the PASSWORD_EXPIRED or ACCOUNT_LOCKED files do not exist, the user will receive a default 'The server failed while attempting to logon' message.

Note: Currently only two error conditions can be handled: PASSWORD_EXPIRED and ACCOUNT_LOCKED. The section titles for these two conditions cannot be changed, but you can change the pattern strings and message text presented to the user to define any two error conditions.

Chapter 44. Creating an instance of Content Manager OnDemand on Linux

Note: This publication was written assuming that OnDemand instances will be run under the root user. The information in this section is provided for customers who need to run instances of Content Manager OnDemand under a user other than the root user. Those customers should print the information in this section and have it available to assist them as they continue with the installation and configuration process.

You create an instance of Content Manager OnDemand by running the ARSDB program on the library server. The ARSDB program initializes the base system tables that are required by Content Manager OnDemand. You initialize other system tables by running the ARSSYSCR program on the library server. The ARSSYSCR program initializes the system tables that are required to support the system log, system migration, and other Content Manager OnDemand functions.

Prerequisites

Before you create the instance, you must have completed the following:

__ 1. Installed and configured DB2, and created a DB2 database instance for Content Manager OnDemand.

__ 2. Installed and configured the Content Manager OnDemand software, including the following files:

- ARS.INI
- ARS.CFG
- ARS.DBFS
- ARS.CACHE

Procedure

To create the instance, follow these steps:

__ 1. Specify permissions for the database directories.

__ 2. Create the instance by running the ARSDB program.

__ 3. Initialize the system logging facility by running the ARSSYSCR program. See “Initialize the system load logging facility” on page 286.

__ 4. (Optional) Initialize the system migration facility by running the ARSSYSCR program.

Specifying permissions for the database directories

The group that the instance owner belongs to must have write access to the database directory names that are specified in the ARS.CFG file (the ARS_DB2_DATABASE_PATH, ARS_DB2_PRIMARY_LOGPATH, and ARS_DB2_ARCHIVE_LOGPATH parameters). You created the instance owner and group when you installed the database manager (see Chapter 40, “Installing the database manager on Linux,” on page 239). See “Specifying the ARS.CFG file for the instance” on page 268 for help with configuring the ARS.CFG file.

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Procedure

To change the owner of the directories:

1. Log in to the server as the `root` user.
2. Use the CHOWN command to change directory ownership. For example, to change the owner and group of all file systems in the `/arsdb` tree to the `archive` owner and the `sysadm1` group, enter the following command:

   ```
   chown -R archive:sysadm1 /arsdb*
   ```

   Run the CHOWN command once to change the ownership of each of the database directories that are specified in the ARS.CFG file (the ARS_DB2_DATABASE_PATH, ARS_DB2_PRIMARY_LOGPATH, and ARS_DB2_ARCHIVE_LOGPATH parameters).

Creating the instance

Overview

You should use the ARSDB program to create the instance. The ARSDB program does the following to create the instance:

- Updates the database configuration
- Verifies the directories for the primary and archived log files
- Creates a link to the database user exit program

  If the database user exit program encounters errors when copying files, it creates the `db2uexit.err` file in the temporary data directory. (By default, `/tmp`. See "ARS_TMP parameter" on page 276 for details.) If this file exists, it usually means that you did not set the correct permissions for the log file directories or there is not enough free space to hold the archived log files. See "Specifying permissions for the database directories" on page 283 for information about setting permissions. See your operating system documentation for information about increasing the size of a file system.
- Creates a backup of the database
- Builds the Content Manager OnDemand system tables and indexes
- Binds the database to Content Manager OnDemand

The ARSDB program creates the database using standard SQL commands. See the documentation provided with the database manager product for information about the SQL commands issued by the ARSDB program and messages printed at the console.

Procedure

To create an instance of Content Manager OnDemand:

1. You must provide the correct locale, code set, and code page **before** you create the database. These values are derived from the ARS_LANGUAGE parameter in the ARS.CFG file. See "ARS_LANGUAGE parameter" on page 273 for details.
2. Log in to the server as the `root` user.
3. Type the following command at the prompt:

   ```
   /opt/ondemand/bin/arsdb -I archive -gcv
   ```

   Where `archive` is the name of the Content Manager OnDemand instance.
4. Press the Enter key.

5. The ARSDB program prompts you before creating a link to the database user exit program:
   - If you maintain DB2 archived log files on disk, enter 1 when prompted
   - If you use Tivoli Storage Manager to maintain the DB2 archived log files, enter 2 when prompted
6. Content Manager OnDemand creates the instance, makes a backup image of the database, and restores the Content Manager OnDemand system tables to the database. This process will take several minutes.

   The ARSDB program generates a series of messages. For example:

```
Creating the DB2 ARSDBASE database
Creating table ARSSERVR.arsag
Creating index ARSSERVR.arsag_name_idx
Creating index ARSSERVR.arsag_agid_idx
..... .. . . . . . . . . . . . . . . . . . .
..... .. . . . . . . . . . . . . . . . . . .
..... .. . . . . . . . . . . . . . . . . . .
Updating runstat statistics for table ARSSERVR.arsusrgrp
Creating table ARSSERVR.arsusrgrpid
Creating index ARSSERVR.arsusrgrpid_idx
Updating runstat statistics for table ARSSERVR.arsusrgrpid
```

Initializing the system logging facility

After you have successfully created the instance of Content Manager OnDemand, run the ARSSYSCR program to initialize the Content Manager OnDemand system logging facility for the instance.

To initialize the Content Manager OnDemand system logging facility:

1. Log in to the server as the `root` user.
2. Type the following command at the prompt:

   ```
   /opt/ondemand/bin/arssyscr -I archive -l
   ```

   Where `archive` is the name of the Content Manager OnDemand instance.
3. Press the Enter key.
4. Content Manager OnDemand creates the tables that support the system logging facility. This process may take several minutes.

   The ARSSYSCR program generates a series of messages. For example:

```
arssyscr: Updating ARSSERVR.ARSSYS
arssyscr: Adding to ARSSERVR.ARSAG with Storage Set Id = 0
arssyscr: Adding to ARSSERVR.ARSAGPERMS
arssyscr: Adding to ARSSERVR.ARSAGFLD
arssyscr: Adding to ARSSERVR.ARSAGFLDALIAS
arssyscr: Adding to ARSSERVR.ARSAG2FOL
arssyscr: Adding to ARSSERVR.ARSAPPUSR
arssyscr: Adding to ARSSERVR.ARSAPP
arssyscr: Adding to ARSSERVR.ARSFOL
arssyscr: Adding to ARSSERVR.ARSFOLPERMS
arssyscr: Adding to ARSSERVR.ARSFOLFLD
arssyscr: Adding to ARSSERVR.ARSFOLFLDUSR
arssyscr: Creation of System Log information was successful
```

Initialize the system load logging facility

OnDemand provides a logging facility to enable tracking OnDemand loading activity. When you enable load logging, OnDemand stores the messages that are generated by OnDemand load programs in the system load log. You use one of the Content Manager OnDemand client programs to search for and filter messages by load date, application group name, load ID, input file name, and other parameters.

Before you start OnDemand for the first time, you must initialize the system load logging facility:

1. Log in to the server as the `root` user.
2. Type the following command at the prompt:
   ```
   /opt/ondemand/bin/arssyscr -I archive  -a
   ```
3. Press the Enter key.
4. Content Manager OnDemand creates the tables that support the system load logging facility. This process may take several minutes.

   The ARSSYSCR program generates a series of messages. For example:
   ```
   arssyscr: Updating ARSSERVR.ARSSYS
   arssyscr: Adding to ARSSERVR.ARSAG with Storage Set Id = 0
   arssyscr: Adding to ARSSERVR.ARSAGPERMS
   arssyscr: Adding to ARSSERVR.ARSAGFLD
   arssyscr: Adding to ARSSERVR.ARSAGFLDALIAS
   arssyscr: Adding to ARSSERVR.ARSAG2FOL
   arssyscr: Adding to ARSSERVR.ARSAPPUSR
   arssyscr: Adding to ARSSERVR.ARSAPP
   arssyscr: Adding to ARSSERVR.ARSFOL
   arssyscr: Adding to ARSSERVR.ARSFOLPERMS
   arssyscr: Adding to ARSSERVR.ARSFOLFLD
   arssyscr: Adding to ARSSERVR.ARSFOLFLDUSR
   arssyscr: Creation of System Load information was successful
   ```

Initializing the system migration facility

The system migration facility is required only by customers who plan to migrate application group index data from the database to archive storage.

After you have successfully created the instance of Content Manager OnDemand, run the ARSSYSCR program to initialize the Content Manager OnDemand system migration facility for the instance.

To initialize the Content Manager OnDemand system migration facility:

1. Log in to the server as the `root` user.
2. Type the following command at the prompt:
   ```
   /opt/ondemand/bin/arssyscr -I archive -a
   ```

   Where `archive` is the name of the Content Manager OnDemand instance.
3. Press the Enter key.
4. Content Manager OnDemand creates the tables that support the system migration facility. This process may take several minutes.

   The ARSSYSCR program generates a series of messages. For example:
   ```
   arssyscr: Updating ARSSERVR.ARSSYS
   arssyscr: Adding to ARSSERVR.ARSAG with Storage Set Id = 0
   arssyscr: Adding to ARSSERVR.ARSAGPERMS
   arssyscr: Adding to ARSSERVR.ARSAGFLD
   arssyscr: Adding to ARSSERVR.ARSAGFLDALIAS
   ```

```
arssyscr: Adding to ARSSERVR.ARSAG2FOL
arssyscr: Adding to ARSSERVR.ARSAPPUSR
arssyscr: Adding to ARSSERVR.ARSAPP
arssyscr: Adding to ARSSERVR.ARSFOL
arssyscr: Adding to ARSSERVR.ARSFOLPERMS
arssyscr: Adding to ARSSERVR.ARSFOLFLD
arssyscr: Adding to ARSSERVR.ARSFOLFLDUSR
arssyscr: Creation of System Migration information was successful
```

Chapter 45. Automating instance operations on Linux

This section describes how to use operating system facilities to automatically start or schedule instance operations.

You can automatically start these instance operations whenever the system is initialized:

__ 1. Start the database on the library server
__ 2. Start the instance on the library server
__ 3. Start the instance on an object server
__ 4. Start the data loading programs

You can schedule these instance operations to begin automatically on a regular schedule:

__ 1. Schedule application group maintenance on the library server
__ 2. Schedule application group maintenance on an object server
__ 3. Schedule system table maintenance
__ 4. Schedule a backup of the Content Manager OnDemand database
__ 5. Schedule a backup of the Tivoli Storage Manager database

Starting the database

You can start the database on the library server using the ARSDB program:

```
su - archive "-c /opt/ondemand/bin/arsdb -gkv"  >> /tmp/arsdb.log 2>&1
```

Alternatively, you can start DB2 manually with the db2start command.

The following example shows an INIT record to automatically start the database when the operating system is initialized on the library server:

```
ars2:2:wait:su - archive "-c /opt/ondemand/bin/arsdb -gkv"  >> /tmp/arsdb.log 2>&1
```

Important: If the DB2 installation program adds a record to the INIT facility to automatically start the DB2 services, make sure that you place the ARSDB record after the record that starts the DB2 services.

Starting the instance on the library server

You must start an instance before clients can connect to the server or the database for the instance.

The ARSSOCKD program controls an Content Manager OnDemand instance on the library server. The ARSSOCKD program runs on the library server. The data loading program (ARSLOAD) and the maintenance programs (such as ARSADMIN and ARSMAINT) will fail and clients will be unable to connect to the instance if the ARSSOCKD program is not running on the library server.

To manually start the archive instance, you can enter the command:

```
/opt/ondemand/bin/arssockd archive
```

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The following example shows an INIT record that automatically starts the instance named `archive` when the operating system is initialized on the library server:

```
ars3:2:once:/opt/ondemand/bin/arssockd archive
```

Starting the instance on an object server

The ARSOBJD program controls an Content Manager OnDemand instance on an object server. Content Manager OnDemand programs that work with an instance on an object server will fail if the ARSOBJD program is not running on the object server.

The ARSOBJD program should be started only on object servers that are running on some other workstation than the library server.

To manually start the archive instance, you can enter the command:

```
/opt/ondemand/bin/arsobjd archive
```

The following example shows an INIT record that automatically starts the instance named `archive` when the operating system is initialized on an object server:

```
ars4:2:once:/opt/ondemand/bin/arsobjd archive
```

Starting the data loading programs

This section describes how to use operating system facilities to automatically start the Content Manager OnDemand data loading programs.

The Content Manager OnDemand data loading programs are:

- ARSJESD, to receive data from z/OS and z/OS systems and store the data in file systems on the server
- ARSLOAD, to create index data and load the data into the system

ARSJESD

The ARSJESD program is the Content Manager OnDemand program that monitors a TCP/IP port for data transmitted to the Content Manager OnDemand server by Download for the z/OS feature from a host system. The ARSJESD program receives the data transmitted by Download for the z/OS feature and stores the data in file systems on the server. See *PSF for z/OS: Download for z/OS* for details about configuring and operating Download for z/OS feature on the host system.

The following example shows an INIT record that automatically starts the ARSJESD program during operating system initialization:

```
ars5:2:once:/opt/ondemand/bin/arsjesd -p 6001 -d /arsacif/acif1
-d /arsacif/acif2 -d /arsacif/acif3 >> /tmp/arsjesd.log 2>&1
```

In the example, the ARSJESD program monitors TCP/IP port number `6001` and stores transmitted data in the specified directories. The ARSJESD program writes output messages to the `arsjesd.log` file in the `/tmp` directory.

You must verify the TCP/IP port number that the ARSJESD program monitors. Replace the string `6001` with the port number that is valid on the server that you are configuring. The ARSJESD program and Download on the z/OS system must specify the same port number. The port number that the ARSJESD program monitors is different than the TCP/IP port number that the Content Manager OnDemand server uses to communicate with clients.

You must verify the names of the directories in which the ARSJESD program can put the data. Replace the strings `/arsacif/acif1`, `/arsacif/acif2`, and `/arsacif/acif3` with the names of directories that are valid on the server that you are configuring.

See the ARSJESD command reference in the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the options and parameters that you can specify.

ARSLOAD

The ARSLOAD program is the main Content Manager OnDemand data loading and indexing program. You can configure the ARSLOAD program to monitor specific file systems for report data downloaded from other systems. If the data needs to be indexed, then the ARSLOAD program calls the indexing program that is specified in the Content Manager OnDemand application. The ARSLOAD program then works with the database manager to load the index data into the database and works with the storage manager to load the report data and resources on to storage volumes.

The Content Manager OnDemand instance (started by using ARSSOCKD or ARSOBJD) must be running, otherwise the ARSLOAD program will fail.

Configuring the ARSLOAD.CFG file

To load a report into the system with the ARSLOAD program, you must specify a userid that has administrator authority for the application group into which you want to load the data. You must also specify a password for the userid. There are several ways that you can specify the userid and password:

- Specify the `-u` and `-p` parameters each time that you run the ARSLOAD program.
- Specify the `-U` parameter and name an input file each time that you run the ARSLOAD program. The input file contains the userid and password.
- Configure the ARSLOAD.CFG file with a system administrator userid and password. The values in the ARSLOAD.CFG file will be used when you run ARSLOAD program, unless you specify otherwise with the `-u` and `-p` parameters or the `-U` parameter. **Important:** Any time that you change the specified user's password in Content Manager OnDemand, remember to change it in the ARSLOAD.CFG file; otherwise the load will fail. The ARSLOAD program can accept an expired password. However, the ARSLOAD program will fail if you specify an incorrect password.

Follow these steps to configure the ARSLOAD.CFG file with a system administrator userid and password.

1. Log on as the `root` user.
2. Change to the `/opt/ondemand/config` directory.
3. Make a copy of the ARSLOAD.CFG file that was supplied by IBM:

   ```
   cp arsload.cfg arsload.cfg.orig
   ```

   Make changes to the ARSLOAD.CFG file with a standard text editor such as vi.
4. Change the userid and password. Table 20 on page 292 lists the values in the ARSLOAD.CFG file that was supplied by IBM.

Table 20. ARSLOAD.CFG file

Variable	Meaning	Default
USERID	Content Manager OnDemand system administrator user. A system administrator user can load data into any application group defined to Content Manager OnDemand.	admin
PASSWD	Password for the Content Manager OnDemand system administrator user	

5. Save your changes and exit the editor.
6. Set the user file permissions so that only the `root` user can access the ARSLOAD.CFG file. Clear the group and other file permissions. Set the Read Only user file permission for the ARSLOAD.CFG file. The permissions should appear as follows:

```
-r-------- 1 root system 1832 Sep 02 13:13 arsload.cfg
```

Automating the ARSLOAD program

The following example shows an INIT record that automatically starts the ARSLOAD program for the instance named `archive` during operating system initialization:

```
ars6:2:once:/opt/ondemand/bin/arsload -v -c /arsacif/acif4 -d /arsacif/acif1
-d /arsacif/acif2 -d /arsacif/acif3 -I archive
```

In the example, the ARSLOAD program checks for input files in the specified directories every ten minutes (the default polling time). An input file must have a file type of .ARD or .PDF to initiate the load process. If an input file needs to be indexed, the ARSLOAD program stores the index data in the specified index directory.

You must verify the names of the directories. Replace the strings `/arsacif/acif1`, `/arsacif/acif2`, `/arsacif/acif3`, and `/arsacif/acif4` with the names of directories that are valid on the server that you are configuring.

The example uses the Content Manager OnDemand userid and password that was specified in the ARSLOAD.CFG file. See "Configuring the ARSLOAD.CFG file" on page 291 for information about specifying the userid and password in the ARSLOAD.CFG file.

After indexing the data, the ARSLOAD program deletes the input files, unless you specify otherwise. Any output or error messages that are generated by the ARSLOAD program are written to `stdout`, `stderr`, and the system log.

See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSLOAD program.

Scheduling application group maintenance on the library server

You can run the ARSMAINT program on the library server to maintain application group data in the database and cache storage. See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSMAINT program.

The instance must be started by the ARSSOCKD program, otherwise the ARSMAINT program will fail.

The following is an example of a CRON record that automatically starts the ARSMAINT program every day at 4 am for the instance named `archive`. The ARSMAINT program will migrate and delete application group index data, optimize application group index data, copy report data from cache storage to archive storage, delete report data from cache storage, and inspect and verify the cache file systems. This format of the command is typically used for a library/object server with Tivoli Storage Manager on one workstation.

```
00 4 * * * /opt/ondemand/bin/arsmaint -cdeimrsv -I archive
```

Scheduling application group maintenance on an object server

You can run the ARSMAINT program on an object server to maintain application group data in cache storage. See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSMAINT program.

The instance must be started by the ARSOBJD program, otherwise the ARSMAINT program will fail.

The following is an example of a CRON record that automatically starts the ARSMAINT program every day at 4 am for the instance named `archive`. The ARSMAINT program will maintain application group data in cache storage, including copying report data to archive storage. This format of the command is typically used for an object server with Tivoli Storage Manager on some other workstation than the library server.

```
00 4 * * * /opt/ondemand/bin/arsmaint -cmsv
```

Scheduling system table maintenance

You can run the ARSDB program to maintain the Content Manager OnDemand system tables on the library server. See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSDB program.

The instance must be started by the ARSSOCKD program, otherwise the ARSDB program will fail.

The following is an example of a CRON record that automatically starts the ARSDB program to maintain the Content Manager OnDemand system tables for the instance named `archive`. The ARSDB program will run twice a month, on the 7th and 14th of each month, beginning at 5 am.

```
00 5 7,14 * * /opt/ondemand/bin/arsdb -mv -I archive >> /tmp/arsdb.log 2>&1
```

Scheduling the Content Manager OnDemand database backup

You can use the ARSDB program to create a backup image of the Content Manager OnDemand database. The ARSDB program supports table space backups and full database backups, online backups and offline backups, and the use of Tivoli Storage Manager to maintain the backup image files. See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSDB program.

The following is an example of a CRON record that automatically starts the ARSDB program to create a full online backup image of the Content Manager OnDemand database for the instance named `archive` every day beginning at 5:30

am. The backup image is written to a tape in the device /dev/rmt0. A tape must be mounted in the device before the ARSDB program begins.

```
30 5 * * * /opt/ondemand/bin/arsdb -v -z /dev/rmt0 -I archive >> /tmp/arsdb.log 2>&1
```

Chapter 46. Your next step on Linux

After you have installed the Content Manager OnDemand and related software on the system, configured the instance of Content Manager OnDemand, created the instance, and automated instance operations, you are now ready to verify the installation on Content Manager OnDemand. See Chapter 55, “Verifying the installation,” on page 349.

f

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Part 6. Installing Content Manager OnDemand on Windows servers

This part of the *IBM Content Manager OnDemand for Multiplatforms: Installation and Configuration Guide* explains how to install and configure Content Manager OnDemand on a Windows server and how to install and configure related software to work with Content Manager OnDemand. There are five basic phases to the installation, which are illustrated in Figure 22:

- Preparing for the installation
- Installing and configuring Content Manager OnDemand and related software
- Verifying the installation
- Preparing the system for use
- Adding optional software

You will find checklists for each of these phases in Chapter 47, "Checklist for installation on Windows," on page 299.

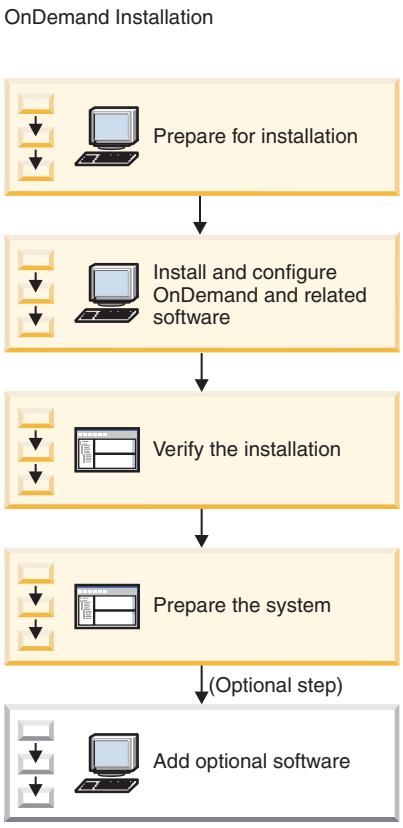

Figure 22. Installing Content Manager OnDemand on a Windows server

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Chapter 47. Checklist for installation on Windows

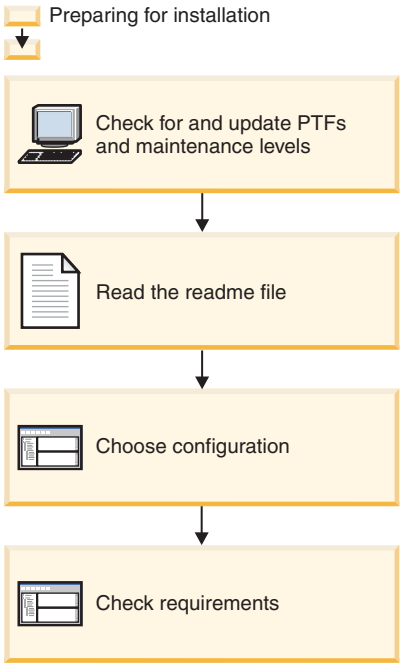

Figure 23. Pre-installation tasks

Before beginning the installation, you should complete the following tasks:

__ 1. Contact the IBM support center for the latest maintenance levels of DB2, Content Manager OnDemand, and optionally, IBM Infoprint Manager (Infoprint) and Tivoli Storage Manager. If you are using Oracle instead of DB2, you should contact Oracle for information about the latest maintenance level of Oracle. If you are using SQL Server instead of DB2, you should contact Microsoft for information about the latest maintenance level of SQL Server.

__ 2. Obtain a copy of the Content Manager OnDemand README file. Print and read the entire file before you begin.

__ 3. Determine the type of Content Manager OnDemand system that you need to configure (see Chapter 2, “Choosing a configuration,” on page 5).

__ 4. Check the Content Manager OnDemand prerequisites and verify the required and optional hardware and software products. See Chapter 48, “Windows server requirements,” on page 305 for information on specific server requirements.

__ 5. Check the hardware and software requirements for all system components and features. See http://www.ibm.com/support/docview.wss?rs=129 &uid=swg27016455 or search for 7016455 at http://www.ibm.com/.

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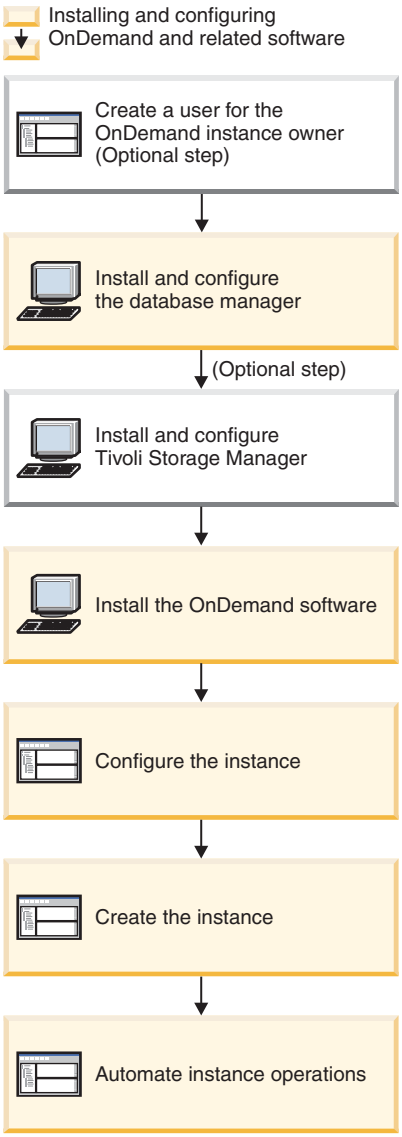

Figure 24. Installing Content Manager OnDemand and related software

Setting up your Content Manager OnDemand system typically requires that you do the following:

__ 1. Create an Content Manager OnDemand system administrator account on each workstation that is part of the Content Manager OnDemand system (see "Content Manager OnDemand system administrator account" on page 307).

__ 2. Install and configure the database manager product on the library server (see Chapter 50, "Installing the database manager on Windows," on page 309).

__ 3. If you plan to maintain data in archive storage, install and configure Tivoli Storage Manager on the library server or on each object server that will be used to maintain data in archive storage (see Chapter 51, "Installing and configuring Tivoli Storage Manager on Windows," on page 313).

__ 4. Install the Content Manager OnDemand software on each workstation that is part of the Content Manager OnDemand system (see Chapter 52, "Installing the Content Manager OnDemand software on Windows," on page 329).

__ 5. Configure the Content Manager OnDemand software on each workstation that is part of the Content Manager OnDemand system (see Chapter 53, "Configuring instances on Windows," on page 331). This step includes configuring the database manager (library server only), storage manager, services, and maintenance tasks and creating and initializing the database (library server only).

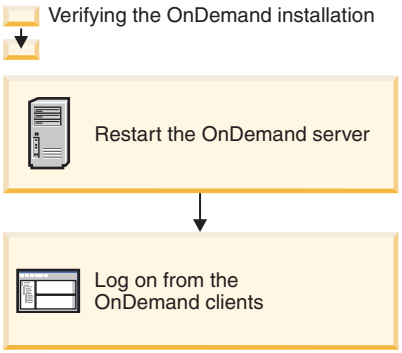

Figure 25. Verifying the installation

Verify the installation of Content Manager OnDemand (see Chapter 55, "Verifying the installation," on page 349).

__ 1. After installing and configuring each Content Manager OnDemand server, restart the system to reinitialize the operating system and start the services required by Content Manager OnDemand.

__ 2. Share the Content Manager OnDemand client program folder so that other users on the network can install client software. You should use the share name `odclient` to share the `\Program Files\IBM\OnDemand32\` folder.

__ 3. Log on to the library server with an Content Manager OnDemand client program. To access the system, you must install at least one of the Content Manager OnDemand client programs on a PC running Microsoft Windows. See *IBM Content Manager OnDemand: Client Installation Guide* for installation information about the Content Manager OnDemand client. See *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for installation information about the Content Manager OnDemand administrative client.

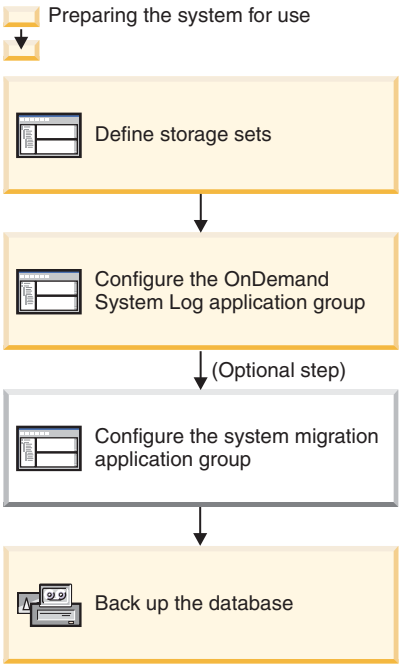

Figure 26. Preparing the system for use

Prepare the system for use:

__ 1. Define storage sets (see Chapter 56, "Defining storage sets," on page 351). Before you define reports or load data into the system, you must define storage sets.

__ 2. Configure the System Log application group (see Chapter 57, "Configuring the System Log application group," on page 353). Before you define reports to the system, load data, or let users access the system, you should configure the System Log application group.

__ 3. If you plan to migrate index data to archive storage, configure the System Migration application group (see Chapter 59, "Configuring the System Migration application group," on page 361).

__ 4. Backup the database (see Chapter 60, "Backing up the Content Manager OnDemand database," on page 363). After configuring the system, you should create a full backup image of the Content Manager OnDemand database.

Installing and configuring optional software:

__ 1. If you plan to use Download for the z/OS feature (Download) to transmit data from z/OS systems to Content Manager OnDemand servers, then you must install and configure Download. Follow the instructions in *PSF for z/OS: Download for z/OS* to plan, install, configure, and verify the installation of the Download software. Then configure Download on each Content Manager OnDemand server. Complete the following tasks:

   __ a. Obtain a copy of *PSF for z/OS: Download for z/OS*.

   __ b. Check the prerequisites and verify the z/OS and TCP/IP software levels for Download.

   __ c. Install and configure Download on the system.

   __ d. Configure the Content Manager OnDemand MVSD service on each server that will use Download to receive datasets (see Chapter 53, "Configuring instances on Windows," on page 331).

__ 2. If you plan to reprint documents using the Content Manager OnDemand server print function, then you must install Infoprint on a workstation that belongs to the same network as the Content Manager OnDemand library server. Follow the instructions in the Infoprint documentation to plan, install, configure, and verify the installation of the Infoprint software. Then configure the server print function on the library server. Complete the following tasks:

   __ a. Obtain a copy of the Infoprint documentation for your server.

   __ b. Install and configure Infoprint.

   __ c. Verify that all resources and fonts that your organization requires to reprint the reports that you plan to store in Content Manager OnDemand are installed on the Infoprint server.

   __ d. On the Infoprint server, define the print queues and devices that Infoprint uses to manage the Content Manager OnDemand server print function.

   __ e. Obtain the TCP/IP host name or TCP/IP address of the Infoprint server.

   __ f. On the library server, update the `ARSPRT.BAT` file with the TCP/IP host name or TCP/IP address of the Infoprint server. You can find the ARSPRT.BAT in the `\program files\IBM\Content Manager OnDemand for Windows\bin` directory.

   __ g. Define a server printer on the Content Manager OnDemand library server with the administrative client.

__ 3. If you need to customize and enhance the standard functionality within the product, see the user exit documentation in the Appendix of this publication. A user exit is a point during processing that enables you to run a user-written program and return control of processing after your user-written program ends. OnDemand provides the following user exit points:

   __ a. Download user exit

   __ b. Report specifications archive definition user exit

   __ c. Retrieval preview user exit

   __ d. Security user exit

   __ e. System log user exit

   __ f. Table space creation user exit

Chapter 48. Windows server requirements

The exact hardware and software configuration that you need for Content Manager OnDemand to support your organization depends on the volume of data that you plan to maintain on the system, the number of concurrent users that the system must support, the backup and recovery requirements of your organization, and the performance levels that the system must meet. At a minimum, you need one processor for a standard Content Manager OnDemand library/object server.

For all Windows server requirements, see http://www.ibm.com/support/docview.wss?rs=129&uid=swg27016455 or search for 7016455 at http://www.ibm.com/.

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Chapter 49. Accounts and userids on Windows

Content Manager OnDemand system administrator account

Each library server must have a user account that will be used to install Content Manager OnDemand software products, administer the system, load data, and perform other Content Manager OnDemand functions. If you use DB2 to manage the database, the user name must meet the DB2 naming rules.

You should create the ODADMIN user account on each workstation on which you plan to install the Content Manager OnDemand server software. Assign the account a password. Specify the following characteristics:

- Enter a description, such as: **Content Manager OnDemand system administrator account**
- Add the account to the local group **Administrators**
- All logon hours should be allowed
- Modify the local security policy settings to grant the following user rights to the new user:
  - Act as part of the operating system
  - Create a token object
  - Increase quotas
  - Log on as a service
  - Replace a process level token

Important if you are using a unified login: After you install and configure the system, remember to add the ODADMIN user to Content Manager OnDemand. Set the User Type to System Administrator. If you change the password in Windows, remember to change it in Content Manager OnDemand. Or, if you change the password in Content Manager OnDemand, remember to change it in Windows.

Unified login for user accounts

The unified login mode in Content Manager OnDemand works with the Windows authentication process to allow users to log on to Content Manager OnDemand using their Windows account user names. This feature means that when an authorized user starts the Content Manager OnDemand client after logging on to Windows, the user does not have to enter an Content Manager OnDemand userid and password. This is because Windows account user names are automatically associated with Content Manager OnDemand userids. The LAN Manager Security Support Provider service is used to associate the accounts and userids.

How a user is authenticated

Here is how a user is authenticated with unified login:

1. The user must first log on to Windows with a valid Windows account.
2. The user starts the Content Manager OnDemand client.
3. The user's Windows account user name is routed from Windows to Content Manager OnDemand. The password is not routed to Content Manager

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OnDemand because it is not used to authenticate the user. The only requirement is that the Windows account user name exist in the Content Manager OnDemand User table.

4. Content Manager OnDemand searches the User table for the Windows account user name:
   - If there is a match, then the user is authenticated and logged on to Content Manager OnDemand. A list of folders (or the user's default folder) is then displayed.
   - If there is no match, then Content Manager OnDemand displays the Logon dialog box. The user must enter a valid Content Manager OnDemand userid and password to proceed.

How to prepare for unified login

To use unified login mode, the client must be running Windows XP or higher and the server must be running Windows 2003. The LAN Manager Security Support Provider service must be started on the client and the server. The client and the server must be running Content Manager OnDemand Version 7.1.1 or later.

All users that access Content Manager OnDemand must have valid Windows accounts. The Windows account user names of the users must be added to Content Manager OnDemand with the Content Manager OnDemand administrative client. You should create a Windows account for an administrative user that will run the Content Manager OnDemand services (see "Content Manager OnDemand system administrator account" on page 307 for details).

Operational notes

Unified login supports the Windows client running under Windows XP and later and servers running under Windows 2003.

Content Manager OnDemand uses unified login when the user initially starts the client software. If the user logs off the server but does not exit the client software, then the user must use the Logon command the next time the user wants to log on to the server. The user must enter a valid Content Manager OnDemand userid and password to logon to the server.

In unified login mode, Content Manager OnDemand attempts to log on to the user's default server. The default server is established the first time a user logs on to Content Manager OnDemand. The default server is always the last server the user selected in the Logon dialog box, with one exception. The default server name can be fixed by specifying the /S startup parameter in the Properties of the shortcut used to start the client software.

A user logged on to Windows with an account user name that exists in the Content Manager OnDemand User table does not have to enter an Content Manager OnDemand userid and password to run Content Manager OnDemand commands from the command line. However, Content Manager OnDemand validates the permissions of the userid, to verify that the user has the right to perform the requested action.

With the administrative client, you can log on to a server using an Content Manager OnDemand userid that is different than the Windows account user name with the Logon As command. To access the Logon As command, point to the server and click the right mouse button. If the user is currently logged on to the server, the user must log off the server before selecting the Logon As command.

Chapter 50. Installing the database manager on Windows

The Content Manager OnDemand library server maintains system information and user-defined index data in a relational database. You can use DB2, Oracle, or Microsoft SQL Server as the database manager. For all products, see the product documentation for complete installation instructions. This section provides installation and configuration information specific to Content Manager OnDemand for DB2, Oracle, and Microsoft SQL Server.

Installing DB2

You must install DB2, Oracle, Microsoft SQL Server on the Content Manager OnDemand library server. This section describes how to install DB2. See "Installing Oracle" for instructions about installing Oracle. See "Installing SQL Server" on page 311 for instructions about installing SQL Server.

The DB2 Universal Database Enterprise Edition program CD-ROMs are provided with the Content Manager OnDemand program package. The DB2 technical information is available in HTML and PDF formats on separate CD-ROMs. The README file explains how to locate the information that you need. Follow the instructions in *IBM DB2 Universal Database Quick Beginnings for DB2 Servers* to plan, install, configure, and verify the installation of DB2.

To install DB2 on the library server:

1. Log on with the Content Manager OnDemand system administrator account (see "Content Manager OnDemand system administrator account" on page 307 for details).
2. Insert the DB2 CD-ROM into the CD-ROM drive. The setup program automatically starts after you load the CD-ROM into the drive.
3. When prompted, select Typical as the installation type, to install all DB2 components required to support OnDemand. You can take most default options (unless you have specific requirements of your own).
4. When prompted, enter the user name and password of the Content Manager OnDemand administrator account.
5. After you install the software from the CD-ROM, apply the latest service update for DB2. You can obtain the latest service update from IBM service at ftp://service.software.ibm.com/ps/products/db2/fixes. From the fixes directory, go to the directory for your language. Then go to the directory for your operating system and go to the fix pack directory. Print the README file. Follow the instructions in the README file to apply the service update. **Note:** After installing a service update, you might need to update your database instances (for example, `archive`). See the DB2 README for details.

Installing Oracle

You must install DB2, Oracle, or SQL Server on the Content Manager OnDemand library server. This section describes how to install Oracle. See "Installing DB2" for instructions about installing DB2. See "Installing SQL Server" on page 311 for instructions about installing SQL Server.

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See your Oracle documentation for installation instructions. After you have completed installing the Oracle software, continue with "Configuration notes."

Configuration notes

After you verify the installation of the Oracle software on the library server, you must configure it to work with Content Manager OnDemand. To configure Oracle to work with Content Manager OnDemand:

1. Configure logon processing.
   a. Add the **OSAUTH_PREFIX_DOMAIN** value to the HKEY_LOCAL_MACHINE\software\ORACLE\HOME0 subkey. The **OSAUTH_PREFIX_DOMAIN** value must have a type of String (REG_SZ). The data value of **OSAUTH_PREFIX_DOMAIN** must be False. For example:

      ```
      HKEY_LOCAL_MACHINE\software\ORACLE\HOME0
           OSAUTH_PREFIX_DOMAIN=False
      ```

   b. Add the following ARS_ORACLE_ keys and values to HKEY_LOCAL_MACHINE\SOFTWARE\IBM\OnDemand for WinNT\@SRV@_ARCHIVE\CFG:

      ARS_ORACLE_USERID
      The user ID of the Content Manager OnDemand user in Oracle (root).

      ARS_ORACLE_PASSWD
      The password for the Content Manager OnDemand user (root) in Oracle.

2. Create the database.

   You should create the Content Manager OnDemand database using Oracle utilities. The name that you specify for the database should match the value that you specify for the Content Manager OnDemand instance name. For example, ARCHIVE. See Chapter 53, "Configuring instances on Windows," on page 331.

3. Change the Oracle parameters:
   a. Connect to the database by using sqlplus. Connect as the Oracle user with dba priviledges. For example:

      ```
      sqlplus "/ as sysdba"
      ```

   b. Change the Oracle parameters:

      ```
      alter system set remote_os_authent = TRUE SCOPE = SPFILE;
      alter system set os_authent_prefix = '' SCOPE = SPFILE;
      ```

   c. Restart the database.

4. Create the userid of the Content Manager OnDemand instance owner in Oracle.

   All tables created by Content Manager OnDemand will be owned by the user that you create in this step. If you wish to have a default Oracle table space for the user, then you should specify the table space when you create the user.

   Use the following format of the CREATE USER command:

   ```
   CREATE USER userid IDENTIFIED EXTERNALLY ;
   GRANT dba to userid ;
   ```

   Where userid is the Windows account user name that you will use to create the instance with the Content Manager OnDemand configurator program (see Chapter 53, "Configuring instances on Windows," on page 331).

5. Integrate Content Manager OnDemand with the Oracle shared library.

Verify that the Oracle program directory was added to the PATH during the software installation. Unless you specify otherwise, the Oracle program directory is `\oracle\ora92\bin`.

Installing SQL Server

You must install DB2, Oracle, or SQL Server on the Content Manager OnDemand library server. This section describes how to install SQL Server. See "Installing DB2" on page 309 for instructions on installing DB2. See "Installing Oracle" on page 309 for instructions on installing Oracle.

This section provides an overview of installing SQL Server. For detailed information about installing SQL Server or if you encounter problems installing SQL Server, see the SQL Server documentation.

To install SQL Server on the library server:

1. Log on with the Content Manager OnDemand system administrator account (see "Content Manager OnDemand system administrator account" on page 307 for details).
2. Insert the SQL Server CD-ROM into the CD-ROM drive. The SQL Server installation program should start. If it does not, browse the CD-ROM for the `autorun.exe` file. Double-click the `autorun.exe` file to start the installation program.
3. The installation program displays the main SQL Server installation screen. From this screen, you can read the release notes, browse the Setup/Upgrade Help (recommended), connect to the Microsoft SQL Server Web site, and install the product and prerequisites. You should make sure that all prerequisites are installed before you install SQL Server.
4. To install SQL Server, click the SQL Server Components and then select Install Database Server.
5. The installation program moves you through the setup steps, collecting information about the computer name, user information, and the type of installation:
   - If you decide to create an instance during installation, you should accept the defaults provided. (**Note:** This is not the instance that will be used by Content Manager OnDemand.)
   - You should install the Server and Client Tools.
6. The installation program then prompts you to select one of three setup options: Typical, Minimum, or Custom. Most customers should select Typical. The Typical setup option installs the SQL Server files to the specified drive and directory and installs the TCP/IP network libraries (required by Content Manager OnDemand).
7. Next, the installation program prompts you for values for the services accounts and to specify the authentication mode. You should accept the defaults provided.
8. After you verify all installation options, Click Next to start copying files. The progress window appears.
9. When the process completes, the Setup Complete window appears.
10. Click Finish to complete the installation and restart the computer.

When the system restarts, log on with an account that belongs to the Administrators group. Verify the installation by completing the following steps:

- Verify that the SQL Server services are started

- Connect to the server and run a simple query against the sample database.

Chapter 51. Installing and configuring Tivoli Storage Manager on Windows

This section explains how to set up Tivoli Storage Manager for Content Manager OnDemand on a Windows workstation.

Tivoli Storage Manager can be used with Content Manager OnDemand object servers to store report data on devices that are supported by Tivoli Storage Manager. Devices supported by Tivoli Storage Manager include optical libraries and tape media. The use of Tivoli Storage Manager is optional and is needed only if you want to provide long-term storage for your reports on devices other than the fixed disks attached to the object server. You can also use Tivoli Storage Manager facilities to maintain DB2 archived log files and backup image files.

You will need the *IBM Tivoli Storage Manager for Windows: Quick Start* publication to install and configure Tivoli Storage Manager. HTML and PDF versions of Tivoli Storage Manager publications, including the *Quick Start*, are available at http://publib.boulder.ibm.com/tividd/td/tdprodlist.html.

Prerequisites

OnDemand supports Tivoli Storage Manager in the following configurations:

- Standard library/object server plus Tivoli Storage Manager on one workstation. Install the Server, Clients, API, Device Drivers, and Licenses on the library server workstation.
- Library server only (where Tivoli Storage Manager resides on some other workstation than the library server). Install the Clients and API on the library server workstation.
- Object server plus Tivoli Storage Manager on some other workstation than the library server. Install the Server, Clients, API, Device Drivers, and Licenses on the object server workstation.

OnDemand uses the Tivoli Storage Manager API client to store data into the Tivoli Storage Manager server. The Tivoli Storage Manager server is managed and administered independently of Content Manager OnDemand. The Tivoli Storage Manager administrator must ensure that the following conditions are met:

- All the normal requirements for Tivoli Storage Manager storage are monitored and managed accordingly
- All required Tivoli Storage Manager policies, management classes, storage pools, and volumes are defined accordingly
- All required Tivoli Storage Manager storage pools and volumes are online
- All Tivoli Storage Manager storage pools and volumes have sufficient storage space to satisfy the needs of Content Manager OnDemand
- The Tivoli Storage Manager server is active when OnDemand needs to read from or write to its storage repository

If your Tivoli Storage Manager configuration cannot support OnDemand, system requests (that require Tivoli Storage Manager services) will fail. The Tivoli Storage Manager administrator should examine the system to ensure that it will support the storage and retrieval of data by OnDemand.

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Tivoli Storage Manager objects created during a typical installation

Table 21 lists the objects that should be defined to the Tivoli Storage Manager server after you install Tivoli Storage Manager, perform initial configuration, and update the configuration for Content Manager OnDemand. The objects defined to the Tivoli Storage Manager server will depend on the number and types of devices that you configure on the system. The information in the table assumes that you will configure one automated library on the system (such as an IBM 3995-C64 optical library with two optical drives) and add one client node to hold Content Manager OnDemand data for seven years.

Table 21. Tivoli Storage Manager objects created during a typical installation

Object	**Name**
Automated Library	LB6.0.0.1
Drive 1	OP1.0.0.1
Drive 2	OP3.0.0.1
Storage Pool	OPTPOOL1
Device Class	OPTCLASS1
Client Node	OD7YRPRI
Policy Domain	DOM1
Policy Set	STANDARD
Management Class	STANDARD
Copy Group	STANDARD
Administrative Clients	ADMIN ODADMIN

Performing initial configuration

After you have installed Tivoli Storage Manager and restarted the system, Tivoli Storage Manager prompts you to configure the Tivoli Storage Manager server. The Initial Configuration wizard guides you through the process. You can find an overview of initial configuration and more information about configuring Tivoli Storage Manager in the *IBM Tivoli Storage Manager for Windows: Quick Start* publication. If you are not familiar with Tivoli Storage Manager functions and concepts, you should read the Tivoli Storage Manager Basics and the Configuring and Managing Server Storage chapters in *IBM Tivoli Storage Manager for Windows: Administrator's Guide* before you begin.

The initial configuration does not include all of the functions needed to support Content Manager OnDemand, but it does provide a system with the basic components that Content Manager OnDemand needs. In "Updating the configuration" on page 317, you will complete the configuration by updating the initial configuration with additional information needed by Content Manager OnDemand.

In general, initial configuration of Tivoli Storage Manager to support Content Manager OnDemand consists of:

- Defining the environment
- Configuring performance
- Configuring services

- Registering licenses
- Adding devices
- Configuring volumes
- Adding client nodes

Defining the environment

The Environment Wizard asks you whether you want to configure a Tivoli Storage Manager stand-alone or network environment.

Most Content Manager OnDemand customers should select the Standalone option.

Configuring performance

The Performance Configuration Wizard helps you optimize the performance of the Tivoli Storage Manager server.

Most Content Manager OnDemand customers should select the Mostly Large Files option and the 2 – 49 Client Nodes option.

Configuring services

The Service Configuration Wizard asks you if you want to start the Tivoli Storage Manager server and scheduler services and the Tivoli Storage Manager device driver automatically when the system is restarted.

Most Content Manager OnDemand customers should configure the Tivoli Storage Manager server service to start automatically and the Tivoli Storage Manager device driver to enable optical support at boot.

After you configure services, you should restart the system to enable optical support (so that Tivoli Storage Manager will recognize all of your SCSI-attached optical devices). After you restart the system, start the TSM Server Utilities and continue with initial configuration from the Device Configuration Wizard.

Registering licenses

When you install Tivoli Storage Manager, your system is licensed for the base Tivoli Storage Manager support, which provides the following:

- An unlimited number of administrative clients
- One backup-archive client
- Enterprise administration functions
- Server-to-server virtual volume support

You should register the device, client, and other licensed functions that you purchased. For current information about devices supported by Tivoli Storage Manager, contact the IBM support center.

The License Wizard asks you to select the license options that you purchased. Select the license options and then click Next.

Most Content Manager OnDemand customers should select Advanced Device Support and enter the number of Tivoli Storage Manager client licenses that they purchased in the space provided.

Adding devices

The Device Configuration Wizard detects manual and automated devices that are attached to the server. The Device Selection dialog shows devices that have not been defined to Tivoli Storage Manager in the left pane. The right pane lists devices that have been defined to Tivoli Storage Manager.

- To define a manual device to Tivoli Storage Manager and associate it with a manual library, move the device from the left pane to the right pane.
- To define an autochanger and its drives to Tivoli Storage Manager and associate them with an automated library, move the autochanger to the right and then drag and drop the drives on the autochanger.

  For an autochanger with multiple drives, you must associate the drives with the autochanger element number order as described in the autochanger documentation.

Configuring volumes

When you install Tivoli Storage Manager, the installation program creates a default 13 MB database volume (db1.dsm) and a 9 MB recovery log volume (log1.dsm). The database size is determined by the amount of data that you plan to store on the server. You might need to increase the size of the recovery log, depending on the current utilization. The *IBM Content Manager OnDemand for Multiplatforms: Introduction and Planning Guide* provides formulas that you can use to estimate the database and recovery log sizes. You should start by increasing the database size by 256 MB and the recovery log size by 72 MB. As you load data on the server, you can monitor the utilization and increase or decrease the database and recovery log sizes accordingly.

Use the Volume Configuration wizards to increase the size of the Tivoli Storage Manager database volumes and recovery log volumes. The wizards format and define the additional volumes and place them where you want them.

Adding client nodes

The Client Node Configuration Wizard lets you register client nodes and specify policy information.

A client node links clients and their data with storage volumes and devices. Before Content Manager OnDemand can store data in Tivoli Storage Manager storage, you must register at least one client node. You must register at least one client node in each storage pool that will contain Content Manager OnDemand data.

To add a client node from the Client Node Configuration Wizard:

1. Click Add Node.
2. In the Add TSM Nodes dialog, specify the following:
   - Client node name.

     When you define a storage node to Content Manager OnDemand (with the Content Manager OnDemand administrative client), you specify the Tivoli Storage Manager client node name.
   - Client node password. Enter the password in the Password and Verify Password fields.
   - Storage pool name. Select the name that Tivoli Storage Manager associated with one of the devices that you added in “Adding devices.”
3. Click OK.

Updating the configuration

You typically need to update the initial configuration of Tivoli Storage Manager to support Content Manager OnDemand by:

- Defining server options
- Defining client options
- Registering an Content Manager OnDemand administrator
- Updating the client node
- Setting the expiration period for the activity log
- Updating device classes
- Updating storage pools
- Updating policy information
- Preparing media

The *IBM Tivoli Storage Manager for Windows: Administrator's Reference* provides detailed information about all of the commands used in this section and should be your primary reference when you work with Tivoli Storage Manager. Refer to the Tivoli Storage Manager publications if you encounter problems configuring Tivoli Storage Manager or if the examples that follow do not provide the information that you need to define your server storage devices, policies, and operations.

Defining server options

You can verify and define server options by starting Server Utilities from the Tivoli Storage Manager program group. Then open Server Options and follow the instructions provided.

Table 22 shows the server options required by most Content Manager OnDemand systems. (Tivoli Storage Manager provides many other server options, however, most customers can use the defaults provided.)

Table 22. Server options for Content Manager OnDemand

Server Options Page	Option and Value
TCP/IP	Select the Enable TCP/IP option Set Port Address to 1500
Client Connections	Set Maximum Simultaneous Clients to 255 Set Idle Timeout to 60
Miscellaneous	Select the No Preempt option
Display Format	Verify the language settings, such as locale and display format

Defining client options

The client options identify the server that Tivoli Storage Manager uses for Content Manager OnDemand application group data. You can define the client options by creating a file named `dsm.opt` (in the `\Program Files\Tivoli\TSM\Baclient` directory unless you specify otherwise). Use Notepad or some other standard text editor to create the file.

The following example shows the client options required by most Content Manager OnDemand systems:

```
TCPServeraddress   fully.qualified.tcpip.host.name
COMMmethod         TCPip
TCPPort            1500
COMPRESSION        OFF
```

Replace the string `fully.qualified.tcpip.host.name` with the name of the server that you are configuring.

Registering the Content Manager OnDemand administrator

The rest of the steps in updating the configuration require that you enter commands from the Tivoli Storage Manager Admin Command Line interface. You should start a Tivoli Storage Manager administrative client console to monitor the commands and messages. To start the console, first start a command prompt. Change to the `\Program Files\Tivoli\TSM\Baclient` directory. Then type `dsmadmc –consolemode` and press Enter.

You should add a client node for the Content Manager OnDemand administrator account that you created in Windows. Add the client node from the Tivoli Storage Manager Admin Command Line interface. For example:

```
register admin odadmin ondemand passexp=0
grant authority odadmin classes=system
```

Replace the string `ondemand` with the password that you assigned to the Content Manager OnDemand administrator account in Windows.

Updating the client node

You should update the Content Manager OnDemand client node that you added in "Adding client nodes" on page 316. You should allow the client node to delete data from archive copy groups. Update the client node from the Tivoli Storage Manager Admin Command Line interface. For example:

```
update node OD7YRPRI archdel=yes
```

Replace the string `OD7YRPRI` with the client node name.

Setting the retention period for the activity log

You should configure the server to retain messages in the server activity log for one year and set the password expiration to the maximum permitted value. The activity log includes messages about client sessions, diagnostic error messages, and messages about scheduled events. Set these values from the Tivoli Storage Manager Admin Command Line interface. For example:

```
set actlogretention 365
set passexp 9999
```

Updating device classes

You might need to update the device classes that Tivoli Storage Manager defined for the devices that you added during initial configuration.

- If the library you are defining to Tivoli Storage Manager uses WORM optical platters, change the value of the `devtype` parameter to `WORM`. Update the device class from the Tivoli Storage Manager Admin Command Line interface. For example, to update the device class named `optclass1`, enter:

  ```
  update devclass optclass1 devtype=WORM
  ```

- You can set the `mountretention` parameter to a larger value if you are configuring a system where the most frequently accessed data resides on the same storage volumes or if you expect a low volume of retrieval activity to data

stored in the library. The mountretention parameter governs how long Tivoli Storage Manager retains idle storage volumes before dismounting them. Update the device class from the Tivoli Storage Manager Admin Command Line interface. For example, to update the device class named optclass1 so that Tivoli Storage Manager retains idle storage volumes for six hours before dismounting them, enter:

```
update devclass optclass1 mountretention=360
```

Updating storage pools

You might need to update the storage pools that Tivoli Storage Manager defined for the devices that you added during initial configuration.

- The maxscratch parameter can be used to enable Tivoli Storage Manager to automatically mount new scratch volumes when needed, without intervention from a Tivoli Storage Manager administrator. Setting the value to 1 means that Tivoli Storage Manager can mount a new scratch volume once. Use caution when setting this parameter to a larger value. Refer to the Tivoli Storage Manager documentation for more information. Update the storage pool from the Tivoli Storage Manager Admin Command Line interface. For example, to update the storage pool named optpool1, enter:

  ```
  update stgpool optpool1 maxscratch=1
  ```

- The reusedelay parameter determines when a storage volume can be rewritten or returned to the scratch pool. That is, the number of days that must elapse after all of the files on a storage volume have been deleted before Tivoli Storage Manager can write over the volume or return the volume to the scratch pool. Refer to the Tivoli Storage Manager documentation for details. Update the storage pool from the Tivoli Storage Manager Admin Command Line interface. For example, to update the storage pool named optpool1, enter:

  ```
  update stgpool optpool1 reusedelay=30
  ```

Updating policy information

First, update the archive copy group with the length of time in days that you want Tivoli Storage Manager to maintain data in the storage pool. Update the copy group from the Tivoli Storage Manager Admin Command Line interface. For example:

```
update copygroup DOM1 standard standard standard -
                 type=archive dest=optpool1 retver=2557
```

Replace the string DOM1 with the name that Tivoli Storage Manager assigned to the policy domain it created when you added the client node (see "Adding client nodes" on page 316). Replace the strings standard with the names that Tivoli Storage Manager assigned to the policy set, management class, and copy group. Replace the string optpool1 with the name that Tivoli Storage Manager assigned to the storage pool. Replace the string 2557 with the length of time (in days) that you want Tivoli Storage Manager to maintain data in the storage pool. This value should be greater than or equal to the value that you specify for the Life of Data and Indexes of the Content Manager OnDemand application groups that will use the storage pool.

After you update the archive copy group, assign a default management class for the policy set. For example:

```
assign defmgmtclass DOM1 standard standard
```

Replace the string DOM1 with the name that Tivoli Storage Manager assigned to the policy domain. Replace the strings standard with the names that Tivoli Storage Manager assigned to the policy set and management class.

After you assign a default management class for the policy set, validate and activate the policy set. For example:

```
validate policyset DOM1 standard
activate policyset DOM1 standard
```

Replace the string DOM1 with the name that Tivoli Storage Manager assigned to the policy domain. Replace the string standard with the name that Tivoli Storage Manager assigned to the policy set.

You are now finished updating the configuration. You can type QUIT at the Tivoli Storage Manager Admin Command Line interface to exit the administrative client. If you started a Tivoli Storage Manager administrative client console, press the Ctrl and Break keys to close the console. Then exit the command prompt.

Preparing media

The Device Labeling wizards help you label storage volumes. For example, the Library Media Labeling Wizard asks for the following information:

- To select 1 to 6 character labels (Tape) or 1 to 32 character labels (Optical) when prompted
- Whether to use a bar code reader to determine labels
- Whether existing labels should be overwritten
- To keep volumes in the library after labeling
- To search for new volumes in the library and check them in with the Tivoli Storage Manager server
- The library and drives to be used (specify the element number)
- Whether to check in newly labeled tapes

Before you begin the labeling process for an automated library, you should fill all of the unused storage slots in the library with storage volumes to be labeled.

After you specify the label information and click Label Now, the wizard starts the label program in a command prompt window. If you are specifying your own labels, you will be prompted to enter a label for each storage volume.

When you are finished labeling all of the storage volumes in the library, press Enter to quit the label program. Then type Exit to close the command prompt window.

Click Next to complete the media preparation step. Select the Search for and check in all newly labeled autochanger media option and then click Finish.

You are now finished with initial configuration. (Click NO on the Question dialog.) When you look at Initial Configuration from the Tivoli Storage Manager Server Utilities, all of the initial configuration tasks are marked Completed.

Configuring Tivoli Storage Manager to manage DB2 files

You can use Tivoli Storage Manager to maintain DB2 archived log files and backup image files. This capability means that you do not have to manually maintain these files on disk. The tasks in this section are optional, and are only recommended for customers who need to use Tivoli Storage Manager facilities to backup and restore DB2 databases. For more information about using Tivoli Storage Manager to manage DB2 files, see *IBM DB2 Universal Database: Data Recovery and High Availability Guide and Reference*, SC09-4831.

Configuring the client options

The `dsm.db2.opt` file (in the `\Program Files\Tivoli\TSM\Baclient` directory by default) on the Content Manager OnDemand library server identifies the Tivoli Storage Manager server and client node used to maintain the DB2 log files and backup images. When archiving log files and creating backup images, DB2 reads this file to determine the options used to store the files in Tivoli Storage Manager.

The following example shows the client options that can be used by most customers. The `NODENAME` parameter identifies the Tivoli Storage Manager client node. The `TCPSERVERADDRESS` identifies the fully qualified TCP/IP host name of the Tivoli Storage Manager server. To maintain DB2 files in Tivoli Storage Manager storage, you must set the COMPRESSION parameter to YES and the PASSWORDACCESS parameter to GENERATE.

```
* The following server manages DB2 log files and backup images
NODENAME           db2backup
COMMETHOD          tcpip
TCPPORT            1500
TCPSERVERADDRESS   fully.qualified.host.name
COMPRESSION        yes
PASSWORDACCESS     generate
```

Defining the storage objects

You must define the storage objects that Tivoli Storage Manager uses to maintain the DB2 log files and backup images. Define the storage objects on the object server where you plan to use Tivoli Storage Manager to maintain the DB2 files. The storage objects include a storage library, device class, storage pool, and policy domain:

- If you plan to use an existing storage pool to maintain DB2 files, you do not need to define a storage library or device class.
- If you plan to use an existing policy domain to maintain DB2 files, the domain must include an archive copy group and a backup copy group. See “Defining the archive copy group” on page 322 and “Defining the backup copy group” on page 322 for details.
- If you plan to define new storage objects to maintain DB2 files, you must add the devices to Tivoli Storage Manager and define a policy domain with archive and backup copy groups. See “Adding devices” on page 316 to add devices to Tivoli Storage Manager. See “Defining the domain” on page 322 for an example of how to define a domain. See “Defining the archive copy group” on page 322 and “Defining the backup copy group” on page 322 for an example of how to define an archive copy group and a backup copy group.
- The storage pool where Tivoli Storage Manager maintains the DB2 files must support rewriteable optical media (not WORM) or tape.

You should use dedicated hardware and storage objects to maintain the DB2 log files and backup images.

Defining the domain

The following example shows how to define a policy domain to Tivoli Storage Manager. Provide a name that is unique to Tivoli Storage Manager. The name in the example implies that Tivoli Storage Manager will maintain the files for one year. The length of time that Tivoli Storage Manager maintains the files actually depends on how you define the archive and backup copy groups.

```
define domain 1YRPD -
              desc='Domain for DB2 file storage'
```

The following example shows how to define a policy set to Tivoli Storage Manager. Provide a name that is unique to Tivoli Storage Manager. The policy set identifies the policy domain.

```
define policyset 1YRPD 1YRPS -
                 desc='Policy set for DB2 file storage'
```

The following example shows how to define a management class to Tivoli Storage Manager. Provide a name that is unique to Tivoli Storage Manager. The management class identifies the policy domain and the policy set.

```
define mgmtclass 1YRPD 1YRPS 1YRMG -
                 desc='Management class for DB2 file storage'
```

Defining the archive copy group

The archive copy group determines Tivoli Storage Manager options for the DB2 archived log files, including the number of days that Tivoli Storage Manager maintains the files. DB2 log files must be maintained until they are no longed needed for database or table space recovery. Log files are valid between full, offline backup images of the database. When you create a full, offline backup image of the database, the log files created prior to the backup image can be deleted. For example, if you create a full, offline backup image of the database every thirty days, you must keep log files for at least thirty days. If you do not create full, offline backup images of the database, you should maintain the files indefinitely.

The following example shows how to define an archive copy group. The archive copy group identifies the policy domain, policy set, and management class. The archive copy group also identifies the storage pool where Tivoli Storage Manager maintains the DB2 archived log files and the length of time that Tivoli Storage Manager maintains the files. In the example, Tivoli Storage Manager maintains each DB2 archived log file stored in the storage pool for 366 days:

```
define copygroup 1YRPD 1YRPS 1YRMG standard -
                 type=archive dest=ODNT2 retver=366
```

Defining the backup copy group

The backup copy group determines Tivoli Storage Manager options for the DB2 backup images, including the number of versions of each backup image maintained and the length of time that Tivoli Storage Manager maintains them. Plan to save one version of each backup image. You should keep the files for the same length of time that you keep archived log files.

The following example shows how to define a backup copy group. The backup copy group identifies the policy domain, policy set, and management class. The backup copy group also identifies the storage pool where Tivoli Storage Manager maintains the DB2 backup images and the number of versions of each backup image that Tivoli Storage Manager maintains. In the example, Tivoli Storage Manager maintains one version of each DB2 backup image file for 366 days:

```
define copygroup 1YRPD 1YRPS 1YRMG standard -
                 type=backup dest=ODNT2 verexists=1 retonly=366
```

Assigning a default management class

After you define the policy set, the management classes it contains, and the copy groups, you must assign a default management class for the policy set. The following example shows how to assign a default management class:

```
assign defmgmtclass 1YRPD 1YRPS 1YRMG
```

Validating the policy set

After you define a default management class, validate the policy set:

```
validate policyset 1YRPD 1YRPS
```

Activating the policy set

Finally, you must activate the policy set to make the definitions available to Tivoli Storage Manager:

```
activate policyset 1YRPD 1YRPS
```

Registering the DB2 client node

You must register a client node in Tivoli Storage Manager for DB2 to use when archiving log files or storing backup images. When you register the client node, you identify the policy used by Tivoli Storage Manager to maintain the files. The client node name must also be identified in the client options file that you create to support DB2 (see "Configuring the client options" on page 321 for details). The client node name must be unique to Tivoli Storage Manager. You must supply a client node password. Register the client node on the object server where you plan to use Tivoli Storage Manager to maintain the DB2 files.

The following example shows how to register the client node `db2backup` and assign it to the `1YRPD` policy domain. The node password is `password`:

```
register node db2backup password domain=1YRPD -
             backdel=yes archdel=yes
```

Setting the client node password in DB2

Before DB2 can use Tivoli Storage Manager to maintain log files and backup image files, you must set the client node password in DB2 on the library server. You established the client node password when you registered the client node in Tivoli Storage Manager (see "Registering the DB2 client node").

Use the `dsmapipw` command to set the client node password in DB2. The `dsmapipw` command is provided with your DB2 software. By default, the `dsmapipw` command can be found in the `\sqllib\adsm` directory.

To set the client node password:

1. On the library server, log on to Windows with the Content Manager OnDemand administrator account.
2. Start a command prompt.
3. Set the DSMI_DIR and DSMI_CONFIG environment variables. These variables identify the directory where the API files are located and the full path name of the options file that Tivoli Storage Manager uses to identify the server that maintains the DB2 files. (You created the options file in "Configuring the client options" on page 321.) For example:

   ```
   export DSMI_DIR=/usr/tivoli/tsm/client/api/bin64
   export DSMI_CONFIG=/usr/tivoli/tsm/client/api/bin64/dsm.db2.opt
   ```

4. Run the `dsmapipw` command. For example:

   ```
   \sqllib\adsm\dsmapipw
   ```

5. The `dsmapipw` command prompts you for the following information:
   - `old password`, which is the current password for the client node. This is the password that you specified when you registered the client node in Tivoli Storage Manager (see "Registering the DB2 client node" on page 323).
   - `new password`, which is the password that will be stored in DB2. You will be prompted twice for the password. Unless you have a good reason for not doing so, specify the old password when prompted.
6. Exit the command prompt.
7. If DB2 is running, stop and restart DB2.

Important: If you change the client node password in Tivoli Storage Manager, remember to run the `dsmapipw` command to set the new password in DB2.

Space requirements

The storage pool where Tivoli Storage Manager maintains the DB2 log files and backup images must contain enough storage to hold the files needed to recover your database. Because you should maintain database files indefinitely, you must plan to allocate a sufficient number of storage volumes to meet these needs. For example, a single log file requires approximately 1.3 MB of storage space. Depending on the amount of data that you store in Content Manager OnDemand and the frequency of full database backups, you might need to maintain hundreds of log files in storage managed by Tivoli Storage Manager. Depending on the frequency and type of backup images you create, you might need to maintain several database and table space backup images. Depending on the size of your database and tables, each backup image may require several storage volumes. Finally, if you plan to migrate large tables of application group data to their own table spaces, DB2 requires storage for a backup image of each migrated table.

Backup considerations

Depending on the size of the database and the frequency of backups, you might need to regularly initialize and load scratch storage volumes into the storage library. If Tivoli Storage Manager determines there is not enough space available in the storage pool, it can request a mount for a scratch storage volume. However, the backup command cannot complete until the mount request is satisfied. If you operate in an unattended environment, this could have an adverse affect on system availability, especially when running an offline backup.

In addition to storing the DB2 log files and backup images in Tivoli Storage Manager, you should regularly back up the Tivoli Storage Manager database and control files. Doing so can help prevent prolonged system outages in the event that you need to recover the database. You can define a schedule to Tivoli Storage Manager that automatically starts the backup process. The *IBM Tivoli Storage Manager for Windows: Administrator's Guide* describes how to define Tivoli Storage Manager schedules.

Backing up Tivoli Storage Manager information

After you configure Tivoli Storage Manager, you should backup the Tivoli Storage Manager database and save Tivoli Storage Manager server files that contain important information. The backup copy of the database can be used if you need to recover the database. (The backup copy should be saved until the next time that you create a full backup of the database.) The files contain important information that you must have if you need to recover the database.

You should backup the database and save server files whenever you make changes to the database. The database is modified when you store data in Tivoli Storage Manager and when you make changes to the Tivoli Storage Manager environment, such as adding devices and managing removable media operations.

Backing up the database

Before you backup the database, you must define the backup storage objects to Tivoli Storage Manager and label at least one tape storage volume. You can define one device class for full backups and a different device class for incremental backups. For example, you can write full backups to a tape device and incremental backups to a disk device. At a minimum, you should define a tape backup device and its associated device class, library, and storage pool:

1. Start Server Utilities from the Tivoli Storage Manager program group.
2. Select Device Configuration.
3. Select the Device Configuration wizard.
4. Click Start.
5. Follow the instructions provided to add a manual tape device to Tivoli Storage Manager and define a device class, library, drive, and storage pool for the tape backup.

Next, label a tape storage volume:

1. Place a blank, unlabeled tape in the drive.
2. Select Media Labeling.
3. Select the Manual Media Labeling wizard.
4. Click Start.
5. Follow the instructions provided to label one or more tape storage volumes.

After you have defined the device and storage objects to Tivoli Storage Manager and labeled at least one tape storage volume, you can backup the database. First, place a labeled tape storage volume in the drive. Then enter the following command from the Tivoli Storage Manager Admin Command Line interface:

```
backup db type=full devclass=dumptapedev
```

Replace the string `dumptapedev` with the name of the device class that you defined for tape backup. The backup command issues several messages, concluding with "Database dump process completed", after successfully creating the database backup.

Write down information about the database backup, such as the date and volume label, and store the backup copy of the database in a safe location, preferably offsite. (Keep the backup copy until you create another full backup copy of the database.)

Saving critical files

The following files contain important information that you must have if you need to recover the database:

- The server options file (DSMSERV.OPT)
- The volume history file (VOLHIST.OUT)
- The device configuration file (DEVCNFG.OUT)
- The Tivoli Storage Manager database and recovery log location file (DSMSERV.DSK)

Save a copy of the files on removable media and store the copy in a safe location, preferably offsite. Save the copy until you create another backup copy of the files.

Protecting data with the data retention protection (DRP) protocol

To avoid the accidental erasure or overwriting of critical data, Content Manager OnDemand supports the Tivoli Storage Manager APIs related to data retention.

Data retention protection (DRP)
Prohibits the explicit deletion of documents until their specified retention criterion is met. Although documents can no longer be explicitly deleted, they can still expire.

Important: DRP is permanent. After it is turned on, it cannot be turned off.

Event-based retention policy
Retention based on an external event other than the storage of data. For Content Manager OnDemand, the retention event is the call to delete the data. A load, unload, application group delete, or expiration of data triggers the retention event.

Restriction: Content Manager OnDemand does not support *deletion hold*, which is a feature that prevents stored data from being deleted until the hold is released.

If you decide to use these policies in Tivoli Storage Manager, then the following scenarios result:

Table 23. Scenarios of using data retention protection

	Creation-based object expiration policy	**Event-based retention object expiration policy**
Data retention protection off	Content Manager OnDemand issues a delete object command through the Tivoli Storage Manager API. Objects are deleted during the next inventory expiration. If an Content Manager OnDemand application group is being deleted, a `delete filespace` command is issued, and the object file space is immediately deleted with the file space.	Content Manager OnDemand issues an event trigger command through the Tivoli Storage Manager API. The status of the objects that are affected are changed from PENDING to STARTED, and the objects are expired by Tivoli Storage Manager based on their retention parameters. If the retention parameters are set to `NOLIMIT`, then the objects never expire. If an OnDemand application group is being deleted, a `delete filespace` command is issued instead, and the objects are immediately deleted along with the file space.

Table 23. Scenarios of using data retention protection (continued)

	Creation-based object expiration policy	Event-based retention object expiration policy
Data retention protection on	Content Manager OnDemand issues no commands to Tivoli Storage Manager. The objects are effectively orphaned by Content Manager OnDemand and are expired by Tivoli Storage Manager based on their retention parameters. If the retention parameters are set to `NOLIMIT`, then the objects never expire.	Content Manager OnDemand issues an event trigger command through the Tivoli Storage Manager API. The event status of the objects that are affected are changed from PENDING to STARTED and the objects will be expired by Tivoli Storage Manager based on their retention parameters. If the retention parameters are set to `NOLIMIT`, then the objects never expire. If an Content Manager OnDemand application group is being deleted, then a `delete filespace` cannot be used with DRP enabled, therefore, the operation is treated the same as if a delete were indicated. The status of all the affected objects is changed from PENDING to STARTED, and they will be expired by Tivoli Storage Manager based on their retention parameters. Because this leaves the file space entries in TSM, you must manually delete these entries when the file space is empty (even with DRP enabled).

Recommendations:

- Set up the application groups to expire by load.
- Define the Tivoli Storage Manager archive copy groups to be event-based, and retain data for 0 days.
- Run the Tivoli Storage Manager inventory expiration regularly to ensure that expired data is removed.

Additionally, Content Manager OnDemand supports the following devices:

IBM DR450 and DR550
Disk-based system that contains a Tivoli Storage Manager that runs DRP.

EMC Centera
Disk-based system that is treated as a device by Tivoli Storage Manager. Tivoli Storage Manager must run DRP.

Configuring the Content Manager OnDemand server

After installing and configuring the Tivoli Storage Manager software, you need to configure the Content Manager OnDemand server software with information it needs to operate with Tivoli Storage Manager. You can use the Content Manager OnDemand configurator program to configure the Content Manager OnDemand server software. See Chapter 53, "Configuring instances on Windows," on page 331 for an overview of the configurator program and details about configuring the Content Manager OnDemand server.

Configure each instance of Content Manager OnDemand that will use Tivoli Storage Manager. Do the following:

- On the Storage page, select the TSM option. Then click TSM Options. Specify the location of the Tivoli Storage Manager program directory and the client options file that you created in "Updating the configuration" on page 317.
- If you plan to use Tivoli Storage Manager to maintain DB2 files, move to the Database page and select the Use TSM for DB2 Files option. Then Click Advanced Options. Specify the location of the client options file that you created in "Configuring Tivoli Storage Manager to manage DB2 files" on page 321.

Chapter 52. Installing the Content Manager OnDemand software on Windows

You must install a copy of the Content Manager OnDemand software on each workstation or node that is part of the Content Manager OnDemand system.

To install the Content Manager OnDemand software, follow these steps:

1. Log on with the Content Manager OnDemand system administrator account (see "Content Manager OnDemand system administrator account" on page 307 for details).
2. Insert the Content Manager OnDemand for Windows Servers CD-ROM into the CD-ROM drive.
3. Choose Run from the Start menu. In the open box, type `x:\server\windows\odwin`, where `x` is the letter of the CD-ROM drive.
4. Read the Welcome screen and then click Next. The License Agreement window appears.
5. Select Yes to accept the license agreement. Click Next. The Destination window appears.
6. Accept the default directory name. Click Next. The Start Copying Files window appears.
7. Click Next. The progress window appears.
8. When the process completes, the Setup Complete windows appears.
9. If you want to view the README file now, click Finish. Otherwise, clear the View README checkbox and then click Finish to complete the installation and restart the computer.
10. After installing the software from the CD-ROM, apply the latest service update for Content Manager OnDemand. You can obtain the latest service update from IBM service at http://www.ibm.com/eserver/support/fixes/.

Installing optional Content Manager OnDemand software

The command to install the Content Manager OnDemand Web Enablement Kit is:

```
x:\wek\windows\odwekwin
```

where `x` is the letter of the CD-ROM drive.

The command to install the Content Manager OnDemand Advanced Function Presentation Transformations for Multiplatforms feature is:

```
x:\wek\windows\afp2web.exe
```

The command to install the Content Manager OnDemand Enhanced Retention Management feature is:

```
x:\wek\windows\oderm.exe
```

The command to install the Content Manager OnDemand PDF Indexing feature is:

```
x:\wek\windows\odpdf.exe
```

The command to install the IBM Content Manager OnDemand Report Distribution for Multiplatforms feature is:

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```
x:\wek\windows\odrdf.exe
```

Chapter 53. Configuring instances on Windows

After installing software on the server, you need to configure Content Manager OnDemand to integrate the various software products and control information, building your specific Content Manager OnDemand operating environment. In general, initial configuration of an Content Manager OnDemand system consists of:

- Defining the server or servers
- Defining an instance on each server
- Specifying properties of the instance:
  - Server type and other options
  - NLS
  - Directories for Content Manager OnDemand programs to use
  - Database manager options
  - Storage manager options
- Creating the instance
- Installing services
- Creating and initializing the database

After you complete the initial configuration of your system, you might need to perform advanced configuration, such as:

- Configuring services
- Configuring scheduled tasks
- Managing multiple servers from one workstation
- Defining multiple instances on one workstation

Getting started

You configure servers by using the Content Manager OnDemand Configurator program.

To begin, log on with the Content Manager OnDemand system administrator account (see "Content Manager OnDemand system administrator account" on page 307 for details).

Next, select Start → Programs → IBM Content Manager OnDemand for Windows → Configurator. The main Configurator window contains a menu bar, toolbar, navigator pane, list pane, and status bar.

The configurator provides online help to assist you with completing tasks. The online help contains information about the options, fields, and commands on the windows, dialog boxes, and property sheets that you see when using the configurator. To display online help, press F1 any time the configurator is active in Windows. Help is available for dialog box commands and options. The main help topic for each dialog box usually contains information about the purpose of the dialog box and the commands and options that appear on the dialog box. To display an index of help topics, select Search from the Help menu. You can type search words to locate related topics in the help file. To learn about Windows help and for information about how to use Windows help, select Using Help from the Help menu.

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Important things to remember

If your Content Manager OnDemand system consists of more than one workstation, you must define each server and create an instance for each server.

An instance owner is assigned during the process of creating the instance. By default, the user name that you use to log on to Windows is assigned as the instance owner. After an instance is created, only the creater-owner of the instance can update or delete the instance. When you want to create an instance, you should log on with the Content Manager OnDemand system administrator account (refer to "Content Manager OnDemand system administrator account" on page 307 for details).

After an instance is created, the following properties of the instance cannot be changed:

- Instance name
- Server type
- Language and code page
- Database instance name
- Instance owner
- Database engine
- Location of database
- Size of the database
- Location of log files
- Size of log files
- Number of log files
- First cache file system named

Important: If you configure a separate object server, ensure that the port number of the object server matches the port number of the library server.

If you update an instance, you must stop and restart the Content Manager OnDemand library and object servers by using the configurator program or system services.

When defining an object server:

- You should use the instance name of the library server.
- You must identify the host name of the library server.
- You must specify the same language and code page as the library server.
- You don't specify database information.

When you create an instance, the configurator installs one or more services on the server. Not all of the services are set up to start automatically when the system is booted. Depending on your requirements, you might need to reconfigure one or more of the services before you begin system operation. For example, you might want to configure the Content Manager OnDemand MVSD service to start automatically on any server that will receive data from other systems using Download.

When you create an instance, the configurator creates scheduled tasks. Before you begin system operation, you must configure these tasks to use the correct runtime options for your system and enable them to run.

You can use the configurator to maintain servers locally or remotely. To identify drives, directories, and paths on a remote server, you must either enter the information in the space provided or use the Browse button to identify a shared folder on the remote server. To maintain a server remotely, the user must have sufficient authority on the remote server.

Defining a server

1. From the File Menu, select New Server. The Add a Server dialog box appears.
2. Enter the information in the spaces provided.
3. When complete, click OK to define the server.

   The configurator adds an entry for the server in the navigator pane. A server contains three items: Instances, Services, and Scheduled Tasks. For initial configuration of a server, you must create an instance and configure scheduled tasks and enable them to run. If you plan to run the Content Manager OnDemand data indexing and loading processes as a service or you plan to transmit data from other systems to the server using Download, you should verify the configuration of these services.

Defining an instance

1. Click Instances. The Instance dialog box appears.
2. Name the instance. For the first or only instance, you should accept the default provided (`ARCHIVE`). **Note:** An instance name can be from one to eight characters, and can contain the letters A through Z and the numbers 0 through 9.
3. Click Next to continue and specify the properties of the instance:
   - Server type and other options
   - NLS parameters
   - Directories for Content Manager OnDemand programs to use
   - Database manager options (library server only)
   - Storage manager options

Specifying properties of an instance

Server Type

1. On the Server Type page, select Library and Object Server or Object Server Only.
2. If you selected Object Server Only, identify the Library Server Name and the Object Server Name.
3. If you selected Library and Object Server, click Advanced Options. If required, change the defaults provided for:
   - Number of Database Servers

     See “Database servers” on page 334 for more information about setting this value.

     If you set the Number of Database Servers to a value other than `0` (zero) or `1` (one), you should update the license information for your database management product.
   - Number of Content Manager OnDemand Licenses
   - Content Federation Services (CFS-OD)

Select Enable CFS_OD if you have purchased this option.

Click OK to close the Advanced Options dialog box and return to the Server Type page.

4. Click Communications. If required, change the default Protocol and Port Number.
5. Click OK to close the Communications dialog box and return to the Server Type page.
6. Click Next to continue.

Database servers

When you configure the library server, you determine the number of processes that Content Manager OnDemand can start on the library server to support database requests. This provides a performance advantage by distributing the server workload over several processes, while balancing the impact on system resources.

In addition to database connections by Content Manager OnDemand client programs, the value that you specify must support the number of active Content Manager OnDemand commands and services such as ARSLOAD, ARSDOC, ARSDB, ARSMAINT, and ARSADMIN.

Each connection to the Content Manager OnDemand database requires a database agent. Content Manager OnDemand can start a database agent for each connection. However, each agent requires its own private memory and some portion of application shared memory. You configure the Number of Database Servers parameter to optimize the way that Content Manager OnDemand handles the database load. For example, you can configure the server so that Content Manager OnDemand starts a fixed number of database agents, regardless of the number of concurrent database requests. While this might appear restrictive, database requests typically process very quickly. For example, ten database agents can handle many database requests, while balancing the impact on system resources.

You should set the Number of Database Servers parameter to support the peak number of concurrent database connections that you expect the library server to handle. A low value limits access to the database during periods of high database activity. A high value requires more system resources during periods of high database activity. The value that you choose also depends on the characteristics of the queries. For example, general queries typically keep a connection open longer than a more specific query.

Language

On the Language page, verify the Language and Code Page.

1. To change the defaults provided, select a different Language. The configurator automatically selects the correct code page for the language that you select. An instance (the library server and all of the object servers that communicate with the library server) can run in one and only one code page. See Appendix J, “National Language Support,” on page 397 for more information about language support in Content Manager OnDemand.
2. Click Next to continue.

Directory

1. On the Directory page, add directories used by Content Manager OnDemand programs and services:
   - Temporary work space directory

- Print work space directory
- Data directories

You must define at least one temporary work space, print work space, and data directory. Data directories can be shared by the Load Data and MVSD services. You can define up to ten data directories for use by Download. Not all directories in the Data Directories list must be assigned to a service. To determine which service a directory is assigned to, click Properties.

Physically separating temporary work space, print work space, data index and load, and download directories and other system and application data improves performance.

2. You can add one or more directories to each list. After you create the instance, you can always add more directories to each list.
3. When finished, click Next to continue.

Database

The database properties are defined only for library servers.

1. On the Database page, select the Database Engine.

   If you select Oracle, there are no other options that you can specify on the Database page. Click Next to continue configuring the instance.
2. If you plan to use Tivoli Storage Manager to maintain DB2 archived log files and backup image files, select the Use TSM for DB2 files option.
3. Click Advanced Database Options. The Advanced Options dialog box appears.
4. Configure the database options:

   DB2:

   - Database Location

     Physically separating the database, the directories that contain the log files, and other system and application data improves performance and helps recovery.
   - Primary Log File Path
   - Archive Log Path (Or Archive Log TSM Option File, if you selected the Use TSM for DB2 files option on the Database page. The TSM for DB2 client options file is usually different from the client options file that is used to maintain application group data.)
   - Log File Size
   - Number of Primary Log Files

   SQL Server:

   - Database Path

     Physically separating the database, the directories that contain the log files, and other system and application data improves performance and helps recovery.
   - Database Size
   - Transaction Log Path
   - Log File Size
   - Number of Log Files
5. Click OK to close the Advanced Options dialog box and return to the Database page.
6. If the Database Engine is DB2, optionally define DB2 File Systems. You can add one or more table space file systems to the list. After you create the instance, the first table space file system that you define holds control information and

cannot be altered or removed. After you create the instance, you can always add more table space file systems to the list.

Storing application group data in table space file systems is optional, but highly recommended. See your database management product documentation for more information about table spaces.

7. Click Next to continue.

Storage

1. On the Storage page, configure the storage manager. Select Cache Only or TSM.
2. If you selected TSM, click TSM Options to verify the location of the Tivoli Storage Manager program directory and client options file used to maintain application group data. The client options file used to maintain application group data is usually different from the client options file used to maintain DB2 files.
3. Define cache file systems. You can add one or more cache file systems to the list. After you create the instance, the first cache file system that you define holds control information and cannot be altered or removed. After you create the instance, you can always add more file systems to the list.

   Physically separating cache file systems and other system and application data improves performance and helps recovery.

Creating an instance

1. Verify that you have completed all of the required options.
2. Verify options that cannot be altered after you create the instance.
3. Click Finish. The configurator displays the Install Services dialog box.

Installing services

Use the Install Services dialog box to identify the Windows user account and password that Content Manager OnDemand uses to log on to its services. By default, Content Manager OnDemand uses the same user account that you used to create the instance. You should use the Content Manager OnDemand system administrator account. (See "Content Manager OnDemand system administrator account" on page 307 for more information.) **Note:** If the user account was not assigned a password in Windows, you must select This User ID does not have a password. Otherwise, you must enter and verify the password in the spaces provided.

After you enter the information in the spaces provided, Content Manager OnDemand adds the instance, services, and tasks to the list. See "Advanced configuration" on page 337 to learn about configuring services and scheduled tasks.

Creating and initializing the database

DB2 and SQL Server

Before you can use your Content Manager OnDemand system, you must create the database and initialize the Content Manager OnDemand system tables on the library server. In addition, if you plan to migrate index data from the database to archive storage, you must initialize the system migration facility. The configurator allows you to complete these steps using the Create Content Manager OnDemand

Database dialog box. If you are configuring an Content Manager OnDemand library server from a remote workstation, you must manually create and initialize the database. See "Manually creating and initializing the database" on page 341 for details.

When you are ready to proceed, click Create Database Now. The configurator creates and initializes the database. After completing these tasks, you can click View Log File to display messages generated during the creation and initialization process.

Oracle

Oracle users must create the database using Oracle utilities. See "Installing Oracle" on page 309. After creating the database, you must create the Content Manager OnDemand system tables by using the ARSDB program.

1. Create the Content Manager OnDemand system tables with the ARSDB program.

   The ARSDB program is installed in the `\Program Files\IBM\OnDemand for Windows\exe` directory. Use the format:

   ```
   arsdb -I OnDemandInstanceName -rtv
   ```

   OnDemandInstanceName is the name of the Content Manager OnDemand instance. For example, `ARCHIVE` (see Chapter 53, "Configuring instances on Windows," on page 331).
2. Initialize the Content Manager OnDemand System Log tables with the ARSSYSCR program.

   The ARSSYSCR program is installed in the `\Program Files\IBM\OnDemand for Windows\exe` directory. Use the format:

   ```
   arssyscr -I OnDemandInstanceName -l
   ```
3. Initialize the Content Manager OnDemand system load tables with the ARSSYSCR program. The ARSSYSCR program is installed in the `\Program Files\IBM\OnDemand for Windows\exe` directory. Use the command:

   ```
   arssyscr -I OnDemandInstanceName -a
   ```
4. (Optional) If you plan to migrate index data from the database to archive storage, initialize the Content Manager OnDemand System Migration tables with the ARSSYSCR program.

   The ARSSYSCR program is installed in the `\Program Files\IBM\OnDemand for Windows\exe` directory. Use the format:

   ```
   arssyscr -I OnDemandInstanceName -a
   ```

Advanced configuration

Configuring services

When you create an instance, the configurator installs one or more services on the server. Not all services are set up to start automatically when the system is booted. Depending on your requirements, you might need to configure the services before you begin system operation. For example, you might want to configure the Content Manager OnDemand MVSD service to automatically start on any server that will receive data from other systems using Download.

Content Manager OnDemand provides the following services:

- Content Manager OnDemand LibSrvr or Content Manager OnDemand ObjSrvr, depending on the Server Type

- Content Manager OnDemand Load Data, one or more, depending on the number of object servers assigned to the instance
- Content Manager OnDemand MVSD, one or more, depending on the number of object servers assigned to the instance
- Content Manager OnDemand Scheduler

Important: The Content Manager OnDemand server service (LibSrvr or ObjSrvr) and the Scheduler service should always be running. If the server service is not running, the maintenance tasks will fail. If the Scheduler service is not running, scheduled tasks will not initiate.

You should verify the properties of the Content Manager OnDemand Load Data service if you plan to keep the Content Manager OnDemand data indexing and loading processes running at all times. You should verify the properties of the Content Manager OnDemand MVSD service if you plan to transmit data from other systems to the server using Download.

To verify the properties of a service:

1. Point to the service and click the right mouse button.
2. From the pop-up menu, select Properties.
3. On the Service page, verify the Startup Type. Refer to the online help for more information.
4. On the Directories page, assign directories to the service. To assign a directory to the service, select the directory in the Available Directories list and click Add. You must assign at least one directory to each service. You can assign up to ten directories to the MVSD service. You can add directories to the Available Directories list from the Directory page of the instance properties dialog box.
5. For the Load Data service, verify the properties on the Load Information page. Refer to the online help for information about data you can enter.
6. For the MVSD service, verify the properties on the Advanced page. See the online help for information about data you can enter.
7. Click OK to configure the service.

If more than one object server belongs to the instance, you need to configure the Content Manager OnDemand Load Data service and the Content Manager OnDemand MVSD service on each object server that requires the service.

Configuring scheduled tasks

When you create an instance, the configurator creates several database maintenance tasks. Before you begin system operation, you must configure these tasks to use the correct runtime options for your system and enable them to run. However, if the database manager is SQL Server, you should use the Database Maintenance Plan wizard from Enterprise Manager to configure and schedule the tasks.

Content Manager OnDemand provides the ability for you to set up tasks to run automatically on a regular schedule:

- ApplGroup Data Maintenance, to maintain application group database tables and cache file systems
- System Table Maintenance, to maintain Content Manager OnDemand system tables

- Content Manager OnDemand Database Backup, to take backup images of the database

Some systems might need to schedule more than one instance of a database maintenance task. For example, a task can be set up to run with specific options every day. Another occurrence of the task can be needed to run once a week, with different options. To create more than one instance of a scheduled task, use the Duplicate command to copy the task. Then use the Properties command to configure the copy of the task.

Important: The Content Manager OnDemand server service (LibSrvr or ObjSrvr) and the Scheduler service should always be running. If the server service is not running, then the maintenance tasks will fail. If the Scheduler service is not running, then scheduled tasks will not initiate.

To configure and enable a scheduled task to run:

1. Click Scheduled Tasks.
2. Point to the task you want to configure and click the right mouse button.
3. From the pop-up menu, select Properties.
4. On the Task page, verify the Startup Path.
5. Click the Enabled check box.
6. On the Options page, verify the options used when the task is run. See the online help for information about data you can enter.
7. On the Schedule page, define the frequency and start time. See the online help for information about configuring a schedule.
8. Click OK to schedule the task.

If the instance contains more than one object server, you need to configure scheduled tasks on each object server.

Managing servers

You can use the Content Manager OnDemand Configurator to manage Content Manager OnDemand servers locally or remotely. However, to remotely manage servers, you must establish a common Windows user account and password. That is, you must define the same account name and password on all of the workstations. Because you should create an Content Manager OnDemand system administrator account when you install and configure Content Manager OnDemand, this should not be a problem. Just remember to log on to Windows using the Content Manager OnDemand system administrator account whenever you want to maintain Content Manager OnDemand servers remotely.

To identify drives, directories, and paths on a remote server, you must either enter the information in the space provided or use the Browse button to identify a shared folder on the remote server. A resource on a remote server must be shared. Otherwise, it will not appear in the Browse list.

Running more than one instance on a workstation

An instance name is unique to a library server. However, you can use the same instance name on more than one server. For example, `server1` is a library server and `server2` is an object server; both servers can use the same instance name. As a matter of fact, you should use the same instance name to identify a library server and all of the object servers that communicate with the library server. However, you should not use the same instance name on more than one library server.

You can define one or more instances to run on the same workstation. For example, you can run one instance for production work and a different instance for development work. Each instance running on the same workstation must be configured to utilize a different TCP/IP port number and each distributed library and object server instance must operate on the same TCP/IP port number.

Each instance should be configured with different properties. For example:

- Instance name
- Database
- Database file systems
- Cache file systems

Configuring LDAP

To use the Content Manager OnDemand Configurator to set LDAP parameters, select Start > Programs > IBM OnDemand for Windows > Configurator. The LDAP settings are available on the Server page for each instance. The LDAP parameters are explained in the Content Manager OnDemand Configurator contextual help.

The ARSLDAP.INI file

The ARS_LDAP_BIND_MESSAGES_FILE parameter enables Content Manager OnDemand to customize message text returned from an LDAP server that is used to alert users that their LDAP password is about to expire or their LDAP account is locked.

The messages displayed to users are contained in the file referenced by this parameter. To enable this user-configurable message functionality, create a file with the appropriate message strings, and set ARS_LDAP_BIND_MESSAGES_FILE to the full path of the file. The ARSLDAP.INI file is provided with example message strings that can be used by the ARS_LDAP_BIND_MESSAGES_FILE parameter.

The ARSLDAP.INI file contains the following three sections:

```
[BIND_MESSAGES]
PASSWORD_EXPIRED="/usr/lpp/ars/config/password_expired.txt"
ACCOUNT_LOCKED="/usr/lpp/ars/config/account_locked.txt"

[PASSWORD_EXPIRED]
TDS6="Password has expired"
AD="data 532"
UDEF1=
UDEF2=
UDEF3=

[ACCOUNT_LOCKED]
TDS6="Account is locked"
AD="data 775"
UDEF1=
UDEF2=
UDEF3=
```

The BIND_MESSAGES section specifies the path to the files containing the user-configurable message text that is displayed to users when their LDAP password is about to expire, or their LDAP account is locked. Generic files are supplied, and should be customized to reflect your actual Content Manager OnDemand environment.

An example message that would be displayed to a user:

```
Your LDAP password has expired and needs to be changed.
Log into <company intranet> for password setting instructions.
```

The entries in the PASSWORD_EXPIRED and ACCOUNT_LOCKED sections are for Tivoli Directory Server Version 6.x and Microsoft Active Directory (AD). These sections also contain three user-defined entries (UDEFx), allowing you to enter your own pattern strings for LDAP servers that are not directly supported.

The LDAP server may return additional information when the user's bind operation fails. When an error is returned from the LDAP server, Content Manager OnDemand reads the file referenced by the ARS_LDAP_BIND_MESSAGES_FILE parameter and searches under the two stanzas, [PASSWORD_EXPIRED] and [ACCOUNT_LOCKED], for user-defined text that matches the LDAP server error. If a match is found, Content Manager OnDemand will display the text found in the files defined under the [BIND_MESSAGES] stanza.

If the ARS_LDAP_BIND_MESSAGES_FILE parameter is not defined, has no file referenced, or the PASSWORD_EXPIRED or ACCOUNT_LOCKED files do not exist, the user will receive a default 'The server failed while attempting to logon' message.

Note: Currently only two error conditions can be handled: PASSWORD_EXPIRED and ACCOUNT_LOCKED. The section titles for these two conditions cannot be changed, but you can change the pattern strings and message text presented to the user to define any two error conditions.

Manually creating and initializing the database

For DB2 and SQL Server users, if you did not create and initialize the database when you created the instance on the library server (see "Creating and initializing the database" on page 336), follow these steps to manually create and initialize the database.

Creating the database

To create the database, click Start → Programs → IBM Content Manager OnDemand for Windows → Command Window. Enter the following command at the prompt:

```
arsdb -cv
```

Initializing the system log

After you have successfully created the instance of Content Manager OnDemand, run the ARSSYSSCR program to initialize the Content Manager OnDemand system logging facility for the instance:

1. Enter the following command in the Content Manager OnDemand command window prompt:

   ```
   arssysscr -I archive -l
   ```

   where `archive` is the name of the Content Manager OnDemand instance.
2. Press **Enter**.

OnDemand creates the tables that support the system logging facility. This process may take several minutes.

The ARSSYSSCR program generates a series of messages. For example:

```
arssyscr: Updating ARSSERVR.ARSSYS
arssyscr: Adding to ARSSERVR.ARSAG with Storage Set Id = 0
arssyscr: Adding to ARSSERVR.ARSAGPERMS
arssyscr: Adding to ARSSERVR.ARSAGFLD
arssyscr: Adding to ARSSERVR.ARSAGFLDALIAS
arssyscr: Adding to ARSSERVR.ARSAG2FOL
arssyscr: Adding to ARSSERVR.ARSAPPUSR
arssyscr: Adding to ARSSERVR.ARSAPP
arssyscr: Adding to ARSSERVR.ARSFOL
arssyscr: Adding to ARSSERVR.ARSFOLPERMS
arssyscr: Adding to ARSSERVR.ARSFOLFLD
arssyscr: Adding to ARSSERVR.ARSFOLFLDUSR
arssyscr: Creation of System Log information was successful
```

Initializing system migration

The system migration facility is required only by customers who plan to migrate application group index data from the database to archive storage.

After you have successfully created the instance of Content Manager OnDemand, run the ARSSYSSCR program to initialize the Content Manager OnDemand system migration facility for the instance:

1. Enter the following command at the Content Manager OnDemand window prompt:

   ```
   arssyscr -I archive  -a
   ```

   where `archive` is the name of the Content Manager OnDemand instance.
2. Press **Enter**.

OnDemand creates the tables that support the system logging facility. This process may take several minutes.

The ARSSYSSCR program generates a series of messages. For example:

```
arssyscr: Updating ARSSERVR.ARSSYS
arssyscr: Adding to ARSSERVR.ARSAG with Storage Set Id = 0
arssyscr: Adding to ARSSERVR.ARSAGPERMS
arssyscr: Adding to ARSSERVR.ARSAGFLD
arssyscr: Adding to ARSSERVR.ARSAGFLDALIAS
arssyscr: Adding to ARSSERVR.ARSAG2FOL
arssyscr: Adding to ARSSERVR.ARSAPPUSR
arssyscr: Adding to ARSSERVR.ARSAPP
arssyscr: Adding to ARSSERVR.ARSFOL
arssyscr: Adding to ARSSERVR.ARSFOLPERMS
arssyscr: Adding to ARSSERVR.ARSFOLFLD
arssyscr: Adding to ARSSERVR.ARSFOLFLDUSR
arssyscr: Creation of System Migration information was successful
```

Initializing the system load logging facility

OnDemand provides a logging facility to enable tracking OnDemand loading activity. When you enable load logging, OnDemand stores the messages that are generated by OnDemand load programs in the system load log. You use one of the Content Manager OnDemand client programs to search for and filter messages by load date, application group name, load ID, input file name, and other parameters.

Before you start OnDemand for the first time, you must initialize the system load logging facility:

1. Type the following command at the Content Manager OnDemand window prompt:

   ```
   arssyscr -I archive  -a
   ```

2. Press the Enter key.
3. Content Manager OnDemand creates the tables that support the system load logging facility. This process may take several minutes.

   The ARSSYSCR program generates a series of messages. For example:

```
arssyscr: Updating ARSSERVR.ARSSYS
arssyscr: Adding to ARSSERVR.ARSAG with Storage Set Id = 0
arssyscr: Adding to ARSSERVR.ARSAGPERMS
arssyscr: Adding to ARSSERVR.ARSAGFLD
arssyscr: Adding to ARSSERVR.ARSAGFLDALIAS
arssyscr: Adding to ARSSERVR.ARSAG2FOL
arssyscr: Adding to ARSSERVR.ARSAPPUSR
arssyscr: Adding to ARSSERVR.ARSAPP
arssyscr: Adding to ARSSERVR.ARSFOL
arssyscr: Adding to ARSSERVR.ARSFOLPERMS
arssyscr: Adding to ARSSERVR.ARSFOLFLD
arssyscr: Adding to ARSSERVR.ARSFOLFLDUSR
arssyscr: Creation of System Load information was successful
```

Chapter 54. Your next step on Windows

After you have installed the Content Manager OnDemand and related software on the system, configured the instance of Content Manager OnDemand, created the instance, and automated instance operations, you are now ready to verify the installation on Content Manager OnDemand. See Chapter 55, "Verifying the installation," on page 349.

If you received the error message: `OnDemand license has been exceeded, currently 2 running only 1 are entitled.`, then verify that in the registry: `HKEY_LOCAL_MACHINE\SOFTWARE\IBM\OnDemand for WinNT\@SRV@_ARCHIVE\CFG\ARS_NUM_LICENSE` that the value matches the number of licenses that you purchased.

You can change the number of licenses using the Content Manager OnDemand Configurator:

1. In the Configurator, double-click the instance name.
2. Go to the server page and click **Advanced Options**.
3. Change the number in the Number of Licenses field as appropriate.
4. Click **OK**.
5. Restart the Content Manager OnDemand LibSrvr service for the change to take effect.

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Part 7. Preparing the system for use

This part of the *IBM Content Manager OnDemand for Multiplatforms: Installation and Configuration Guide* describes how to verify the installation of Content Manager OnDemand on all supported platforms. Other important tasks described in this section include:

- Creating storage sets. You must add storage sets to the system before you can create application groups or assign the system-defined application groups to a storage set. Depending on the storage management characteristics of the reports that you plan to store on the system, you might need to add more than one storage set.
- Configuring the System Log application group. You should assign the System Log application group to a storage set that specifies a client node in storage managed by Tivoli Storage Manager so that the system can maintain a permanent copy of the system log data. You should also store system log index data in table spaces.
- Configuring the System Migration application group. If you plan to migrate index data from the database to archive storage, then you must create a storage set that specifies a client node in storage managed by Tivoli Storage Manager. After you add the storage set to the system, you can assign the System Migration application group to the storage set. You should also store system migration index data in table spaces.
- Creating a backup copy of the database. After installing and configuring the system, you should create a backup copy of the Content Manager OnDemand database. If you configured the system to use Tivoli Storage Manager, you should also backup the Tivoli Storage Manager database at this time.

High Availability environments: For details on configuring Content Manager OnDemand for a High Availability Cluster Multi-Processing (HACMP™) environment, see Deploying IBM DB2® Content Manager OnDemand in an HACMP environment .

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Chapter 55. Verifying the installation

After you have completed installation and configuration of the database manager, Content Manager OnDemand software, and Tivoli Storage Manager software, and have configured and initialized the system, perform the following tasks:

1. Shut down and restart the system. Reinitializing the operating system starts the Content Manager OnDemand services.
2. If you have not already done so, install at least one of the Content Manager OnDemand client programs on a PC. See the *IBM Content Manager OnDemand: Client Installation Guide* for installation information.
3. Check the hardware and software requirements for all system components and features. See http://www.ibm.com/support/docview.wss?rs=129 &uid=swg27016455 or search for 7016455 at http://www.ibm.com.
4. Start the Content Manager OnDemand client program. Content Manager OnDemand displays the Logon to Server dialog box.
5. Click Update Servers. Content Manager OnDemand displays the Update Servers dialog box.
6. Add the name of the Content Manager OnDemand library server. Click Help for information about the fields and options.
7. Click Close to return to the Logon to Server dialog box.
8. Select the name of the server that you added in the Update Servers dialog box, if it is not already selected.
9. Type an Content Manager OnDemand userid and password in the fields provided. (The first time that you log on to the system, you must specify the built-in Content Manager OnDemand userid, `admin`. Initially, there is no password. However, you will be prompted to enter and verify a password.)
10. Press Enter.
11. Open and search the System Log folder.

If you were able to view messages stored in the system log, then you can consider the installation of Content Manager OnDemand successful.

If the client program does not start, check the drive, path name, and program name values used to start the program. Then try the command again.

If the client program issues a message indicating a problem, follow the instructions in the message window. Also see the *IBM Content Manager OnDemand: Messages and Codes*. If the problem persists, contact the IBM support center for help with resolving the problem.

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Chapter 56. Defining storage sets

You must define storage sets before you can define reports to Content Manager OnDemand or load data into the system.

You can define storage sets to copy data to cache storage or archive storage (or both). The storage management attributes of the application groups that you add to the system will determine the types of media that you need and how you configure storage sets on the system.

A storage set must contain at least one primary storage node. A primary storage node can use cache storage (the default) or specify a client node in storage managed by Tivoli Storage Manager (or both). The administrative client online help provides details about defining storage sets and storage nodes.

If you plan to migrate index data to archive storage, you must assign the System Migration application group to a storage set that specifies a client node in storage managed by Tivoli Storage Manager. Also, you should assign the System Log application group to a storage set that specifies a client node in storage managed by Tivoli Storage Manager so that the system can maintain a permanent copy of the data that is written to the system log. The following topics provide additional details:

- Chapter 57, “Configuring the System Log application group,” on page 353
- Chapter 59, “Configuring the System Migration application group,” on page 361

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Chapter 57. Configuring the System Log application group

When you install and configure Content Manager OnDemand, you initialize the system log. The system log comprises the System Log application group, a set of system log applications, and the System Log folder. The System Log application group contains the storage management information that Content Manager OnDemand uses to maintain the data written to the system log. When you initialize the system, the application group is not assigned to a storage set. Because the application group is not assigned to a storage set, the system does not maintain a permanent copy of the system log data.

Before you begin defining reports to Content Manager OnDemand, loading data on the system, or allowing users to access the system, you should configure the System Log application group to maintain a permanent copy of the data that is written to the system log. You can do this by first defining a storage set that specifies a client node in storage managed by Tivoli Storage Manager and then by updating the System Log application group and assigning it to the storage set. See Chapter 56, "Defining storage sets," on page 351 and "Maintaining system log data in archive storage" for more information.

If your system does not use Tivoli Storage Manager, you should assign the System Log application group to a cache-only storage set and change the length of time that Content Manager OnDemand maintains the system log data to the maximum permitted value. See "Maintaining system log data in cache storage" on page 354 for more information.

If you define table space file systems to Content Manager OnDemand, you should store the system log data in table spaces. See "Storing system log data in table spaces" on page 355 for more information.

Maintaining system log data in archive storage

You should create a storage set that specifies a client node in storage managed by Tivoli Storage Manager. You must add at least one primary storage node to the storage set. The primary storage node must identify a client node in Tivoli Storage Manager that maintains data indefinitely. The Logon Name and Password in the primary storage node must be identical to the client node and password in Tivoli Storage Manager.

When you register the client node in Tivoli Storage Manager, you must specify the name of the Tivoli Storage Manager policy domain that maintains data on the required media for the required length of time. If you do not specify the name of a domain, Tivoli Storage Manager assigns the client node to the default domain. Individual chapters for each platform provide details about defining storage devices to Tivoli Storage Manager and policy domains to support Content Manager OnDemand and describe how to register a client node in Tivoli Storage Manager. See:

AIX Chapter 8, "Installing and configuring Tivoli Storage Manager on AIX," on page 27

HP-UX Itanium
Chapter 19, "Installing and configuring Tivoli Storage Manager on HP-UX Itanium," on page 99

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Solaris

Chapter 30, “Installing and configuring Tivoli Storage Manager on Solaris,” on page 171

Windows

Chapter 51, “Installing and configuring Tivoli Storage Manager on Windows,” on page 313

After you create the storage set, you must update the System Log application group and assign it to the storage set. After assigning the application group to the storage set and restarting the system, the system automatically maintains a copy of the system log data in archive storage.

Complete the following steps to assign the System Log application group to a storage set:

1. Start the administrative client.
2. Log on to the server with a userid that has system administrator authority. (The built-in userid `admin` has system administrator authority.)
3. Click Application Groups.
4. Point to the System Log application group and click the right mouse button.
5. From the pop-up menu, select Update to open the Update an Application Group window.
6. Click the Storage Management tab.
7. In the Storage Set Name list, select the name of the storage set. The storage set that you select should specify a client node in a Tivoli Storage Manager policy domain that maintains data indefinitely.
8. Click Advanced to open the Advanced Storage Management dialog box.
9. Select `Next Cache Migration` under Migrate Data from Cache. This causes Content Manager OnDemand to copy the system log data to archive storage the next time that the ARSMAINT command runs.
10. Click OK to close the Advanced Storage Management dialog box.
11. Click OK to save your changes and close the Update an Application Group window.

The administrative client online help provides information about the options on the Storage Management page.

Maintaining system log data in cache storage

If your system does not use Tivoli Storage Manager, you should assign the System Log application group to a cache-only storage set and change the length of time that Content Manager OnDemand maintains the data to the maximum permitted value. Doing so ensures that Content Manager OnDemand does not delete the data from cache storage for a very long time. Complete the following steps to configure the System Log application group:

1. Start the administrative client.
2. Log on to the server with a userid that has system administrator authority. (The built-in userid `admin` has system administrator authority.)
3. Click Application Groups.
4. Point to the System Log application group and click the right mouse button.
5. From the pop-up menu, select Update to open the Update an Application Group window.
6. Click the Storage Management tab.

7. In the Storage Set Name list, select the name of the storage set. The storage set named `Cache Only - Library Server` is a cache-only storage set created on the library server when you initialized the system.
8. Replace the contents of the Cache Data for ___ Days field with `99999`. This value causes Content Manager OnDemand to maintain data for approximately 273 years.
9. Click OK.

The administrative client online help provides information about the options on the Storage Management page.

Storing system log data in table spaces

If you define table space file systems to Content Manager OnDemand, you should configure the System Log application group to store index data in table spaces.

To update the System Log application group:

1. Start the administrative client.
2. Log on to the server with a userid that has system administrator authority. (The built-in userid `admin` has system administrator authority.)
3. Click Application Groups.
4. Point to the System Log application group and click the right mouse button.
5. From the pop-up menu, select Update to open the Update an Application Group window.
6. On the General page, select Advanced to open the Database Information dialog box.
7. Under Create Tablespace Type, select SMS.
8. Click OK to close the Database Information dialog box.
9. Click OK to save your changes and close the Update an Application Group window.

Chapter 58. Configuring the System Load application group

When you install and configure Content Manager OnDemand, you can optionally initialize the system load logging facility. The system load logging facility comprises the System Load application group, a set of system load applications, and the System Load folder. The System Load application group contains the storage management information that Content Manager OnDemand uses to maintain the data written to the system load logging facility. When you initialize the system, the application group is not assigned to a storage set. Because the application group is not assigned to a storage set, the system does not maintain a permanent copy of the system load data.

Before you begin defining reports to Content Manager OnDemand, loading data on the system, or allowing users to access the system, you should configure the System Load application group to maintain a permanent copy of the data that is written to the system load logging facility. You can do this by first defining a storage set that specifies a client node in storage managed by Tivoli Storage Manager and then by updating the System Load application group and assigning it to the storage set. See Chapter 56, "Defining storage sets," on page 351 for more information.

If your system does not use Tivoli Storage Manager, you should assign the System Load application group to a cache-only storage set and change the length of time that Content Manager OnDemand maintains the system load data to the maximum permitted value. See "Maintaining system load data in archive storage" for more information.

If you define table space file systems to Content Manager OnDemand, you should store the system load data in table spaces. See "Storing system load data in table spaces" on page 359 for more information.

Maintaining system load data in archive storage

You should create a storage set that specifies a client node in storage managed by Tivoli Storage Manager. You must add at least one primary storage node to the storage set. The primary storage node must identify a client node in Tivoli Storage Manager that maintains data indefinitely. The Logon Name and Password in the primary storage node must be identical to the client node and password in Tivoli Storage Manager.

When you register the client node in Tivoli Storage Manager, you must specify the name of the Tivoli Storage Manager policy domain that maintains data on the required media for the required length of time. If you do not specify the name of a domain, Tivoli Storage Manager assigns the client node to the default domain. Individual chapters for each platform provide details about defining storage devices to Tivoli Storage Manager and policy domains to support Content Manager OnDemand and describe how to register a client node in Tivoli Storage Manager. See:

AIX Chapter 8, "Installing and configuring Tivoli Storage Manager on AIX," on page 27

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HP-UX Itanium
Chapter 19, "Installing and configuring Tivoli Storage Manager on HP-UX Itanium," on page 99

Solaris
Chapter 30, "Installing and configuring Tivoli Storage Manager on Solaris," on page 171

Linux Chapter 41, "Installing and configuring Tivoli Storage Manager on Linux," on page 243

Windows
Chapter 51, "Installing and configuring Tivoli Storage Manager on Windows," on page 313

After you create the storage set, you must update the System Load application group and assign it to the storage set. After assigning the application group to the storage set and restarting the system, the system automatically maintains a copy of the system load data in archive storage.

Complete the following steps to assign the System Load application group to a storage set:

1. Start the administrative client.
2. Log on to the server with a userid that has system administrator authority. (The built-in userid `admin` has system administrator authority.)
3. Click Application Groups.
4. Point to the System Load application group and click the right mouse button.
5. From the pop-up menu, select Update to open the Update an Application Group window.
6. Click the Storage Management tab.
7. In the Storage Set Name list, select the name of the storage set. The storage set that you select should specify a client node in a Tivoli Storage Manager policy domain that maintains data indefinitely.
8. Click Advanced to open the Advanced Storage Management dialog box.
9. Select `Next Cache Migration` under Migrate Data from Cache. This causes Content Manager OnDemand to copy the system load data to archive storage the next time that the ARSMAINT command runs.
10. Click OK to close the Advanced Storage Management dialog box.
11. Click OK to save your changes and close the Update an Application Group window.

The administrative client online help provides information about the options on the Storage Management page.

Maintaining system load data in cache storage

If your system does not use Tivoli Storage Manager, you should assign the System Load application group to a cache-only storage set and change the length of time that Content Manager OnDemand maintains the data to the maximum permitted value. Doing so ensures that Content Manager OnDemand does not delete the data from cache storage for a very long time. Complete the following steps to configure the System Load application group:

1. Start the administrative client.
2. Log on to the server with a userid that has system administrator authority. (The built-in userid `admin` has system administrator authority.)

3. Click Application Groups.
4. Point to the System Load application group and click the right mouse button.
5. From the pop-up menu, select Update to open the Update an Application Group window.
6. Click the Storage Management tab.
7. In the Storage Set Name list, select the name of the storage set. The storage set named `Cache Only - Library Server` is a cache-only storage set created on the library server when you initialized the system.
8. Replace the contents of the Cache Data for ___ Days field with `99999`. This value causes Content Manager OnDemand to maintain data for approximately 273 years.
9. Click OK.

The administrative client online help provides information about the options on the Storage Management page.

Storing system load data in table spaces

If you define table space file systems to Content Manager OnDemand, you should configure the System Load application group to store index data in table spaces.

To update the System Load application group:

1. Start the administrative client.
2. Log on to the server with a userid that has system administrator authority. (The built-in userid `admin` has system administrator authority.)
3. Click Application Groups.
4. Point to the System Load application group and click the right mouse button.
5. From the pop-up menu, select Update to open the Update an Application Group window.
6. On the General page, select Advanced to open the Database Information dialog box.
7. Under Create Tablespace Type, select SMS.
8. Click OK to close the Database Information dialog box.
9. Click OK to save your changes and close the Update an Application Group window.

Chapter 59. Configuring the System Migration application group

Migration is the process by which Content Manager OnDemand moves index data from the database to archive storage. This process optimizes database storage space while allowing you to maintain index data for a very long time. You typically migrate index data after users no longer need to access the reports, but for legal or other requirements, you still need to maintain the data for some number of years or months. Content Manager OnDemand uses the storage management settings in application groups to determine whether or not to migrate index data to archive storage. All migrated data is managed through the System Migration application group.

When you install and configure Content Manager OnDemand, you can optionally initialize the system migration function. The system migration function comprises the System Migration application group, a set of system migration applications, and the System Migration folder. The System Migration application group contains the storage management information that Content Manager OnDemand uses to maintain index data migrated to archive storage. Until you assign the application group to a storage set that specifies a client node in storage managed by Tivoli Storage Manager, Content Manager OnDemand cannot migrate index data from the database to archive storage. See Chapter 56, "Defining storage sets," on page 351 and "Assigning the System Migration application group to a storage set" for more information.

If you define table space file systems to Content Manager OnDemand, you should store system migration data in table spaces. See "Storing system migration data in table spaces" on page 362 for more information.

Assigning the System Migration application group to a storage set

If you need the system to maintain index data in archive storage, you must assign the System Migration application group to a storage set that identifies a client node in Tivoli Storage Manager. You must register the client node in a Tivoli Storage Manager policy domain that maintains data indefinitely. When you define the storage set, the Logon Name and Password of the primary storage node must be identical to the client node and password in Tivoli Storage Manager. Individual chapters for each platform provide details about defining storage devices and policy domains to support Content Manager OnDemand and show how to register a client node in Tivoli Storage Manager. See:

AIX Chapter 8, "Installing and configuring Tivoli Storage Manager on AIX," on page 27

HP-UX Itanium
Chapter 19, "Installing and configuring Tivoli Storage Manager on HP-UX Itanium," on page 99

Solaris
Chapter 30, "Installing and configuring Tivoli Storage Manager on Solaris," on page 171

Linux Chapter 41, "Installing and configuring Tivoli Storage Manager on Linux," on page 243

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Windows

Chapter 51, “Installing and configuring Tivoli Storage Manager on Windows,” on page 313

After you define the storage set, you must update the System Migration application group and assign it to the storage set. After assigning the application group to the storage set and restarting the system, the system automatically migrates index data to archive storage, whenever migration processing (the ARSMAINT program) runs. Complete the following steps to assign the System Migration application group to a storage set:

1. Start the administrative client.
2. Log on to the server with a userid that has system administrator authority. (The built-in userid `admin` has system administrator authority.)
3. Click Application Groups.
4. Point to the System Migration application group and click the right mouse button.
5. From the pop-up menu, select Update to open the Update an Application Group window.
6. Click the Storage Management tab.
7. In the Storage Set Name list, select the name of the storage set. The storage set that you select should identify a client node in a Tivoli Storage Manager policy domain that maintains data indefinitely.
8. Click OK.

The administrative client online help provides information about the options on the Storage Management page.

Storing system migration data in table spaces

If you define table space file systems to Content Manager OnDemand, you should configure the System Migration application group to store data in table spaces.

To update the system migration application group:

1. Start the administrative client.
2. Log on to the server with a userid that has system administrator authority. (The built-in userid `admin` has system administrator authority.)
3. Click Application Groups.
4. Point to the System Migration application group and click the right mouse button.
5. From the pop-up menu, select Update to open the Update an Application Group window.
6. On the General page, select Advanced to open the Database Information dialog box.
7. Under Create Tablespace Type, select SMS.
8. Click OK to close the Database Information dialog box.
9. Click OK to save your changes and close the Update an Application Group window.

Chapter 60. Backing up the Content Manager OnDemand database

To complete the installation and configuration process, you should run the ARSDB program to create a full, offline backup image of the Content Manager OnDemand database on removable media. A full backup image of the database is required to rebuild the database, in the event that you need to do so. You cannot rebuild the database unless you have a full database backup (and any table space backups and log files generated since the last full database backup). See the *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for more information about the ARSDB program, including the backup options.

Complete the following steps to create a full, offline backup of the database with the ARSDB program:

1. Log on with the proper authority: the `root` user on a UNIX server, or an administrator on a Windows server.
2. Make sure there are no other users logged on to the library server.
3. Make sure there are no other applications connected to the database.
4. If you plan to backup the database to tape, place a blank, formatted tape storage volume in the tape drive.
5. On a UNIX server, change to the Content Manager OnDemand program directory. On a Windows server, select Start → Programs → IBM Content Manager OnDemand for Windows → Command Window.
6. Enter the backup command. For example:

   ```
   arsdb -v -y <device>
   ```

   Replace the string `<device>` with the name of the output device.
7. Write down the information about the database backup, including the date and time that the backup was taken and the label of the storage volume. Keep the backup copy in a safe location, preferably offsite. Save the backup copy at least until the next time that you create another full backup image of the database.

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Appendix A. Silently installing Content Manager OnDemand

The installation programs for Content Manager OnDemand for Multiplatforms are based on InstallAnywhere. You cannot install OnDemand 8.5 silently without a response to accept the license agreement.

To generate a response file, you can use the `-r` command line switch that is followed by the response file name. Run the installation program normally until it finishes recording the responses. For example:

```
./odaix -r /tmp/my_response_file
```

To use the generated response in a silent installation, you can use the `-f` command line switch followed by the response file name. For example:

```
./odaix -f /tmp/my_response_file -i silent
```

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Appendix B. Uninstalling Content Manager OnDemand

To uninstall Content Manager OnDemand on AIX, use the following command:

```
/usr/lpp/ars/_uninst850/uninstallod
```

or

```
/usr/lpp/ars/_uninst850/uninstallod -i console
```

To uninstall Content Manager OnDemand on Solaris, HP-UX, Linux, or Linux on zSeries®, use the following command:

```
/opt/ondemand/_uninst850/uninstallod
```

or

```
/opt/ondemand/_uninst850/uninstallod -i console
```

You can also use the Java™ command to uninstall Content Manager OnDemand.

Important: Use the Java command only if you cannot use the above commands because the system cannot find a suitable JVM.

On AIX, enter this command:

```
java -jar /usr/lpp/ars/_uninst850/uninstallod.jar
```

or

```
java -jar /usr/lpp/ars/_uninst850/uninstallod.jar -i console
```

On Solaris, HP-UX, Linux, or Linux on zSeries, enter this command:

```
java -jar /opt/ondemand/_uninst850/uninstallod.jar
```

or

```
java -jar /opt/ondemand/_uninst850/uninstallod.jar -i console
```

To uninstall the Content Manager OnDemand Advanced Function Presentation Transformations for Multiplatforms feature on AIX, Solaris, HP-Integrity, Linux, or Linux on zSeries, use the following command:

```
<CMOD server directory>/afp2web/_uninst850afp2web/uninstallafp2web
```

or

```
<CMOD server directory>/afp2web/_uninst850afp2web/uninstallafp2web -console
```

To uninstall the Content Manager OnDemand Enhanced Retention Management feature on AIX, Solaris, HP-Integrity, Linux, or Linux on zSeries, use the following command:

```
<CMOD server directory>/_uninst850erm/uninstalloderm
```

or

```
<CMOD server directory>/_uninst850erm/uninstalloderm -console
```

To uninstall the Content Manager OnDemand PDF Indexing feature on AIX, Solaris, HP-Integrity, Linux, or Linux on zSeries, use the following command:

```
<CMOD server directory>/_uninst850pdf/uninstallodpdf
```

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or

```
<CMOD server directory>/_uninst850pdf/uninstallodpdf -console
```

To uninstall the IBM Content Manager OnDemand Report Distribution for Multiplatforms feature on AIX, Solaris, HP-Integrity, Linux, or Linux on zSeries, use the following command:

```
 <CMOD server directory>/_uninst850rd/uninstallodrd
```

or

```
<CMOD server directory>/_uninst850rd/uninstallodrd -console
```

On Windows, use the Add/Remove programs application to uninstall any or all of the following:

- Content Manager OnDemand
- Advanced Function Presentation Transformations for Multiplatforms
- Enhanced Retention Management
- PDF indexing
- Report Distribution

Appendix C. User exit programming

User exits provided by Content Manager OnDemand are specific points in the program where an experienced programmer can specify processing routines to enhance or replace the default Content Manager OnDemand functions. For example, the security user exit provides a point on the library server where you can identify and authenticate users that log on to the system.

Programmers require a working knowledge of the tools needed to develop a user exit program. The following list identifies the main skills and tools that are needed:

- Skills

  C and C++ programming

  Operating system programming

  Experience with relational database technology

  Knowledge of compiling and linking programs in the C, C++, and operating system environment

  DB2 UDB, Oracle, or SQL Server (if writing your own SQL code)
- Tools

  IDE

  C or C++ compiler

If you do not have these skills, see your IBM representative.

A makefile is provided for use with the following compilers:

- **AIX:** IBM XL C/C++ Compiler version 9.0
- **Windows:** Visual Studio version 2008 FP1
- **HP-UX:** HP C/aC++ 11.23.12
- **Sun:** Sun C 5.9 SunOS_sparc patch 124867-01 2007/07/12
- **Linux/Intel:** gcc version 3.4.6 20060404 (Red Hat 3.4.6–3)
- **Linux on System z:** gcc version 4.1.0 (SUSE Linux)

C/C++ compilers used outside of this list must provide equivalent compile options as documented in the makefile.

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Appendix D. Download user exit

Overview

When processing files transmitted by Download, unless you specify otherwise, the ARSLOAD program uses a part of the name of the file that is saved on the server to identify the application group to load. If the ARSLOAD program cannot determine the correct application group to load from the file name, then the load will fail. If the application group to load contains more than one application, then you must identify the application to load. Otherwise, the load will fail.

Content Manager OnDemand provides ways for you to identify the correct application group and application to load. For example, you can run the ARSLOAD program with the **-A** and **-G** parameters to specify the parts of the file name that identify the application group and application. However, if the file name does not contain information that can be used to identify the application group and application, then you must use some other method to determine the correct application group and application before the load process can proceed.

Using Download

You can use Download to transmit reports from z/OS systems to Content Manager OnDemand servers. If you use Download to automate the data loading process, then you may need to provide a user-written program to process the files transmitted by Download before they can be processed by the ARSLOAD program. You must provide a user-written program if the file name does not contain information that can be used to identify the application group to load.

For example, suppose that you use a report distribution system to place the output of your application programs on the spool data set. Download selects the output and transmits the data to an Content Manager OnDemand server. However, after the output has been processed by the report distribution system, the resulting file name on the spool data set can no longer be associated with the application program that generated the output. Therefore, the ARSLOAD program cannot use the file name to determine the application group to load. (And because the file name does not contain information that can be use used to identify the application group and application to load, you cannot run the ARSLOAD program with the **-A** and **-G** parameters.) You must find some other way to identify the application group and application to load.

Download provides a user exit (APSUX15) that allows you to provide additional job information to OnDemand. Download includes the additional job information in the data stream that is transmitted from the spool data set to the server. See *PSF for z/OS: Download for z/OS* for detailed information about Download, the user exit, and the additional job information that can be included in the data that is transmitted to the server.

On the Content Manager OnDemand server, the ARSJESD program provides the **-x** parameter so that you can run a user-written program to process the additional job information after Download successfully transmits a file to the server. See the ARSJESD program reference in *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for information about using the **-x** parameter.

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Invoking the Download user exit

When Download selects output data from the spool data set for transmission to an OnDemand server, it invokes the APSUX15 user exit program. The user exit program concatenates a string of additional job information to the print parameters that Download transmits to the server. Upon completion, the user exit program passes the location of the string and the string length to Download, which transmits the output data set with associated JCL and the additional job information to the server.

The ARSJESD program receives the data sets into file systems on the server. If you start the ARSJESD program with the **-x** parameter, the ARSJESD program invokes the specified user-written program. The program specified with the **-x** parameter can be any user-written program.

For example, you could provide a user-written program that parses the additional job information transmitted by Download and the APSUX15 user exit program. The user-written program could extract the value of the WRITER parameter to identify the application to load. Using this value, the user-written program could then query the database to determine the name of the application group to which the application belongs. The user-written program could then run the ARSLOAD program with the **-a** parameter to identify the application to load and the **-g** parameter to identify the application group to load. (The user-written program could also rename the input file and then run the ARSLOAD program with the **-A** parameter to specify the part of the new file name that identifies the application and the **-G** parameter to specify the part of the new file name that identifies the application group.)

By using the Download user exit program, the **-x** parameter with the ARSJESD program, and a user-written program, you can configure the system so that each file that Download transmits to the server is automatically processed and loaded into the correct application group and application.

Sample Download user exit program

This section contains additional information about the Download user exit.

ARSJESD processing

The ARSJESD program is the component of Download for the z/OS feature that runs on the workstation. The **-x** parameter of the ARSJESD program may be used to specify the name of a user-written program to process additional job information sent by PSF through the APSUX15 user exit.

If the ARSJESD program was invoked with the **-x** parameter, it calls the specified user-written program. The ARSJESD program passes the file name and the additional job information to the user-written program.

The additional job information is installation dependent. See *IBM Print Services Facility for z/OS: Download for z/OS*, S550-0429-01 for details about the APSUX15 user exit and the content, format, and purpose of the additional job information. The processing done by the user-written program is also installation dependent. See your Infoprint Manager or PSF information for information about processing the additional job information with a user-written program.

Sample user exit program

In Content Manager OnDemand, it is possible to use the ARSJESD exit point in order to customize and enhance the standard functionality within the product. A user exit is a point during processing that enables you to run a user-written program and return control of processing after your user-written program ends.

The ARSJESD exit point is a server exit. Content Manager OnDemand provides data at the ARSJESD exit that serves as input to the user-written program. The data consists of the file name and the additional job information. Using this exit, it is possible to do functions such as parse the additional job information that is sent by PSF and rename the input file by using one of the PSF parameters.

The program invoked at the ARSJESD exit point is defined by specifying the **–x** *userProgram* parameter when starting the ARSJESD program, where *userProgram* is the name or full path name of the user-written program.

The following example demonstrates a common use for the ARSJESD exit point. The example processes the file name and the additional job information. The example renames the input file by using the value of the WRITER parameter that was sent by PSF. For the sake of simplicity, the sample is not demonstrated across all of the supported platforms. IBM recognizes that the scripting languages between platforms do vary, but the principles which are described here are uniform across all supported platforms; only the syntax differs. The sample is provided for an AIX system.

Note: The example program is provided on an as-is basis. The licensee of the Content Manager OnDemand product is free to copy, revise modify, and make derivative works of this program sample as they see fit.

```
#!/bin/ksh
#
#  COPYRIGHT:  5697-G34 (C) COPYRIGHT IBM CORPORATION 2003
#              ALL RIGHTS RESERVED
#              LICENSED MATERIALS - PROPERTY OF IBM
#
#              US Government Users Restricted Rights - Use, duplication or
#              disclosure restricted by GSA ADP Schedule Contract with IBM Corp.
#
#  MODULE:    writer_rename
#
#  DESCRIPTION:
#    This Korn shell script is designed as a exit routine to be executed by
#    the ARSJESD program after a file has been downloaded from z/OS.
#    This script parses and prints the additional job options that were sent
#    by PSF and renames the file name by using the value of the WRITER parameter.
#
#
# set -x
#
ME=$(basename $0)
PRODUCT="OnDemand"
PRODUCT_DIR=/usr/lpp/ars
ARS_BIN_DIR=${PRODUCT_DIR}/bin
AWK=/bin/awk
DATE=/bin/date

status_msg ()
{

  print "\n$(${DATE}) -- ${ME} -- \nERROR: Unable to determine WRITER field"
  print "\t\t$1"

  return
```

```
}

parse_objects ()
{
   while getopts o: i
   do
      print ${OPTARG} | ${AWK} -F [=] '{print $1}' | read option
      case $option in
         pa) value=${OPTARG#*=}
             while [ "$value" != "$oldvalue" ]
             do
                oldvalue=$value
                arg=${value%%=*}
                value=${value#*=}
                case $arg in
                   segmentid   ) SEGID=${value%%,*} ;;
                   forms       ) FORM=${value%%,*} ;;
                   class       ) CLASS=${value%%,*} ;;
                   destination ) DEST=${value%%,*} ;;
                   writer      ) WRITER=${value%%,*} ;;
                esac
                value=${value#*,}
             done ;;
         *) print ${OPTARG} | ${AWK} -F [=] '{print $1, $2}'| read arg value
            case $arg in
               fileformat ) FORMAT="$value" ;;
               datat      ) DATAT="$value" ;;
               chars      ) CHARS="$value" ;;
               cc         ) CC="$value" ;;
               cctype     ) CCTYPE="$value" ;;
               pagedef    ) PAGEDEF="$value" ;;
               prmode     ) PRMODE="$value" ;;
               trc        ) TRC="$value" ;;
               cop        ) COPIES="$value" ;;
               datac      ) DATAC="$value" ;;
               f          ) FORMDEF="$value" ;;
               outbin     ) OUTBIN="$value" ;;
               jobn       ) JOBNAME="$value" ;;
               us         ) USER="$value" ;;
               no         ) MVSNAME="$value" ;;
               pr         ) TEXT="$value" ;;
               address1   ) ADDRESS1="$value" ;;
               address2   ) ADDRESS2="$value" ;;
               address3   ) ADDRESS3="$value" ;;
               address4   ) ADDRESS4="$value" ;;
               bu         ) BLDG="$value" ;;
               de         ) DEPT="$value" ;;
               na         ) NAME="$value" ;;
               ro         ) RO="$value" ;;
               ti         ) TITLE="$value" ;;
            esac ;;

      esac

   done
}

FILENAME="$1"
shift
print "\n$(${DATE}) -- ${ME} -- \nStart writer_move for file ${FILENAME}\n"
print "File Name = ${FILENAME}"

print ${FILENAME} | awk -F [.] '{print $1, $2, $3, $4, $5, $6, $7}' | read MVS JOBNAME DATASET FORMS YYDDD HHMMM EXT

PARMS=$(print $@ | tr -d '\"' )
print "Parameters = ${PARMS}"

parse_objects ${PARMS}

APPGRP=${WRITER}

if [ "${WRITER}" != "" ]
then
```

```
   status_msg "WRITER field specified."
   NEWFILENAME="${MVS}.${JOBNAME}.${WRITER}.${FORMS}.${YYDDD}.${HHMMM}.${EXT}"
else
   status_msg "WRITER field not specified."
   NEWFILENAME="${MVS}.${JOBNAME}.${DATASET}.${FORMS}.${YYDDD}.${HHMMM}.NOWTR"
fi

print "File renamed to ${NEWFILENAME}"

mv ${FILENAME} ${NEWFILENAME}
```

Appendix E. Report specifications archive definition exit

The Report Specifications Archive Definition exit allows an installation to modify some of the parameters used by OnDemand when document data is being captured (loaded) by the ARSLOAD program. The following parameters can be modified:

- The Application Group name.
- The Application name.
- The name of the Object Server to be used for data storage.
- The name of the Storage Node to be used for data storage.
- The indexer parameters set.
- The input file control character type, logical record length and record format.

Interface exit components

The Report Specifications Archive Definition exit interface consists of the ARSUUPDT program, which is provided in source form in the `exits` directory.

ARSUUPDT is a DLL module written in the C programming language. It is provided in both source and executable forms, with the source being provided mainly in understanding how the exit is driven.

The Report Specifications Archive Definition exit is implemented by a single DLL - ARSUUPDT. The sample shipped with the product initializes the data structure and calls the exit driver.

ARSUUPTD DLL

When the ARSLOAD program loads a document, it makes two calls of the DLL. The first (called Names) allows the exit to modify specifications for:

Application Group name
Application name
Object Server Name
Storage Node Name

The second call (Parameters) allows the exit to modify the following:

Indexer Parameters
Viewer parameters:
    Logical Record length
    Record Format
    Control character type

The ARSUUPDT DLL must reside in the /usr/lpp/ars/bin/exits directory.

To call the exit, you must specify the **-E** parameter when you run the ARSLOAD program.

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Format

Figure 27 shows the C language ARSUUPDT.

```
#pragma export(UPDTEXIT)
#include "arscsxit.h"

int UPDTEXIT( ArsCSXitUpdtExit  updt )
```

Figure 27. C language ARSUUPDT

General description

The *updt->Function* field should be interrogated to determine the which type of call is being made:

Names **ARCCSXIT_PROCESS_NAMES**

Parameters **ARCCSXIT_PROCESS_PARMS**

Table 24 and Table 25 on page 379 show the input parameters valid for each call. Do not attempt to use parameters that are not specified as being valid for a given call.

Table 24. Names call parameters

Parameter	Meaning
updt->pFileName	Address of the null delimited file name.
updt->ApplGrpName	Null delimited application group name. This is the application group name that ARSLOAD will attempt to use if no action is performed by the Names call.
updt->ApplName	Null delimited application name. This is the application name that ARSLOAD will attempt to use if no action is performed by the Names call.
updt->ObjServer	Null delimited application name. This is the object server that ARSLOAD will attempt to use if no action is performed by the Names call. If no object server is explicitly specified, ARSLOAD will use the object server specified by the storage node that is designated for loading in the storage set assigned to the application group.
updt->StorageNode	Null delimited storage node name. This is the storage node that ARSLOAD will attempt to use if no action is performed by the Names call. If no node is explicitly specified, ARSLOAD will use the primary storage node specified by the storage node that is designated for loading in the storage set assigned to the application group.

Table 24. Names call parameters (continued)

Parameter	Meaning
updt->ArsCSXitUpdtExit-pJES	Pointer to the JES information. If this pointer is not null, the object being loaded is being read from the JES SPOOL. The JES information contains a DDNAME that is currently allocated to the SPOOL file and a pointer to the JES SSS2 SSOB extension. If null, the file being processed is either an MVS data set or an HFS file.

Table 25. Parameters call parameters

Parameter	Meaning
updt->pFileName	Address of the null delimited file name.
updt->ApplGrpName	Null delimited application group name. This is the application group name the document will be stored under.
updt->ApplName	Null delimited application name. This is the application name the document will be stored under.
updt->ObjServer	Null delimited application name. This is the object server that will be stored in. If the object server is X'00', ARSLOAD will use the object server specified by the storage node that is designated for loading in the storage set assigned to the application group.
updt->StorageNode	Null delimited storage node name. This is the storage node that ARSLOAD will be stored in. If the node is X'00', ARSLOAD will use the primary storage node that is specified by the storage node that is designated for loading in the storage set that is assigned to the application group.
updt->ArsCSXitUpdtExit-pJES	Pointer to the JES information. If this pointer is not null, the object being loaded is being read from the JES SPOOL. The JES information contains a DDNAME that is currently allocated to the SPOOL file and a pointer to the JES SSS2 SSOB extension. If null, the file being processed is either an MVS data set or an HFS file.
updt->IndexerParms	The indexer parameter that will be passed to the indexer. The indexers parameters are a series of records separated by newline characters (X'15'). If altered by the exit, these parameter will be stored back into indexer parameters that are associated with the application.
updt->CCType	Carriage control type. If altered by the exit, this value will be stored in the view information that is associated with the application. Changing this value after reports have been loaded may cause previously loaded documents to display incorrectly.

Table 25. Parameters call parameters (continued)

Parameter	Meaning
updt->LRECL	For fixed record format the length of each line. This has no meaning for variable format. If altered by the exit, this value will be stored in the view information that is associated with the application. Changing this value after reports have been loaded may cause previously loaded documents to display incorrectly.
updt->RECFM	The record format the document is stored in OnDemand. If altered by the exit, this value will be stored in the view information that is associated with the application. Changing this value after reports have been loaded may cause previously loaded documents to display incorrectly.
updt->update_appl	Indicates that the application is to be updated. If zero, any changes made by the exit will not be reflected in the application definitions. If non-zero, the application will be updated with the new values.
updt->Delim	For documents stored as stream, this is the NULL terminated string that contains the string that is used to determine record boundaries. For example, records that use EBCDIC newline characters as record delimiters would specify X'1500'.

Valid values for record format are described in Table 26.

Table 26. Record formats

Format	Value
Fixed	ARCCSXIT_DOC_FORMAT_FIXED
Variable	ARCCSXIT_DOC_FORMAT_VARIABLE
Stream	ARCCSXIT_DOC_FORMAT_STREAM

Valid values for carriage control are described in Table 27.

Table 27. Carriage control

Format	Value
ANSI	ARCCSXIT_CC_ANSI
Machine	ARCCSXIT_CC_MACHINE
None	ARCCSXIT_CC_NONE

Notes:

1. Carriage control, lrecl, recfm, and record delimiter are only valid for documents stored as Line data.
2. Documents stored as variable in OnDemand are stored with a two-byte length prefix followed by the data for the record. The length does not include the two-byte prefix.

Returned values

In addition to updating the ArsCSXitPrepExit as appropriate, the DLL should set a return code zero to indicate success, and a non-zero to indicate failure.

Appendix F. Retrieval preview user exit

The retrieval preview user exit allows for the modification of document data prior to the data being retrieved from the server. The retrieval preview user exit allows you to run a user-written program to process documents that belong to a specified application. The user-written program is activated by selecting the Use Preview Exit option on the Miscellaneous Options page of an application. When the option is selected, the user-written program will be called any time that a request is made to retrieve a document. Any information that is specified in the Parameters field will be passed to the user-written program.

The retrieval preview user exit allows an installation to process document data before the document is presented to the client. The retrieval preview exit can be used to add, remove, or reformat data before the document is presented to the client. For example:

- Remove pages from the document, such as banner pages, title pages, all pages but the summary page, and so on.
- Remove specific words, columns of data, or other information from the document. That is, omit ("white out") sensitive information such as salaries, social security numbers, and birth dates.
- Add information to the document, for example, a summary page, data analysis information, and Confidential or Copy statements.
- Reformat data contained in the document, for example, reorder the columns of data.

Programming considerations

The retrieval preview user exit is not called for all document retrievals. In particular, the user exit is not called for functions that use the so-called Bulk Retrieval method of retrieving documents or for server printing. For example, running the ARSDOC GET function without specifying the **-n** parameter performs a bulk retrieval, and documents retrieved will not be presented to the client preview exit.

If a request is made to retrieve a large object document, care should be taken to make certain that the retrieval preview user exit does not remove any pages from the document. The large object segment size and page navigation information are based on the number of pages that existed when the document was loaded on the server. Unexpected results may occur if this information is changed.

The retrieval preview user exit may be enabled for all data types, except for None.

The user-written program can be used to remove sensitive information from a document or to perform other types of data manipulation. However, because the user-written program is not used during server reprinting or bulk retrievals, the restricted data may still be accessible by the user.

When modifying the data, the format and type of the data must not be changed; only the content may be changed. For example:

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- If the format of the data is EBCDIC data with a fixed length of 133 bytes, the format must not be changed to something different, such as ASCII data delimited by the line feed character (X'0A')
- If the data type is AFP, the document may not be converted to some other type of data, such as PDF

When the modified data is viewed by the Windows client, the format of the data and the data type that is defined in the application on the View Information page will be used to display the data. If the format or data type has changed, the document will not view properly.

The retrieval user exit point may be enabled for more than one application. However, all applications must be processed by the same user-written program (only one user-written program is supported). The system passes the name of the application that is associated with the document to the user-written program. The user-written program can perform processing based on the application or it can perform the same processing for all documents regardless of the application.

A sample user exit program arsuprep.c and header file arscsxit.h are provided by IBM. The files are located in the `/usr/lpp/ars/exits` directory on AIX, in the `/opt/ondemand/exits` directory on HP-UX Itanium and Solaris, and in the `\Program Files\IBM\OnDemand for Windows\exits` directory on Windows.

Returned values

If the exit wants a different file presented to the user, it should set `prep->OutFileName` to the name of the file. This file must be formatted to agree with the specification in ArcCSXitAppl. For example, the file cannot be in variable format if the ArcCSXitAppl indicates fixed.

OnDemand will delete this file after returning its contents to the user.

The exit should set a return code of 0 (zero).

Appendix G. Security user exit

OnDemand provides a user exit that allows you to implement your own user exit program to identify and authenticate users that log on to the system. You can use the security user exit to authenticate a user's password by some means other than the way that is built in to OnDemand. For example, you may want to deny access to the system after three incorrect logon attempts are made by a user; you may want to enforce some sort of password uniqueness; and so forth. You can also use the security user exit to allow users that are not already in the Content Manager OnDemand user database to access the system.

The security user exit allows you to augment the security related processing of the following activities or events:

- Logon
- Change Password
- Add User ID or Delete User ID by using the Content Manager OnDemand administrative functions
- Access to an OnDemand folder
- Access to an OnDemand application group

When driven for these activities, a user-written exit routine (or set of exit routines) can interact with some other security system to determine if the given activity is to be allowed or disallowed.

The security user exit runs the ARSUSEC program when a user attempts to logon to the system. A sample C program is provided in the EXITS directory. To implement your own security user exit program, you should add your specific code to the sample provided (for example, you could call another program from the ARSUSEC program). See the ARSCSXIT.H file for information about functions, parameters, and return codes. You then compile the ARSUSEC program (a Makefile is provided) and move or copy the executable program to the BIN directory. Then restart the library server to begin using the security user exit program.

Important: When you implement your own security user exit program, you bypass the logon verification processing that is built into the base OnDemand product. IBM advises caution when you bypass the Content Manager OnDemand user and password restrictions. The security of the system could easily be subverted by malicious or defective code. Only use code that you trust.

Sample security user exit program

The following example demonstrates how to use the security user exit. The example program prevents users from changing their passwords. For the sake of simplicity, the sample is not demonstrated across all of the supported platforms. IBM recognizes that the scripting languages between platforms do vary, but the principles which are described here are uniform across all supported platforms; only the syntax differs. The sample is provided for an AIX system.

To customize the password functions of the system, IBM recommends that you enable the Content Manager OnDemand user security exit and provide a user exit program to handle these activities. This will allow you to determine if a given

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activity is allowed or disallowed. For example, you could customize the system so that only system administrators and user administrators can change passwords; you could specify a list of users that may not change their passwords; and so on.

These hints and tips apply to the security user exit:

- This information applies only to OnDemand for Multiplatforms Version 7.1.1.
- Once enabled, the user exit program processes **all** logons to the system. This includes logons from the Windows (end-user) client, the administrative client, client programs such as ARSDOC and ARSLOAD, and ODWEK CGI/Servlet/Java APIs.
- The user security exit is enabled by setting the SRVR_FLAGS_SECURITY_EXIT parameter in the ARS.INI file to 1 (one).
- The name of the security user exit program is arsusec. See the arsusec.c file in the EXITS directory for a sample source file. See the arscsxit.h file in the EXITS directory for the function and structure declarations for the security user exit program.
- There are several approaches to the main logic of the user exit program, depending on the exact requirements. For example:

  Permit a specific userid to change passwords. For example, you could allow the built-in userid (admin) to change passwords. Some customers may need to permit a list of users to change passwords (such as system administrators and user administrators).

  Maintain a list of users that cannot change their passwords. When the actual userid matches one of the userids in the "User Cannot Change Password" list, set the return code to ARCCSXIT_SECURITY_RC_FAILED or ARCCSXIT_SECURITY_RC_PERMS.
- Set the Maximum Password Age parameter to the value that best matches the main logic of the user exit program (permit / deny). The Maximum Password Age parameter is set on the System Parameters dialog box, which is accessed by using the administrative client.

  Set the Maximum Password Age parameter to Never Expires so that users are not prompted to change their passwords. If you are restricting the change password function to a very limited number of users, then this is probably the best overall setting because most users will never automatically be prompted to change their passwords. However, if your organization mandates that passwords must be changed periodically, then the administrator (user or users that can change passwords) must be prompted outside of the system when the password interval has elapsed and it is time to change passwords.

  Set the Maximum Password Age parameter to Expires in n Days so that users will be prompted to change their passwords periodically. For the (hopefully) small number of users that cannot change their passwords, any attempt to do so will fail; the standard password expiration policy for the system handles all other users.

Note: The example program is provided on an as-is basis. The licensee of the Content Manager OnDemand product is free to copy, revise modify, and make derivative works of this program sample as they see fit.

```
#define _ARSUSEC_C

/*****************************************************************/
/*                                                               */
/* MODULE NAME: ARSUSEC.C                                        */
/*                                                               */
```

```
/*                                                                   */
/* SYNOPSIS:  OnDemand Security Exit                                 */
/*                                                                   */
/*                                                                   */
/* DESCRIPTION:  This module contains the SECURITY function, which   */
/*               is used to validate userids and passwords           */
/*                                                                   */
/* COPYRIGHT:                                                        */
/*  5697-G34 (C) COPYRIGHT IBM CORPORATION 2001.                     */
/*  All Rights Reserved                                              */
/*  Licensed Materials - Property of IBM                             */
/*                                                                   */
/*  US Government Users Restricted Rights - Use, duplication or      */
/*  disclosure restricted by GSA ADP Schedule Contract with IBM Corp.*/
/*                                                                   */
/* NOTE: This program sample is provided on an as-is basis.          */
/*       The licensee of the OnDemand product is free to copy,       */
/*       revise modify, and make derivative works of this program    */
/*       sample as they see fit.                                     */
/*                                                                   */
/*********************************************************************/

#include "arscsxit.h"
#include <stdio.h>
#include <string.h>

ArcCSXitSecurityRC
ARSCSXIT_EXPORT
ARSCSXIT_API
SECURITY( char *act_userid,
          char *cur_userid,
          char *cur_passwd,
          char *new_userid,
          char *new_passwd,
          ArcCSXitSecurityAction action,
          char *msg,
          char *clnt_id
        )
{
   ArcCSXitSecurityRC rc;

   msg[0] = '\0';

   if      ( action == ARCCSXIT_SECURITY_USER_LOGIN )
     {
     rc = ARCCSXIT_SECURITY_RC_OKAY_BUT_VALIDATE_IN_OD;
     }

   else if ( action == ARCCSXIT_SECURITY_USER_UPDATE )
     {
     /* action = change password */

     if ( !strcmp(act_userid,"ADMIN") )
       {
       /* actual userid is ADMIN, who may change passwords */

       rc = ARCCSXIT_SECURITY_RC_OKAY;
       }
     else
       {
       /* actual userid is NOT ADMIN */

       if ( !strcmp(cur_passwd,new_passwd) &&
     *cur_passwd != NULL )
  {
  /* new password must match current password and
     current password must not be blank,
```

```
     required for initial login/change password */

  rc = ARCCSXIT_SECURITY_RC_OKAY;
  }
       else
  {
         /* all other users may not change their own password */

         strcpy(msg,"You do not have permission to change your password.");
         rc = ARCCSXIT_SECURITY_RC_PERMS;
         }
       }
     }
   else
     {
     /* all other actions */

     rc = ARCCSXIT_SECURITY_RC_OKAY;
     }

   return( rc );
}
```

Appendix H. System log user exit

Content Manager OnDemand generates messages about the various actions that occur on the system. For example, when a user logs on the system, Content Manager OnDemand generates a message that contains the date and time, the type of action, the userid, and other information. Unless you specify otherwise, certain messages are automatically save in the system logging facility. You can configure the system to save other messages in the system logging facility.

In addition to saving messages in the system log, OnDemand sends the messages to the system log user exit. The system log user exit is a point at which you may run a user-written program to process the messages and return control of processing after your user-written program ends. The user-written program can process the messages in any way that you want. For example, the user-written program could send alerts to administrators, compile statistics, or generate accounting information.

The standard system log user exit program is named ARSLOG. The system log user exit program on UNIX servers is named `arslog`; the system log user exit program on Windows servers is named `ARSLOG.BAT`. The program resides in the Content Manager OnDemand executable directory (`bin`). The ARSLOG program supplied by IBM does not perform any functions. However, you can replace the ARSLOG program supplied by IBM with a user-written program that does specific functions, such as checking the message number and issuing alerts to administrators. **Important:** The name of the user-written program must be ARSLOG. You can change the function of the ARSLOG program, but you may not specify a different program name.

You must do the following to configure the system to send the messages to the system log user exit:

- Enable Content Manager OnDemand to generate system messages and specify the types of messages generated by selecting the appropriate options in the System Parameters dialog box.
- Enable Content Manager OnDemand to generate application group messages by selecting the appropriate option in the System Parameters dialog box.
- Specifying the types of application group messages generated by selecting options on the Message Logging page in application groups.
- Enable Content Manager OnDemand to send messages to a user-defined program by selecting the appropriate options in the System Parameters dialog box.

After you have completed these steps, Content Manager OnDemand automatically saves the messages in the system log and sends the messages to the system log user exit.

The messages that Content Manager OnDemand sends to the system log user exit contain the parameters listed in Table 28.

Table 28. System log user exit message parameters

Parameter	Purpose	Size (in bytes)	Example
$1	Content Manager OnDemand instance	10	archive

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Table 28. System log user exit message parameters (continued)

Parameter	Purpose	Size (in bytes)	Example
$2	Time stamp	20	08/13/95 14:24:31
$3	Log record identifier	10	57049
$4	Content Manager OnDemand user ID	128	ADMIN
$5	User's accounting information	60	Z76-001J/999999
$6	Severity: **1** Alert **2** Error **3** Warning **4** Information **5** Debug	1	3
$7	Message number	5	31
$8	Message text	255	Failed Login: odaixlib1 7.52.365.12
$9	Document file	variable	The file is stored in the directory that is specified by the ARS_TMP parameter in the ARS.CFG file. The file is deleted immediately after the exit program returns control to OnDemand.

If you create your own ARSLOG program, remember that:

- The ARSLOG program and any programs that it might call run under the UID of the `root` user on a UNIX server, or with Administrator authority on a Windows server. These are privileged accounts with unrestricted access to all files and commands on the system.
- You should specify the full path name of all files used by the ARSLOG program and all programs invoked by the ARSLOG program. For example, you should specify `/bin/mail`, and not simply `mail`.

Content Manager OnDemand programs are coded in the C language. However, the ARSLOG program can call any executable file. You are responsible for developing a user-written program. You must validate the quality and performance of the user-written program and any other programs that it calls. The actual mechanism for taking action based on the messages provided by Content Manager OnDemand is dependent on the software that you are using on the system.

The online help for the administrative client provides information about enabling Content Manager OnDemand to generate messages and send them to the ARSLOG program. The online help also provides information about how to select the application group messages that Content Manager OnDemand generates and sends to the ARSLOG program.

The System Log table contains one row for each message that Content Manager OnDemand generates. Table 29 on page 391 lists the fields, data types, and descriptions of the fields of the records in the System Log table.

Table 29. System Log table

Column Name	Data Type	Size (in bytes)	Description
time_stamp	Date/Time(TZ)	4	The time stamp of the log record in the Content Manager OnDemand internal date format. See the ARSDATE program reference in *IBM Content Manager OnDemand for Multiplatforms: Administration Guide* for information about date formats.
userid	VARCHAR	20	The userid of the user that generated the log record.
severity	CHAR	1	The severity of the log record. **1** Alert **2** Error **3** Warning **4** Information **5** Debugging
msg_num	SMALLINT	2	The message number of the log record.
msg_text	VARCHAR	254	The message text of the log record.
appl_id	CHAR	1	Determines whether Content Manager OnDemand overhead information is valid. **A** Not applicable. The overhead information does not apply to the log record. However, the overhead information can be useful for other purposes. For example, a log record created when a document is retrieved contains overhead information about the document. **N** No. The overhead information does not contain useful information. **Y** The overhead information contains information about the document belonging to this particular log record.
log_id	INTEGER	4	The identifier for the Content Manager OnDemand client connection.
account	VARCHAR	60	The user's accounting information.
doc_name	VARCHAR	11	The name of the object.
doc_off	INTEGER	4	The offset of the document within the compressed object.
doc_len	INTEGER	4	The length of the document within the compressed object. A `0` (zero) means all of the data.
comp_off	INTEGER	4	The offset of the document within the compressed object.
comp_len	INTEGER	4	The length of the document within the compressed object. A `0` (zero) means all of the data.
annot	CHAR	1	Determines whether annotations exist for the document. Applies only if the annotation flag is set (YES) for the application group.
comp_type	CHAR	1	The method used to compress document data.
resource	INTEGER	4	The resource identifier for the document.
pri_nid	SMALLINT	2	The primary storage node identifier.

Table 29. System Log table (continued)

Column Name	Data Type	Size (in bytes)	Description
sec_nid	SMALLINT	2	The secondary storage node identifier.

Sample ARSLOG user exit script for UNIX

Figure 28 shows the sample ARSLOG user exit script for UNIX that is provided by IBM.

```
# $1 - OnDemand Instance Name
# $2 - Time Stamp
# $3 - Log Identifier
# $4 - Userid
# $5 - Account
# $6 - Severity
# $7 - Message Number
# $8 - Message Text
# $9 - Document File
#

echo "$@" >> ${ARS_TMP}/syslog.log

if [ -n "$9" ];then
   if [ -f "$9" ];then
      print "Copy log doc $9\n" >> ${ARS_TMP}/syslog.log
      cp $9 /tmp/syslogdocs/$(basename $9).doc 2>> ${ARS_TMP}/syslog.log
   else
      print "$9 does not exist\n" >> ${ARS_TMP}/syslog.log
   fi
fi

exit 0
```

Figure 28. Sample ARSLOG user exit script for UNIX

Sample ARSLOG user exit batch file for Windows

Figure 29 shows the sample ARSLOG user exit batch file for Windows that is provided by IBM.

```
REM %1 - OnDemand Instance Name
REM %2 - Time Stamp
REM %3 - Log Identifier
REM %4 - Userid
REM %5 - Account
REM %6 - Severity
REM %7 - Message Number
REM %8 - Message Text
REM %9 - Document File
REM

ECHO %1 %2 %3 %4 %5 %6 %7 %8 %9>%ARS_TMP%\System.log

REM make sure the %ARS_TMP%\Syslog directory exists
IF EXIST %9 COPY %9 %ARS_TMP%\Syslog

EXIT
```

Figure 29. Sample ARSLOG user exit batch file for Windows

Appendix I. Table space creation exit

The Content Manager OnDemand table space creation exit allows an installation to take action when OnDemand creates a table space, table, or index tables that will be used to store application index data. The exit is not called for the Content Manager OnDemand system tables.

For table and index creation, the installation can alter the SQL that will be used to create the table or index.

Interface exit components

The table space creation exit consists of the ARSUTBL sample program, which contains a sample table space creation exit in C source form.

The table space creation is implemented by a DLL which in this document is called arsutbl. However, the DLL can have any name and can reside in any directory. The sample ARSUTBL places the DLL in /usr/lpp/ars/bin/exits/arsutbl.

The following statement must exist in the ARS.CFG file that is associated with the instance so that the arsutbl DLL can be invoked:

```
ARS_DB_TABLESPACE_USEREXIT=absoulte path name
```

For the sample arsutbl, you would specify the following statement in the ARS.CFG file:

```
ARS_DB_TABLESPACE_USEREXIT=/usr/lpp/ars/bin/exits/arsutbl
```

Format

Figure 30 shows the C language arsutbl.

```
#pragma export(TBLSPCRT)
#include "arscsxit.h"
int TBLSPCRT( ArcCSXitApplGroup appl_grp,
              char tblsp_name,
              char table_name,
              char idx_name,
              char sql,
              int  action,
              int  created
            )
```

Figure 30. C language arsutbl

General description

On entry, *action* should be interrogated to determine the type of action being performed. The actions are:

Table space creation	1
Table creation	2
Index creation	3
Final call	4

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Table 30, Table 31, and Table 32 show the input parameters valid for each action. There are no applicable parameters for the Final call invocation.

Do not attempt to use parameters that are not specified as being valid for a given action. Do not attempt to access storage beyond the terminating X'00'. The exit should not modify any input parameters except the SQL string if supplied for the action.

Index Creation is called once for each index that is being created on the table.

Table 30. Tablespace Create

Parameter	Meaning
appl_grp	Contains information related to the application group for which the table space is being created. This includes the application group name, the application group identifier, and the internal application group name.
tblsp_name	Null delimited table space name being created.

Table 31. Table Create

Parameter	Meaning
appl_grp	Contains information related to the application group for which the table space is being created. This includes the application group name, the application group identifier, and the internal application group name.
tblsp_name	Null delimited table space name being created.
table_name	Null delimited table name being created.
sql	Null delimited SQL that will be used to create the table. The installation can alter this, however the resultant string plus the tailing X'00' must not exceed 16384 bytes.

Table 32. Index Create

Parameter	Meaning
appl_grp	Contains information related to the application group for which the table space is being created. This includes the application group name, the application group identifier, and the internal application group name.
tblsp_name	Null delimited table space name being created.
table_name	Null delimited table name being created.
idx	Null delimited index name being created.
sql	Null delimited SQL that will be used to create the table. The installation can alter this, however the resultant string plus the tailing X'00' must not exceed 16384 bytes.

Returned values

The **created* return value should be set as shown in Table 33.

Table 33. Return codes

Action	Meaning
`0`	OnDemand should create the table space, table, or index.
non-zero	The exit has created the table space, table or index.

The exit should set a return code of `0` (zero).

Appendix J. National Language Support

This appendix contains information about the National Language Support (NLS) provided by Content Manager OnDemand, including information about the code pages (code sets) supported to provide national language (NL) character support.

Note: Unless otherwise indicated, information applies to all supported operating systems.

Conversion between different code pages

A code page maps each character from a character set, such as the Latin alphabet, to a numeric representation. Each code page is identified by a numeric identifier. For example, code page 850 represents the character `A` as hexadecimal `41`.

Ideally, for optimal performance, Content Manager OnDemand clients and applications should always use the same code page as the Content Manager OnDemand instance[2]. However, this is not always practical or possible. Content Manager OnDemand provides support for character conversion that allows clients, applications, and instances to use different code pages. This means that, while an Content Manager OnDemand instance must run in a single code page, clients that access the instance can operate in any code page and reports that you store in Content Manager OnDemand can contain characters encoded in any code page.

However, when you use different code pages, Content Manager OnDemand might need to convert characters from one code page to a different code page in order to maintain the meaning of the data.

When does character conversion occur?

Character conversion can occur in the following situations:

- When a client is operating in a code page that is different from the code page of the Content Manager OnDemand instance.

  Character data conversion takes place on the server using Unicode code page mapping tables. Unicode code page mapping tables exist for all single- and double-byte languages. For example, a Windows client operating in the Latin 1 code page 1252 can access an Content Manager OnDemand instance that has character data encoded in the Latin 1 code page 819 (code set ISO 8859-1).

  Any data that the user enters (or default values) is converted to Unicode by Content Manager OnDemand. The resulting Unicode data is then converted to the code page of the instance. For example, the user enters a userid, password, and server name to logon to a server. Content Manager OnDemand converts the characters from the code page of the client to Unicode and then from Unicode to the code page of the instance.

  Any data sent to the client is converted to Unicode by Content Manager OnDemand. The resulting Unicode data is then converted to the code page of the client. For example, after authenticating the userid and password, the server builds a list of folder names that the user is authorized to open. Content

2. An Content Manager OnDemand instance is a logical Content Manager OnDemand server environment, with one library server (and database) and one or more object servers. Each Content Manager OnDemand instance (the servers and the database) must run in a single code page.

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Manager OnDemand converts the characters from the code page of the instance to Unicode and then from Unicode to the code page of the client.

- When ACIF generates index data in a code page that is different than the code page of the Content Manager OnDemand instance.

  Character data conversion takes place on the server using Unicode code page mapping tables. Content Manager OnDemand converts the characters from the code page used by ACIF to Unicode and then from Unicode to the code page of the instance. For example, index data generated by ACIF and encoded in code page 500 (ISO EBCDIC) can be stored in an instance that has character data encoded in code page 819.

Character conversion will **not** occur for:

- Documents stored in Content Manager OnDemand.

  When you store documents in Content Manager OnDemand, they are stored on the server as a byte stream and no character conversion occurs. For example, if the characters in the document are encoded in code page 500, the characters remain encoded in code page 500 when stored in Content Manager OnDemand.

  When a user retrieves a document from Content Manager OnDemand, the server sends the document to the client without converting the characters from one code page to the other. For example, a document is stored in Content Manager OnDemand with characters encoded in code page 500. When the user retrieves the document, it remains encoded in code page 500, although the client might be running in a code page that is different than the instance, such as 1252. However, the client viewing program maps characters in a document from the code page of the server to the code page of the client.

Character mapping

For double-byte character set (DBCS) AFP data and DBCS and single-byte character set (SBCS) line data, the Content Manager OnDemand client automatically converts characters in a document from the code page of the server to the code page of the client using ICU converters. This method of character mapping works with the Windows client and supports DBCS (for AFP and line data) and SBCS (for line data) languages, including most DBCS User Defined Character (UDC) mappings. The ICU converters automatically map the user-defined area of a code page to the standard user-defined area of the corresponding ICU table. If the code page contains UDC mappings outside the standard user-defined area, you can create and use your own ICU converter. (Otherwise, the viewing program will not be able to display the characters correctly.) Use the Character Data Representation Architecture (CDRA) utility to create your own ICU converter. For AFP data, change the IconvLocalePath parameter in the Preferences section of the FLDPORT2.INI file to use your own ICU converter. See “Character data conversion tables” on page 407 for more information about character conversion and ICU converters.

For more information on ICU, see http://www.icu-project.org/.

The AFP Viewer operates internally in Unicode and uses ICU to convert data.

How does Content Manager OnDemand determine code page values?

The client code page is determined from the operating environment when the connection to the instance is made. For example, the Windows client derives the code page from the locale as specified in the Regional Settings under Control Panel.

The instance code page is derived from the value specified at the time the instance is created. The instance is in one and only one code page.

The code page of index data generated by ACIF is determined by the value of the CPGID parameter. When index data is stored in an instance, it is converted from the code page used by ACIF to the code page of the instance. (When index data is retrieved from an instance, it is converted from the code page of the instance to the code page of the client.)

The code page of a line data document is derived from the application (View Information page). For all other types of documents, the code page is derived from the data. The server never performs character conversion on documents.

Configuring your system for NLS

When you install Content Manager OnDemand on AIX, HP-UX Itanium, Solaris, or Linux, the default locale is `en_US`, the default code page is `819`, and the default code set is `ISO8859-1`. When you install Content Manager OnDemand on Windows, the default locale is `English` and the default code page is `1252`.

If you need to change the defaults, you must do so **before** you create the instance. After you create the instance, you cannot change these values unless you delete the instance, drop the database, and then recreate the instance and database.

The following topics provide additional information about configuring your system for NLS:

- Language settings
- Creating the database
- Mapping AFP fonts

Language settings

The following four tables show the language codes supported by Content Manager OnDemand and how they are mapped to locale and code set values for each operating system.

Table 34. Supported language codes, locales, and code sets for AIX

Language Code	Territory	Locale	Code Set
CHS	China	zh_CN	IBM-eucCN
FRC	Canada	en_CA	ISO8859–1
HRV	Croatia	hr_HR	ISO8859-2
CZE	Czech Republic	cs_CZ	ISO8859-2
DAN	Denmark	da_DK	ISO8859–1
ARA	Egypt	ar_AA	ISO8859–6
FIN	Finland	fi_FI	ISO8859–1
FRA	France	fr_FR	ISO8859–1
DEU	Germany	de_DE	ISO8859–1
ELL	Greece	el_GR	ISO8859-7
HUN	Hungary	hu_HU	ISO8859-2
ITA	Italy	it_IT	ISO8859–1
JPN	Japan	ja_JP	IBM-eucJP

Table 34. Supported language codes, locales, and code sets for AIX (continued)

Language Code	Territory	Locale	Code Set
KOR	Korea	ko_KR	IBM-eucKR
NLD	Netherlands	nl_NL	ISO8859–1
NOR	Norway	no_NO	ISO8859–1
PLK	Poland	pl_PL	ISO8859-2
PTB	Portugal/Brazil	pt_BR	ISO8859–1
RUS	Russia	ru_RU	ISO8859-5
SKY	Slovakia	sk_SK	ISO8859-2
SLO	Slovenia	sl_SI	ISO8859-2
ESP	Spain	es_ES	ISO8859–1
SVE	Sweden	sv_SE	ISO8859–1
CHT	Taiwan	zh_TW	IBM-eucTW
ENU	US/English	en_US	ISO8859–1

Table 35. Supported language codes, locales, and code sets for HP-UX Itanium

Language Code	Territory	Locale	Code Set
CHS	China	zh_CN.hp15CN	hp15cn
FRC	Canada	fr_CA.iso88591	iso8859–1
HRV	Croatia	hr_HR.iso88592	iso88592
CZE	Czech Republic	cs_CZ.iso88592	iso88592
DAN	Denmark	da_DK.iso88591	iso8859–1
ARA	Egypt	ar_SA.iso88596	iso88596
FIN	Finland	fi_FI.iso88591	iso8859–1
FRA	France	fr_FR.iso88591	iso8859–1
DEU	Germany	de_DE.iso88591	iso8859–1
ELL	Greece	el_GR.iso88597	iso88597
HUN	Hungary	hu_HU.iso88592	iso88592
ITA	Italy	it_IT.iso88591	iso8859–1
JPN	Japan	ja_JP.eucJP	eucJP
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NOR	Norway	no_NO.iso88591	iso8859–1
PLK	Poland	pl_PL.iso88592	iso88592
PTB	Portugal/Brazil	pt_PT.iso88591	iso8859–1
RUS	Russia	ru_RU.iso88595	iso88595
SKY	Slovakia	sk_SK.iso88592	iso88592
SLO	Slovenia	sl_SI.iso8	iso88592
ESP	Spain	es_ES.iso88591	iso8859–1
SVE	Sweden	sv_SE.iso88591	iso8859–1
CHT	Taiwan	zh_TW.eucTW	eucTW
ENU	US/English	en_US.iso88591	iso8859–1

Table 36. Supported language codes, locales, and code sets for Solaris

Language Code	Territory	Locale	Code Set
FRC	Canada	en_CA	ISO8859–1
CHS	China	zh	eucCN
HRV	Croatia	hr_HR	ISO-8859-2
CZE	Czech Republic	cs_CZ	ISO-8859-2
DAN	Denmark	da	ISO8859–1
ARA	Egypt	ar_EG	ISO-8859-6
FIN	Finland	fi	ISO8859–1
FRA	France	fr	ISO8859–1
DEU	Germany	de	ISO8859–1
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NOR	Norway	no	ISO8859–1
PLK	Poland	pl_PL	ISO-8859-2
PTB	Portugal/Brazil	pt	ISO8859–1
RUS	Russia	ru_RU	ISO-8859-5, KOI8-R
SKY	Slovakia	sk_SK	ISO-8859-2
SLO	Slovenia	sl_SI	ISO-8859-2
ESP	Spain	es	ISO8859–1
SVE	Sweden	sv	ISO8859–1
CHT	Taiwan	zh_TW	eucTW
ENU	US/English	en_US	ISO8859–1

Table 37. Supported language codes, locales, and code sets for Windows

Language Code	Territory	Locale	Code Set
FRC	Canada	CA	1252
CHS	China	CN	GBK
HRV	Croatia	HR	1250
CZE	Czech Republic	CS	1250
DAN	Denmark	DN	1252
ARA	Egypt	AA	1256
FIN	Finland	FI	1252
FRA	France	FR	1252
DEU	Germany	DE	1252
ELL	Greece	EL	1253
HUN	Hungary	HU	1250
ITA	Italy	IT	1252

Table 37. Supported language codes, locales, and code sets for Windows (continued)

Language Code	Territory	Locale	Code Set
JPN	Japan	JP	IBM-943
KOR	Korea	KR	1363
NLD	Netherlands	NL	1252
NOR	Norway	NO	1252
PLK	Poland	PL	1250
PTB	Portugal/Brazil	BR	1252
RUS	Russia	RU	1251
SKY	Slovakia	SK	1250
SLO	Slovenia	SL	1250
ESP	Spain	ES	1252
SVE	Sweden	SE	1252
CHT	Taiwan	TW	950
ENU	US/English	US	1252

On an AIX, HP-UX Itanium, Solaris or Linux system, you must set the ARS_LANGUAGE parameter in the ARS.CFG file to the correct language code for your operating environment before you create the database. Content Manager OnDemand determines the locale and code set in which to create the database using the language code that you specify. See

AIX "ARS_LANGUAGE parameter" on page 57

HP-UX Itanium
"ARS_LANGUAGE parameter" on page 129

Solaris
"ARS_LANGUAGE parameter" on page 201

Linux "ARS_LANGUAGE parameter" on page 273

for details about setting the ARS_LANGUAGE parameter.

On a Windows system, Content Manager OnDemand obtains information about the instance from values you supplied when you configured the system. For example, when you create the database, Content Manager OnDemand derives the locale, code page, and code set of the database by using the value of the language parameter you set when you configured the instance. See "Specifying properties of an instance" on page 333 for details about setting the language code.

Creating the database

We recommend that you use the ARSDB program to create the database. The ARSDB program is copied to the Content Manager OnDemand program directory when you install Content Manager OnDemand.

Information for UNIX servers

The ARSDB program reads information in the ARS.CFG file. Before you create the database you must verify, and if necessary, modify the database parameters in the ARS.CFG file. For NLS, the key parameter is ARS_LANGUAGE. This value

determines the locale, code set, and code page that Content Manager OnDemand uses to create the database. For details about setting the ARS_LANGUAGE parameter, see:

AIX "Specifying the ARS.CFG file for the instance" on page 52

HP-UX Itanium
"Specifying the ARS.CFG file for the instance" on page 124

Solaris
"Specifying the ARS.CFG file for the instance" on page 196

Linux "Specifying the ARS.CFG file for the instance" on page 268

Important: You must specify the correct language code **before** you create the database. If you create the database using the incorrect language code, you must drop and then re-initialize the database. If you drop the database, then you must reload any data that you previously loaded into the system and recreate any Content Manager OnDemand objects that you defined, such as application groups, folders, and users.

For DBCS languages, you must create the database in the *euc* (Extended UNIX code) code page. Table 38 lists the DBCS languages supported by Content Manager OnDemand and the euc code page that you must use to create the database. The table also lists the IBM code page that the Windows client uses on the PC, even though the PC might be running under the Microsoft (MS) code page shown in the table.

Table 38. DBCS code pages

Territory	Host Code Page	UNIX Code Page (Code Set)	PC Code Page
China	IBM-935	IBM-1383 (IBM_eucCN)	IBM-1386 (MS–936)
Japan	IBM-939	IBM-954 (IBM_eucJP)	IBM-943 (MS–932)
Korea	IBM-933	IBM-970 (IBM_eucKR)	IBM-1363 (MS–949)
Taiwan	IBM-937	IBM-964 (IBM_eucTW)	IBM-950 (MS–950)

Information for Windows servers

Before you create the database, you must configure the instance with the correct language and code page. Chapter 53, "Configuring instances on Windows," on page 331 provides details about setting the language and code page. Table 37 on page 401 lists the supported language codes, locales, and code sets.

Note: You must set the correct language and code page **before** you create the database. If you create the database using the incorrect language and code page, you must drop and then reinitialize the database. If you drop the database, you must reload any data that you previously loaded into the system and recreate any Content Manager OnDemand objects you defined, such as users, folders, and application groups.

Mapping AFP fonts

You might need to map the fonts your documents were created with to fonts that can be displayed at the client.

You need to map AFP fonts if your documents contain fonts that are not defined to Content Manager OnDemand, if your documents contain modified IBM AFP fonts, or if your documents contain AFP fonts that you or others in your organization created. Otherwise, the viewing program might not be able to display the characters properly. (If your documents use fonts that are not defined to Content Manager OnDemand, then users will see a message when viewing them.) The *IBM Content Manager OnDemand: Windows Client Customization Guide* provides details about mapping AFP fonts.

Creating application groups

An application group is a container that holds report data. You store reports and the index data used to retrieve and maintain them in an application group. You define database fields for each application group. The database fields represent categories of information in a report. When you load a report into an application group, you store index information about the report in the database.

When you define database fields, you specify attributes of the fields. Attributes include the field name, type, and length. For character data, the field length must specify the number of bytes required to hold the field data in the database. For multi-byte languages, character string conversion between code pages might result in either an increase or decrease in the length of the string when data is loaded into the database. For example, the client might require two bytes to display a double-byte character and the server might require three bytes to store the character in the euc code page of the database. In the example, the string length must be increased so that the database field is large enough to hold the converted string. The maximum length of a string field in Content Manager OnDemand is 254 bytes. Verify the length of each database (string) field you define:

- If you use the Report Wizard to generate application groups, the Report Wizard converts strings you select to the code page of the database and displays the number of characters required to hold the string in the database. You can accept the value generated by the Report Wizard or replace it with another value.
- If you use the Add an Application Group command to add application groups, you must calculate the number of bytes required to hold the field in the database and enter the value on the Field Information page.

Creating applications

You typically create an Content Manager OnDemand application for each type of report or source of data that you plan to store in Content Manager OnDemand. When you create an application, you specify attributes of the application. The attributes include:

- The data type of the report as it is stored in Content Manager OnDemand (for example, AFP). The data type determines the viewing program used to display pages of the report.
- The program used to index the report. If you use one of the indexing programs provided with Content Manager OnDemand, the application typically includes the parameters that the indexing program uses to process the report and generate the index data.
- Logical views of report data. Logical views provide different ways to view pages of a line data report.

You can create an application by using the Report Wizard or by using the Add an Application command. You can create indexing information by entering parameters and values directly into the application, specifying the name of a parameter file

that contains the information, or using the Graphical Indexer to generate indexing information. You can create logical views by entering values directly into the application or using the sample data window to generate the logical view information.

Data Type

The Data Type of the application identifies the format of the data as it is stored in Content Manager OnDemand and the viewer that the client calls to display documents stored in the application. If you plan to store line data in Content Manager OnDemand or create indexing parameters with the graphical indexer (using a line data source file), you must set the Data Type of the application to Line. When you set the Data Type to Line:

- Verify the code page of the data. The code page of the data is typically the code page of the operating system where the data was created. In Content Manager OnDemand, the default code page for line data is 500 (ISO EBCDIC).
- If the line data contains shift-in and shift-out (SOSI) codes, indicate how ACIF handles them. Shift-in and shift-out codes indicate when the code points in a record change from single byte to double byte and double byte to single byte. Select from SOSI1, SOSI2, and SOSI3.

  MBCS Considerations: Multi-byte character set (MBCS) code pages that contain shift-in and shift-out codes are supported in line data but not AFP. Examples of MBCS code pages are 939 (Japan) and 933 (Korea).

For all other types of data, the code page is encapsulated in the data. For AFP data, it is possible that characters are encoded in more than one code page. The AFP viewer uses mapping files to display single- and double-byte data in the proper code page. You might need to map AFP fonts a document was created with to outline fonts on the PC to properly display some characters. The *Client Customization Guide* provides details about mapping AFP fonts.

Indexing considerations

Indexing with ACIF

If you use ACIF to index the input data, the application indexing parameters determine how ACIF indexes the data and the code page of the index data generated by ACIF. The CPGID (Code Page Global Identifier) parameter identifies the code page of the index data generated by ACIF. The CPGID should be the same as the code page of the source data. You must code ACIF trigger and index string values in the code page of the source data. See the *IBM Content Manager OnDemand for Multiplatforms: Indexing Reference* for more information about ACIF, including examples that show how to code trigger and index string values for EBCDIC data.

Important: If you plan to use ACIF to generate index data in a multi-byte language, then you must allow ACIF to create the Map Coded Font Format 2 (MCF2) structured fields with coded fonts. To do so, you must set the MCF2REF parameter to CF (MCF2REF=CF).

Indexing with the Generic indexer

If you use the Generic Indexer to index the input data, the default code page is 819 (Latin 1, code set ISO 8859-1). If you need to generate index data in some other code page, you must specify the code page by using the CODEPAGE: parameter in

the parameter file that is used by the Generic Indexer. See the *IBM Content Manager OnDemand for Multiplatforms: Indexing Reference* for more information.

Indexing with the graphical indexer

If you use the graphical indexer to generate indexing parameters for a report that contains multi-byte character data, you might need to change the starting column, ending column, and column width values generated by the graphical indexer. When you open a report with the graphical indexer, the client converts the characters from the host code page to the PC code page. If the report contains multi-byte character data, the SOSI codes in the data are not converted. As a result, when you select a string that contains multi-byte character data, the starting column of the string might be displayed incorrectly by the graphical indexer. In addition, if the string in the original report (generated on the host) contained SOSI codes, the ending column or column width value will be displayed incorrectly by the graphical indexer. To generate correct indexing parameters for multi-byte character data:

- Create the indexing parameters using the graphical indexer
- Using a copy of the original report (generated on the host), determine the actual starting column, ending column, and column width values for the strings you selected in the report (triggers and fields)
- Change the indexing parameters by using the Keyboard option on the Indexer Information page

Important: After you modify the indexing parameters, you must not reopen the report with the graphical indexer. If you do so, your modifications will be lost.

Logical Views

If you use the sample data window to create logical views for a report that contains multi-byte character data, you might need to change the starting column, ending column, and column width values generated by Content Manager OnDemand. When you open a report in the sample data window, the client converts the characters from the host code page to the PC code page. If the report contains multi-byte character data, the SOSI codes in the data are not converted. As a result, when you select a string that contains multi-byte character data, the starting column of the string might be displayed incorrectly by the graphical indexer. In addition, if the string in the original report (generated on the host) contained SOSI codes, the ending column or column width value will be displayed incorrectly by the graphical indexer. To generate correct logical views for multi-byte character data:

- Create the logical views using the sample data window
- Using a copy of the original report (generated on the host), determine the actual starting column, ending column, and column width values for the strings you selected in the report (fields and the validation string)
- Change the logical view information by replacing the values on the Logical View Fields page

Important: After you modify the logical view information, you must not reopen the report in the sample data window. If you do so, your modifications will be lost.

Running Content Manager OnDemand programs

Certain Content Manager OnDemand programs accept input data (parameters and values) from a parameter file. When you work with a multi-byte language database, the data in the parameter file must be encoded in the euc code page of the database. The tables in "Language settings" on page 399 list the DBCS languages supported by Content Manager OnDemand and the euc code page (for UNIX systems) or code page (for Windows systems) or that you must run under when you create the parameter file.

When you need to create a parameter file, you should log on at a workstation that is running under the same code page as the database. Do not create the parameter file on a workstation and then use the FTP program to send it to a server. Do not log on to a server with the TELNET program. (However, you can use the TELNET program to run commands from the prompt, so long as you enter all of the parameters and values at the command prompt.)

Character data conversion tables

For all information concerning to character data conversion, font mapping, and related matters, see the *Content Manager OnDemand Windows Client Customization Guide*, SC27-0837-05.

Troubleshooting incorrect NLS characters

If your characters display incorrectly, try the following troubleshooting tips:

- Check the code page of the database. When OnDemand is installed, the default code page is 819. The 819 is an example of an integer identifier known as a Coded Character Set Identifier (CCSID). The 819 CCSID maps to the ISO8859-1 code set. If the default code page needs to be changed , it must be changed before the Content Manager OnDemand database instance is created.
- Check to make sure you are using the appropriate language version of the Content Manager OnDemand 32 client, during the thick client install options are provided to install the appropriate language version.
- Check to see if custom template HTML files specify a language encoding. Character conversion could be taking place based on the encoding that is specified.
- You can adjust the encoding in Internet Explorer from the **Task menu –>View -->Encoding**. On Netscape through the **Task menu -->View -->Character coding**.

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Index

A

activity log retention
  Tivoli Storage Manager
    AIX 31
    HP-UX Itanium 103
    Linux 247
    Solaris 175
    Windows 318
administrative user
  instance owner
    Windows 307
administrative users
  Tivoli Storage Manager
    AIX 30
    HP-UX Itanium 102
    Linux 246
    Solaris 174
    Windows 318
AFP fonts 403
AIX
  ARS.CACHE file 64
  ARS.CFG file 52
  ARS.DBFS file 63
  ARS.INI file 50
  ARSPRT file 15
  checklist 11
  configuration files 19
  database 23
  DB2 23
  DB2 files in Tivoli Storage Manager 36
  DB2 instance 24
  DB2 instance owner 23
  DB2 table spaces 24
  Download for the z/OS feature 15
  hardware requirements 17
  installation checklist 11
  installing 9
  instance
    ARS.CACHE file 64
    ARS.CFG file 52
    ARS.DBFS file 63
    ARS.INI file 50
    automating operations 73
    configuring 49
    creating 67
    operations, automating and scheduling 73
    scheduling operations 73
    starting 73
  instance name, OnDemand 24, 25
  instance owner 21
  instance, DB2 24
  maintaining DB2 files in Tivoli Storage Manager 36
  OnDemand instance name 24, 25
  OnDemand software 47
  Oracle 24
  Oracle database 25
  Oracle database, creating 25
  Oracle home directory 25
  Oracle table spaces 25
  Oracle userid 25
  print software 15
AIX *(continued)*
  requirements 17
  root user 21
  server print 15
  software requirements 17
  system load log
    initializing 70
  system log
    initializing 69
  system migration
    initializing 70
  system table space 24, 25
  table spaces 24, 25
  Tivoli Storage Manager software 27
API
  See application programming interface
application groups
  maintaining
    AIX 76, 77
    HP-UX Itanium 149
    Linux 292, 293
    Solaris 220, 221
    Windows 338
  migrating data to archive storage
    AIX 76, 77
    HP-UX Itanium 149
    Linux 292, 293
    Solaris 220, 221
    Windows 338
application programming interface
  ARSJESD program 371
  ARSLOG program 389
  ARSUUPD 377
  client retrieval preview 383
  Download for the z/OS feature 371
  report specification archive definition 377
  retrieval preview 383
  security user exit 385
  system log 389
  table space creation user exit 393
  user exits
    programming requirements 369
    requirements 369
archive copy groups
  Tivoli Storage Manager
    AIX 34
    HP-UX Itanium 106
    Linux 250
    Solaris 178
    Windows 319
archived log files
  maintaining in Tivoli Storage Manager
    AIX 36, 56
    HP-UX Itanium 108, 128
    Linux 252, 272
    Solaris 180, 200
    Windows 321, 336
  maintaining on disk
    AIX 55
    HP-UX Itanium 127
    Linux 271

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archived log files *(continued)*
maintaining on disk *(continued)*
Solaris 199
Windows 335
ARS_ADSM program
Tivoli Storage Manager
AIX 30, 41
HP-UX Itanium 102, 113
Linux 246, 257
Solaris 174, 185
Windows 318
ARS_CODEPAGE parameter
AIX 54
HP-UX Itanium 126
Linux 269
Solaris 198
ARS_DB_ENGINE parameter
AIX 25, 54
HP-UX Itanium 97, 126
Linux 241, 270
Oracle database in AIX 25
Oracle database in HP-UX 97
Oracle database in Linux 241
Oracle database in Solaris 169
Solaris 169, 198
ARS_DB_IMPORT parameter
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
ARS_DB_PARTITION parameter
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
ARS_DB_TABLESPACE parameter
AIX 24, 25, 55
HP-UX Itanium 96, 97, 127
Linux 240, 241, 271
Solaris 168, 169, 199
ARS_DB_TABLESPACE_USEREXIT parameter
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB2_ARCHIVE_LOGPATH parameter
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB2_DATABASE_PATH parameter
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB2_LOG_NUMBER parameter
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_DB2_LOGFILE_SIZE parameter
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_DB2_PRIMARY_LOGPATH parameter
HP-UX Itanium 128
ARS_DB2_PRIMARY_LOGPATH parameter *(continued)*
Linux 272
Solaris 200
ARS_DB2_TSM_CONFIG parameter
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_LANGUAGE parameter 399, 402
AIX 57
HP-UX Itanium 129
Linux 273
Solaris 201
ARS_LOCAL_SRVR parameter
AIX 58
HP-UX Itanium 130
Linux 274
Solaris 202
ARS_MESSAGE_OF_THE_DAY parameter
AIX 58
HP-UX Itanium 130
Linux 274
Solaris 202
ARS_NUM_DBSRVR parameter
AIX 58
HP-UX Itanium 130
Linux 274
Solaris 202
ARS_NUM_LICENSE parameter
AIX 59
HP-UX Itanium 131
Linux 275
Solaris 203
ARS_ORACLE_HOME parameter
AIX 25, 59
HP-UX Itanium 131
Linux 241
Solaris 203
ARS_ORACLE_PASSWD parameter
AIX 25
HP-UX Itanium 97
Linux 241
Solaris 169
Windows 310
ARS_ORACLE_PASSWORD parameter
AIX 59
HP-UX Itanium 131
Solaris 203
ARS_ORACLE_USERID parameter
AIX 25, 60
HP-UX Itanium 97, 132
Linux 241
Solaris 169, 204
Windows 310
ARS_PRINT_PATH parameter
AIX 60
HP-UX Itanium 132
Linux 275
Solaris 204
ARS_SRVR parameter
AIX 60
HP-UX Itanium 132
Linux 275
Solaris 204
ARS_STORAGE_MANAGER parameter
AIX 60
HP-UX Itanium 132

ARS_STORAGE_MANAGER parameter *(continued)*
Linux 276
Solaris 204
ARS_SUPPORT_CFSOD parameter
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
ARS_TMP parameter
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
ARS.CACHE file
AIX 64
HP-UX Itanium 136
Linux 279
Solaris 208
specifying in ARS.INI file
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
ARS.CFG file
AIX 52
ARS_CODEPAGE parameter
AIX 54
HP-UX Itanium 126
Linux 269
Solaris 198
ARS_DB_ENGINE parameter
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
ARS_DB_IMPORT parameter
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
ARS_DB_PARTITION parameter
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
ARS_DB_TABLESPACE parameter
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB_TABLESPACE_USEREXIT parameter
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB2_ARCHIVE_LOGPATH parameter
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB2_DATABASE_PATH parameter
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB2_LOG_NUMBER parameter
AIX 56
ARS.CFG file *(continued)*
ARS_DB2_LOG_NUMBER parameter *(continued)*
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_DB2_LOGFILE_SIZE parameter
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_DB2_PRIMARY_LOGPATH parameter
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_DB2_TSM_CONFIG parameter
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_LANGUAGE parameter 399, 402
AIX 57
HP-UX Itanium 129
Linux 273
Solaris 201
ARS_LOCAL_SRVR parameter
AIX 58
HP-UX Itanium 130
Linux 274
Solaris 202
ARS_MESSAGE_OF_THE_DAY parameter
AIX 58
HP-UX Itanium 130
Linux 274
Solaris 202
ARS_NUM_DBSRVR parameter
AIX 58
HP-UX Itanium 130
Linux 274
Solaris 202
ARS_NUM_LICENSE parameter
AIX 59
HP-UX Itanium 131
Linux 275
Solaris 203
ARS_ORACLE_HOME parameter
AIX 59
HP-UX Itanium 131
Solaris 203
ARS_ORACLE_PASSWORD parameter
AIX 59
HP-UX Itanium 131
Solaris 203
ARS_ORACLE_USERID parameter
AIX 60
HP-UX Itanium 132
Solaris 204
ARS_PRINT_PATH parameter
AIX 60
HP-UX Itanium 132
Linux 275
Solaris 204
ARS_SRVR parameter
AIX 60
HP-UX Itanium 132
Linux 275
Solaris 204

ARS.CFG file *(continued)*
ARS_STORAGE_MANAGER parameter
AIX 60
HP-UX Itanium 132
Linux 276
Solaris 204
ARS_SUPPORT_CFSOD parameter
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
ARS_TMP parameter
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
code set
AIX 57
HP-UX Itanium 129
Linux 273
Solaris 201
database connections, specifying
AIX 58
HP-UX Itanium 130
Linux 274
Solaris 202
DB_ENGINE parameter
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
DB2INSTANCE parameter
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
DSM_CONFIG parameter
AIX 61
HP-UX Itanium 133
Linux 277
Solaris 205
DSM_DIR parameter
AIX 61
HP-UX Itanium 133
Linux 277
Solaris 205
DSM_LOG parameter
AIX 61
HP-UX Itanium 133
Linux 277
Solaris 205
DSMG_CONFIG parameter
AIX 62
HP-UX Itanium 134
Linux 277
Solaris 206
DSMG_DIR parameter
AIX 62
HP-UX Itanium 134
Linux 277
Solaris 206
DSMG_LOG parameter
AIX 62
HP-UX Itanium 134
Linux 277
Solaris 206
ARS.CFG file *(continued)*
DSMI_CONFIG parameter
AIX 62
HP-UX Itanium 134
Linux 277
Solaris 206
DSMI_DIR parameter
AIX 62
HP-UX Itanium 134
Linux 278
Solaris 206
DSMI_LOG parameter
AIX 62
HP-UX Itanium 134
Linux 278
Solaris 206
DSMSERV_CONFIG parameter
AIX 62
HP-UX Itanium 134
Linux 278
Solaris 206
DSMSERV_DIR parameter
AIX 63
HP-UX Itanium 135
Linux 278
Solaris 207
HP-UX Itanium 124
language parameter 399, 402
AIX 57
HP-UX Itanium 129
Linux 273
Solaris 201
license parameter
AIX 59
HP-UX Itanium 131
Linux 275
Solaris 203
Linux 268
locale
AIX 57
HP-UX Itanium 129
Linux 273
Solaris 201
Solaris 196
specifying in ARS.INI file
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
ARS.DBFS file
AIX 63
HP-UX Itanium 135
Linux 278
Solaris 207
specifying in ARS.INI file
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
ARS.INI file
AIX 50
HOST parameter
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
HP-UX Itanium 122

ARS.INI file *(continued)*
Linux 266
PORT parameter
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
PROTOCOL parameter
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
Solaris 194
SRVR_DB_CFG parameter
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
SRVR_INSTANCE_OWNER parameter
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
SRVR_OD_CFG parameter
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
SRVR_SM_CFG parameter
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
ARSDB program
application groups, maintaining
AIX 77
HP-UX Itanium 149
Linux 293
Solaris 221
Windows 338
backing up the database
AIX 77
HP-UX Itanium 150
Linux 293
Solaris 221
Windows 338
creating the instance
AIX 68
HP-UX Itanium 140
Linux 284
Solaris 212
database backup
AIX 77
HP-UX Itanium 150
Linux 293
Solaris 221
Windows 338
database, maintaining
AIX 77
HP-UX Itanium 149
Linux 293
Solaris 221
Windows 338
scheduling
AIX 77
HP-UX Itanium 149, 150
Linux 293
ARSDB program *(continued)*
scheduling *(continued)*
Solaris 221
Windows 338
starting the database
AIX 73
HP-UX Itanium 145
Linux 289
Solaris 217
ARSJESD program
API definition 371
starting
AIX 74
HP-UX Itanium 146
Linux 290
Solaris 218
user exit program 371
ARSLOAD program
password
AIX 75
HP-UX Itanium 147
Linux 291
Solaris 219
starting
AIX 75
HP-UX Itanium 147
Linux 291
Solaris 219
userid
AIX 75
HP-UX Itanium 147
Linux 291
Solaris 219
ARSLOAD.CFG file
password
AIX 75
HP-UX Itanium 147
Linux 291
Solaris 219
userid
AIX 75
HP-UX Itanium 147
Linux 291
Solaris 219
ARSLOG program 389
ARSMAINT program
application groups, maintaining
AIX 76, 77
HP-UX Itanium 149
Linux 292, 293
Solaris 220, 221
Windows 338
cache storage, maintaining
AIX 76, 77
HP-UX Itanium 149
Linux 292, 293
Solaris 220, 221
Windows 338
database, maintaining
AIX 76
HP-UX Itanium 149
Linux 292
Solaris 220
Windows 338
scheduling
AIX 76, 77
HP-UX Itanium 149

ARSMAINT program *(continued)*
scheduling *(continued)*
Linux 292, 293
Solaris 220, 221
Windows 338
ARSOBJD program
starting
AIX 74
HP-UX Itanium 146
Linux 290
Solaris 218
ARSPRT file
AIX 15
HP-UX Itanium 87
Linux 231
Solaris 159
Windows 303
ARSSOCKD program
starting
AIX 73
HP-UX Itanium 145
Linux 289
Solaris 217
ARSSYSCR program
initializing system load log
AIX 70
HP-UX Itanium 142
Linux 286
Solaris 214
Windows 342
initializing system log
AIX 69
HP-UX Itanium 141
Linux 285
Solaris 213
initializing system migration
AIX 70
HP-UX Itanium 142
Linux 286
Solaris 214
system load log
AIX 70
HP-UX Itanium 142
Linux 286
Solaris 214
Windows 342
system log
AIX 69
HP-UX Itanium 141
Linux 285
Solaris 213
system migration
AIX 70
HP-UX Itanium 142
Linux 286
Solaris 214
ARSUTBL
API definition 393
table space creation user exit 393
user exit program 393
ARSUUPD
exit point 377
report specification archive definition exit 377

B

backing up the database 363
AIX 77
HP-UX Itanium 150
Linux 293
Solaris 221
Windows 338
backup devices
Tivoli Storage Manager
AIX 41
HP-UX Itanium 113
Linux 257
Solaris 185
backup files
maintaining in Tivoli Storage Manager
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
Windows 336

C

cache storage file systems
AIX 64
HP-UX Itanium 136
Linux 279
maintaining
AIX 76, 77
HP-UX Itanium 149
Linux 292, 293
Solaris 220, 221
Windows 338
Solaris 208
Windows 336
CFSOD
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
checking in storage volumes
Tivoli Storage Manager
AIX 36
HP-UX Itanium 108
Linux 252
Solaris 180
Windows 320
checklist
AIX 11
HP-UX Itanium 83
Linux 227
Solaris 155
Windows 299
client nodes
Tivoli Storage Manager
AIX 35
HP-UX Itanium 107
Linux 251
Solaris 179
Windows 316, 318
client options
Tivoli Storage Manager
AIX 30
HP-UX Itanium 102
Linux 246
Solaris 174

client options *(continued)*
Tivoli Storage Manager *(continued)*
Windows 317
client retrieval preview exit 383
client system options
Tivoli Storage Manager
AIX 29
code page 397
AIX 54
HP-UX Itanium 126
Linux 269
Solaris 198
Windows 334
code pages 399, 405
code set
AIX 57
HP-UX Itanium 129
Linux 273
Solaris 201
Windows 334
code sets 399
compilers
programming requirements 369
requirements 369
concurrent users
AIX 59
HP-UX Itanium 131
Linux 275
Solaris 203
Windows 333
configuration files
AIX 19
HP-UX Itanium 91
Linux 235
Solaris 163
configurations
LDAP server 5
library server 5
object server 5
OnDemand servers 5
configuring
Tivoli Storage Manager software
AIX 27
HP-UX Itanium 99
Linux 243
Solaris 171
Windows 313
connecting to the database
AIX 58
HP-UX Itanium 130
Linux 274
Solaris 202
Windows 333
copy groups
Tivoli Storage Manager
AIX 34
HP-UX Itanium 106
Linux 250
Solaris 178
Windows 319

D

database
archived log files
AIX 55
HP-UX Itanium 127
database *(continued)*
archived log files *(continued)*
Linux 271
Solaris 199
Windows 335
backup 363
AIX 77
HP-UX Itanium 150
Linux 293
Solaris 221
Windows 338
backup, Tivoli Storage Manager
AIX 42
HP-UX Itanium 115
Linux 259
Solaris 187
Windows 324
connections
AIX 58
HP-UX Itanium 130
Linux 274
Solaris 202
Windows 333
creating 402
AIX 67
HP-UX Itanium 139
Linux 283
Solaris 211
Windows 336
creating in Oracle
AIX 25
HP-UX Itanium 97
Linux 241
Solaris 169
Windows 310
file systems
AIX 54, 55, 63
HP-UX Itanium 126, 127, 135
Linux 270, 271, 278
Solaris 198, 199, 207
Windows 335
importing data
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
installing
AIX 23
HP-UX Itanium 95
Linux 239
Solaris 167
Windows 309
instance name
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
log file number
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
log file size
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200

database *(continued)*
log files
AIX 55
HP-UX Itanium 127, 128
Linux 271, 272
Solaris 199, 200
Windows 335
maintaining
AIX 76, 77
HP-UX Itanium 149
Linux 292, 293
Solaris 220, 221
Windows 338
maintaining DB2 files in Tivoli Storage Manager
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
Windows 336
migration 361
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
Oracle, creating
AIX 25
HP-UX Itanium 97
Linux 241
Solaris 169
Windows 310
partitions
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
primary log file number
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
primary log file size
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
primary log files
HP-UX Itanium 128
Linux 272
Solaris 200
starting
AIX 73
HP-UX Itanium 145
Linux 289
Solaris 217
table space file systems
AIX 54, 55, 63
HP-UX Itanium 126, 127, 135
Linux 270, 271, 278
Solaris 198, 199, 207
Windows 335
Tivoli Storage Manager
AIX 32
HP-UX Itanium 104
Linux 248
Solaris 176
Windows 316
database backup files
maintaining in Tivoli Storage Manager
AIX 36
HP-UX Itanium 108
Linux 252
Solaris 180
Windows 321
database manager parameters
archived log files
Windows 335
ARS_DB_ENGINE
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
ARS_DB_IMPORT
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
ARS_DB_PARTITION
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
ARS_DB_TABLESPACE
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB_TABLESPACE_USEREXIT
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB2_ARCHIVE_LOGPATH
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB2_DATABASE_PATH
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB2_LOG_NUMBER
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_DB2_LOGFILE_SIZE
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_DB2_PRIMARY_LOGPATH
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_DB2_TSM_CONFIG
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_ORACLE_HOME
AIX 59
HP-UX Itanium 131

database manager parameters *(continued)*
ARS_ORACLE_HOME *(continued)*
Solaris 203
ARS_ORACLE_PASSWORD
AIX 59
HP-UX Itanium 131
Solaris 203
ARS_ORACLE_USERID
AIX 60
HP-UX Itanium 132
Solaris 204
database engine
Windows 335
database path
Windows 335
DB_ENGINE
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
DB2INSTANCE
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
file systems
Windows 335
log files
Windows 335
primary logs
Windows 335
table space file systems
Windows 335
DB_ENGINE parameter
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
DB2
archived log file location
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
archived log files
maintaining in Tivoli Storage Manager on AIX 56
maintaining in Tivoli Storage Manager on HP-UX 128
maintaining in Tivoli Storage Manager on Linux 272
maintaining in Tivoli Storage Manager on Solaris 200
maintaining in Tivoli Storage Manager on Windows 336
Windows 335
ARS_DB_ENGINE parameter
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
ARS_DB_PARTITION parameter
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
ARS_DB_TABLESPACE parameter
AIX 24, 55
HP-UX Itanium 96, 127
Linux 240, 271
Solaris 168, 199
DB2 *(continued)*
ARS_DB_TABLESPACE_USEREXIT parameter
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB2_ARCHIVE_LOGPATH parameter
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB2_DATABASE_PATH parameter
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB2_LOG_NUMBER parameter 56, 128, 200, 272
ARS_DB2_LOGFILE_SIZE parameter
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_DB2_PRIMARY_LOGPATH parameter
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_DB2_TSM_CONFIG parameter
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
backup files
maintaining in Tivoli Storage Manager on AIX 56
maintaining in Tivoli Storage Manager on HP-UX 128
maintaining in Tivoli Storage Manager on Linux 272
maintaining in Tivoli Storage Manager on Solaris 200
maintaining in Tivoli Storage Manager on Windows 336
connections
AIX 58
HP-UX Itanium 130
Linux 274
Solaris 202
Windows 333
database backup files, maintaining in Tivoli Storage Manager
AIX 36
HP-UX Itanium 108
Linux 252
Solaris 180
Windows 321
database engine
Windows 335
database path
Windows 335
DB_ENGINE parameter
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
DB2CSHRC file
AIX 24
HP-UX Itanium 96
Linux 240
Solaris 168
DB2INSTANCE parameter
AIX 24, 61

DB2 *(continued)*
DB2INSTANCE parameter *(continued)*
HP-UX Itanium 96, 133
Linux 240, 276
Solaris 168, 205
DB2PROFILE file 24, 96, 168, 240
file systems
AIX 54, 55, 63
HP-UX Itanium 126, 127, 135
Linux 270, 271, 278
Solaris 198, 199, 207
Windows 335
installing 167, 239
AIX 23
HP-UX Itanium 95
Linux 239
Solaris 167
Windows 309
instance
AIX 23
HP-UX Itanium 95
Linux 239
Solaris 167
instance name
AIX 24, 61
HP-UX Itanium 96, 133
Linux 240, 276
Solaris 168, 205
log file location
AIX 55
HP-UX Itanium 127, 128
Linux 271, 272
Solaris 199, 200
log files
AIX 56
HP-UX Itanium 128
Linux 272
maintaining in Tivoli Storage Manager on AIX 56
maintaining in Tivoli Storage Manager on HP-UX 128
maintaining in Tivoli Storage Manager on Linux 272
maintaining in Tivoli Storage Manager on Solaris 200
maintaining in Tivoli Storage Manager on Windows 336
Solaris 200
Windows 335
log files, maintaining in Tivoli Storage Manager
AIX 36
HP-UX Itanium 108
Linux 252
Solaris 180
Windows 321
maintaining files in Tivoli Storage Manager
AIX 36
HP-UX Itanium 108
Linux 252
Solaris 180
Windows 321
operating environment, setting
AIX 24
HP-UX Itanium 96
Linux 240
Solaris 168
partitions
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
DB2 *(continued)*
primary log file location
HP-UX Itanium 128
Linux 272
Solaris 200
primary log files
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
primary logs
Windows 335
setting the operating environment
AIX 24
HP-UX Itanium 96
Linux 240
Solaris 168
starting
AIX 73
HP-UX Itanium 145
Linux 289
Solaris 217
system table space
AIX 24
HP-UX Itanium 96
Linux 240
Solaris 168
table space creation user exit
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
table space file systems
AIX 54, 55, 63
HP-UX Itanium 126, 127, 135
Linux 270, 271, 278
Solaris 198, 199, 207
Windows 335
table spaces
AIX 24
HP-UX Itanium 96
Linux 240
Solaris 168
DB2 UDB
See DB2
DB2 Universal Database
See DB2
DB2CSHRC file
AIX 24
HP-UX Itanium 96
Linux 240
Solaris 168
DB2INSTANCE parameter
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
DB2PROFILE file
AIX 24
HP-UX Itanium 96
Linux 240
Solaris 168
DBCS
application group fields 404
ARS_CODEPAGE
AIX 54
HP-UX Itanium 126

DBCS *(continued)*
ARS_CODEPAGE *(continued)*
Linux 269
Solaris 198
ARS_LANGUAGE
AIX 57
HP-UX Itanium 129
Linux 273
Solaris 201
code pages 402, 405
database fields 404
fonts 403
generic indexer 405
graphical indexer 406
indexing data 405
language parameter
Windows 334
languages, support for 397
logical views 406
programs 407
report wizard 406
Shift Out Shift In structured fields 405
SOSI structured fields 405
DBINSTANCE parameter
AIX 24
HP-UX Itanium 96
Linux 240
Solaris 168
defining a storage node 351
defining a storage set 351
defining policy domains
Tivoli Storage Manager
AIX 34
HP-UX Itanium 106
Linux 250
Solaris 178
Windows 319
devices
backup
AIX 41
HP-UX Itanium 113
Linux 257
Solaris 185
Tivoli Storage Manager
AIX 33, 41
HP-UX Itanium 105, 113
Linux 249, 257
Solaris 177, 185
Windows 316
Download for the z/OS feature
AIX 15
API definition 371
HP-UX Itanium 87
Linux 231
Solaris 159
starting
AIX 74
HP-UX Itanium 146
Linux 290
Solaris 218
Windows 337
user exit program 371
Windows 302
DSM_CONFIG parameter
AIX 61
HP-UX Itanium 133
Linux 277
DSM_CONFIG parameter *(continued)*
Solaris 205
DSM_DIR parameter
AIX 61
HP-UX Itanium 133
Linux 277
Solaris 205
DSM_LOG parameter
AIX 61
HP-UX Itanium 133
Linux 277
Solaris 205
DSM.OPT file
AIX 30, 56, 61, 62
HP-UX Itanium 102, 128, 133, 134
Linux 246, 272, 277
Solaris 174, 200, 205, 206
Windows 317, 336
DSM.SYS file
AIX 29
HP-UX Itanium 101
Linux 245
Solaris 173
DSMG_CONFIG parameter
AIX 62
HP-UX Itanium 134
Linux 277
Solaris 206
DSMG_DIR parameter
AIX 62
HP-UX Itanium 134
Linux 277
Solaris 206
DSMG_LOG parameter
AIX 62
HP-UX Itanium 134
Linux 277
Solaris 206
DSMI_CONFIG parameter
AIX 62
HP-UX Itanium 134
Linux 277
Solaris 206
DSMI_DIR parameter
AIX 62
HP-UX Itanium 134
Linux 278
Solaris 206
DSMI_LOG parameter
AIX 62
HP-UX Itanium 134
Linux 278
Solaris 206
DSMSERV_CONFIG parameter
AIX 62
HP-UX Itanium 134
Linux 278
Solaris 206
DSMSERV_DIR parameter
AIX 63
HP-UX Itanium 135
Linux 278
Solaris 207
DSMSERV.OPT file
AIX 29, 62
HP-UX Itanium 101, 134
Linux 245, 278

DSMSERV.OPT file *(continued)*
Solaris 173, 206
Windows 317

E

exits
programming requirements 369
requirements 369

F

file systems
cache storage
AIX 64
HP-UX Itanium 136
Linux 279
Solaris 208
Windows 336
cache storage, maintaining
AIX 76, 77
HP-UX Itanium 149
Linux 292, 293
Solaris 220, 221
Windows 338
database
AIX 54, 55, 63
HP-UX Itanium 126, 127, 135
Linux 270, 271, 278
Solaris 198, 199, 207
Windows 335
table spaces
AIX 54, 55, 63
HP-UX Itanium 126, 127, 135
Linux 270, 271, 278
Solaris 198, 199, 207
Windows 335
fonts 403

G

generic indexer 405
graphical indexer 406

H

hardware requirements
AIX 17
HP-UX Itanium 89
Linux 233
Solaris 161
Windows 305
HOST parameter
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
HP-UX Itanium
ARS.CACHE file 136
ARS.CFG file 124
ARS.DBFS file 135
ARS.INI file 122
ARSPRT file 87
checklist 83
configuration files 91
HP-UX Itanium *(continued)*
database 95
DB2 95
DB2 files in Tivoli Storage Manager 108
DB2 instance 96
DB2 instance owner 95
DB2 table spaces 96
Download for the z/OS feature 87
hardware requirements 89
installation checklist 83
installing 81
instance
ARS.CACHE file 136
ARS.CFG file 124
ARS.DBFS file 135
ARS.INI file 122
automating operations 145
configuring 121
creating 139
operations, automating and scheduling 145
scheduling operations 145
starting 145
instance name, OnDemand 96, 97
instance owner 93
instance, DB2 96
maintaining DB2 files in Tivoli Storage Manager 108
OnDemand instance name 96, 97
OnDemand software 119
Oracle 97
Oracle database 97
Oracle database, creating 97
Oracle table spaces 97
Oracle userid 97
print software 87
requirements 89
root user 93
server print 87
software requirements 89
system load log
initializing 142
system log
initializing 141
system migration
initializing 142
system table space 96, 97
table spaces 96, 97
Tivoli Storage Manager software 99

I

importing data into the database
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
index data
migrating 361
indexing
DBCS data 405
installation
silent 365
installation checklist
AIX 11
HP-UX Itanium 83
Linux 227
Solaris 155
Windows 299

installing
AIX 9
database
AIX 23
HP-UX Itanium 95
Linux 239
Solaris 167
Windows 309
HP-UX Itanium 81
Linux 225
OnDemand software
AIX 47
HP-UX Itanium 119
Linux 263
Solaris 191
Windows 329
Solaris 153
Tivoli Storage Manager software
AIX 27
HP-UX Itanium 99
Linux 243
Solaris 171
Windows 313
Windows 297
instance
ARS.CACHE file
AIX 64
HP-UX Itanium 136
Linux 279
Solaris 208
ARS.CFG file
AIX 52
HP-UX Itanium 124
Linux 268
Solaris 196
ARS.DBFS file
AIX 63
HP-UX Itanium 135
Linux 278
Solaris 207
ARS.INI file
AIX 50
HP-UX Itanium 122
Linux 266
Solaris 194
cache storage file systems
Windows 336
configuring
AIX 49
HP-UX Itanium 121
Linux 265
Solaris 193
Windows 331
creating
AIX 67
HP-UX Itanium 139
Linux 283
Solaris 211
Windows 336
data loading
AIX 74
HP-UX Itanium 146
Linux 290
Solaris 218
Windows 337
DB2 file systems
Windows 335
instance *(continued)*
starting
AIX 73, 74
HP-UX Itanium 145, 146
Linux 289, 290
Solaris 217, 218
Windows 337
system load log
AIX 70
HP-UX Itanium 142
Linux 286
Solaris 214
Windows 342
system log
AIX 69
HP-UX Itanium 141
Linux 285
Solaris 213
Windows 336
system migration
AIX 70
HP-UX Itanium 142
Linux 286
Solaris 214
Windows 336
instance name
AIX 61
DB2
AIX 24
HP-UX Itanium 96
Linux 240
Solaris 168
HP-UX Itanium 133
Linux 276
OnDemand
AIX 24, 25, 51
HP-UX Itanium 96, 97, 123
Linux 240, 241, 267
Solaris 168, 169, 195
Solaris 205
instance owner
OnDemand
AIX 21, 51
HP-UX Itanium 93, 123
Linux 237, 267
Solaris 165, 195
Windows 307

L

labeling storage volumes
Tivoli Storage Manager
AIX 36
HP-UX Itanium 108
Linux 252
Solaris 180
Windows 320
language parameter 399, 402
AIX 57
HP-UX Itanium 129
Linux 273
Solaris 201
Windows 334
language settings 397
LDAP
AIX 57, 58, 65
anonymous bind connections 57, 129, 201, 273

LDAP *(continued)*
arsldap.ini file 65, 137, 209, 280, 340
attribute 58, 130, 202, 274
attribute binding 57, 129, 201, 273
base distinguished name 57, 129, 201, 273
configuration on Windows 340
distinguished name for non-anonymous binding 57, 129, 201, 273
distinguished name password for non-anonymous binding 57, 129, 201, 273
hostname of LDAP server 58, 130, 202, 274
HP-UX Itanium 129, 130, 137
LDAP port 58, 130, 202, 274
Linux 273, 274, 280
login message strings 57, 129, 201, 273
Solaris 201, 202, 209
Windows 340
LDAP server
about 5
libraries
Tivoli Storage Manager
AIX 33
HP-UX Itanium 105
Linux 249
Solaris 177
Windows 316
library server
about 5
library server program
starting
AIX 73
HP-UX Itanium 145
Linux 289
Solaris 217
Windows 337
licenses
OnDemand users
AIX 59
HP-UX Itanium 131
Linux 275
Solaris 203
Windows 333
Tivoli Storage Manager
AIX 30
HP-UX Itanium 102
Linux 246
Solaris 174
Windows 315
Linux
ARS.CACHE file 279
ARS.CFG file 268
ARS.DBFS file 278
ARS.INI file 266
ARSPRT file 231
checklist 227
configuration files 235
database 239
DB2 239
DB2 files in Tivoli Storage Manager 252
DB2 instance 240
DB2 instance owner 239
DB2 table spaces 240
Download for the z/OS feature 231
hardware requirements 233
installation checklist 227
installing 225
Linux *(continued)*
instance
ARS.CACHE file 279
ARS.CFG file 268
ARS.DBFS file 278
ARS.INI file 266
automating operations 289
configuring 265
creating 283
operations, automating and scheduling 289
scheduling operations 289
starting 289
instance name, OnDemand 240, 241
instance owner 237
instance, DB2 240
maintaining DB2 files in Tivoli Storage Manager 252
OnDemand instance name 240, 241
OnDemand software 263
Oracle 241
Oracle database 241
Oracle database, creating 241
Oracle home directory 241
Oracle table spaces 241
Oracle userid 241
print software 231
requirements 233
root user 237
server print 231
software requirements 233
system load log
initializing 286
system log
initializing 285
system migration
initializing 286
system table space 240, 241
table spaces 240, 241
Tivoli Storage Manager software 243
load, system
application group, configuring 357
locale 397, 399
AIX 54, 57
HP-UX Itanium 126, 129
Linux 269, 273
Solaris 198, 201
Windows 334
log files
archived log files
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
Windows 335
DB2
AIX 55, 56
HP-UX Itanium 127, 128
Linux 271, 272
Solaris 199, 200
Windows 335
maintaining in Tivoli Storage Manager
AIX 36, 56
HP-UX Itanium 108, 128
Linux 252, 272
Solaris 180, 200
Windows 321, 336
primary log files
AIX 56

log files *(continued)*
primary log files *(continued)*
HP-UX Itanium 128
Linux 272
Solaris 200
SQL Server
Windows 335
log retention
Tivoli Storage Manager
AIX 31
HP-UX Itanium 103
Linux 247
Solaris 175
Windows 318
log, system
API definition 389
application group, configuring 353
ARSLOG program 389
user exit programs 389
logging on a Windows server 307
logical views 406
logon
security user exit 385
user exit programs 385
logon as 307

M

maintenance programs
scheduling
AIX 73
HP-UX Itanium 145
Linux 289
Solaris 217
Windows 338
management classes
Tivoli Storage Manager
AIX 34
HP-UX Itanium 106
Linux 250
Solaris 178
Windows 319
Map Coded Font Format 2 structured fields 405
mapping AFP fonts 403
MCF2 structured fields 405
MCF2REF parameter 405
message of the day
AIX 58
HP-UX Itanium 130
Linux 274
Solaris 202
messages
API definition 389
ARSLOG program 389
system log 389
user exit programs 389
migrating index data 361
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
migration
application group data
AIX 76, 77
HP-UX Itanium 149
Linux 292, 293
Solaris 220, 221
migration *(continued)*
application group data *(continued)*
Windows 338
application group, configuring 361
ARS_DB_IMPORT parameter
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
ARS.CFG file
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
cache storage to archive storage
AIX 76, 77
HP-UX Itanium 149
Linux 292, 293
Solaris 220, 221
Windows 338
multi-processor
AIX 58, 60
HP-UX Itanium 130, 132
Linux 274, 275
Solaris 202, 204

N

national language support 397
ARS_CODEPAGE
AIX 54
HP-UX Itanium 126
Linux 269
Solaris 198
ARS_LANGUAGE
AIX 57
HP-UX Itanium 129
Linux 273
Solaris 201
language parameter
Windows 334
NLS 397
ARS_CODEPAGE
AIX 54
HP-UX Itanium 126
Linux 269
Solaris 198
ARS_LANGUAGE
AIX 57
HP-UX Itanium 129
Linux 273
Solaris 201
language parameter
Windows 334

O

object server
about 5
object server program
starting
AIX 74
HP-UX Itanium 146
Linux 290
Solaris 218
Windows 337

OnDemand
uninstalling 367
OnDemand software
installing
AIX 47
HP-UX Itanium 119
Linux 263
Solaris 191
Windows 329
optical libraries
Tivoli Storage Manager
AIX 33
HP-UX Itanium 105
Linux 249
Solaris 177
Windows 316
Oracle
ARS_DB_ENGINE parameter
AIX 25, 54
HP-UX Itanium 97, 126
Linux 241
Solaris 169, 198
ARS_DB_TABLESPACE parameter
AIX 25, 55
HP-UX Itanium 97, 127
Linux 241
Solaris 169, 199
ARS_DB_TABLESPACE_USEREXIT parameter
AIX 55
HP-UX Itanium 127
Solaris 199
ARS_ORACLE_HOME parameter
AIX 25, 59
HP-UX Itanium 131
Linux 241
Solaris 203
ARS_ORACLE_PASSWD parameter
AIX 25
HP-UX Itanium 97
Linux 241
Solaris 169
Windows 310
ARS_ORACLE_PASSWORD parameter
AIX 59
HP-UX Itanium 131
Solaris 203
ARS_ORACLE_USERID parameter
AIX 25, 60
HP-UX Itanium 97, 132
Linux 241
Solaris 169, 204
Windows 310
connections
AIX 58
HP-UX Itanium 130
Solaris 202
Windows 333
database engine
Windows 335
database, creating
AIX 25
HP-UX Itanium 97
Linux 241
Solaris 169
Windows 310
DB_ENGINE parameter
AIX 61
Oracle *(continued)*
DB_ENGINE parameter *(continued)*
HP-UX Itanium 133
Solaris 205
home directory
AIX 25
Linux 241
installation directory
AIX 25
Linux 241
installation directory in ARS.CFG file
AIX 59
HP-UX Itanium 131
Solaris 203
installing
AIX 24
HP-UX Itanium 97
Linux 241
Solaris 169
Windows 309
password
AIX 25, 241
HP-UX Itanium 97
Linux 241
Solaris 169
Windows 310
password parameter
AIX 59
HP-UX Itanium 131
Solaris 203
system table space
AIX 25
HP-UX Itanium 97
Linux 241
Solaris 169
table space creation user exit
AIX 55
HP-UX Itanium 127
Solaris 199
table spaces
AIX 25
HP-UX Itanium 97
Linux 241
Solaris 169
userid
AIX 25
HP-UX Itanium 97
Linux 241
Solaris 169
Windows 310
userid parameter
AIX 60
HP-UX Itanium 132
Solaris 204

P

parameters
ARS_CODEPAGE
AIX 54
HP-UX Itanium 126
Linux 269
Solaris 198
ARS_DB_ENGINE
AIX 54
HP-UX Itanium 126
Linux 270

parameters *(continued)*
ARS_DB_ENGINE *(continued)*
Solaris 198
ARS_DB_IMPORT
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
ARS_DB_PARTITION
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
ARS_DB_TABLESPACE
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB_TABLESPACE_USEREXIT
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB2_ARCHIVE_LOGPATH
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB2_DATABASE_PATH
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS_DB2_LOG_NUMBER
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_DB2_LOGFILE_SIZE
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_DB2_PRIMARY_LOGPATH
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_DB2_TSM_CONFIG
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
ARS_LANGUAGE 399, 402
AIX 57
HP-UX Itanium 129
Linux 273
Solaris 201
ARS_LOCAL_SRVR
AIX 58
HP-UX Itanium 130
Linux 274
Solaris 202
ARS_MESSAGE_OF_THE_DAY
AIX 58
HP-UX Itanium 130
Linux 274
Solaris 202
parameters *(continued)*
ARS_NUM_DBSRVR
AIX 58
HP-UX Itanium 130
Linux 274
Solaris 202
ARS_NUM_LICENSE
AIX 59
HP-UX Itanium 131
Linux 275
Solaris 203
ARS_ORACLE_HOME
AIX 59
HP-UX Itanium 131
Solaris 203
ARS_ORACLE_PASSWORD
AIX 59
HP-UX Itanium 131
Solaris 203
ARS_ORACLE_USERID
AIX 60
HP-UX Itanium 132
Solaris 204
ARS_PRINT_PATH
AIX 60
HP-UX Itanium 132
Linux 275
Solaris 204
ARS_SRVR
AIX 60
HP-UX Itanium 132
Linux 275
Solaris 204
ARS_STORAGE_MANAGER
AIX 60
HP-UX Itanium 132
Linux 276
Solaris 204
ARS_SUPPORT_CFSOD
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
ARS_TMP
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
ARSLOAD.CFG file
AIX 76
HP-UX Itanium 148
Linux 292
Solaris 220
DB_ENGINE
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
DB2INSTANCE
AIX 61
HP-UX Itanium 133
Linux 276
Solaris 205
DSM_CONFIG
AIX 61
HP-UX Itanium 133
Linux 277

parameters *(continued)*
DSM_CONFIG *(continued)*
Solaris 205
DSM_DIR
AIX 61
HP-UX Itanium 133
Linux 277
Solaris 205
DSM_LOG
AIX 61
HP-UX Itanium 133
Linux 277
Solaris 205
DSMG_CONFIG
AIX 62
HP-UX Itanium 134
Linux 277
Solaris 206
DSMG_DIR
AIX 62
HP-UX Itanium 134
Linux 277
Solaris 206
DSMG_LOG
AIX 62
HP-UX Itanium 134
Linux 277
Solaris 206
DSMI_CONFIG
AIX 62
HP-UX Itanium 134
Linux 277
Solaris 206
DSMI_DIR
AIX 62
HP-UX Itanium 134
Linux 278
Solaris 206
DSMI_LOG
AIX 62
HP-UX Itanium 134
Linux 278
Solaris 206
DSMSERV_CONFIG
AIX 62
HP-UX Itanium 134
Linux 278
Solaris 206
DSMSERV_DIR
AIX 63
HP-UX Itanium 135
Linux 278
Solaris 207
MCF2REF 405
PASSWD
AIX 76
HP-UX Itanium 148
Linux 292
Solaris 220
USERID
AIX 76
HP-UX Itanium 148
Linux 292
Solaris 220
partitioning the database
AIX 54
HP-UX Itanium 126
partitioning the database *(continued)*
Linux 270
Solaris 198
PASSWD parameter
AIX 76
HP-UX Itanium 148
Linux 292
Solaris 220
password
ARS_ORACLE_PASSWORD
AIX 59
HP-UX Itanium 131
Solaris 203
ARSLOAD program
AIX 75
HP-UX Itanium 147
Linux 291
Solaris 219
Oracle
AIX 25, 59
HP-UX Itanium 97, 131
Linux 241
Solaris 169, 203
Windows 310
password expiration
Tivoli Storage Manager
AIX 31
HP-UX Itanium 103
Linux 247
Solaris 175
Windows 318
policy domains
Tivoli Storage Manager
AIX 34
HP-UX Itanium 106
Linux 250
Solaris 178
Windows 319
PORT parameter
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
primary log files
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
print software
AIX 15
HP-UX Itanium 87
Linux 231
Solaris 159
Windows 303
printing software
temporary space
AIX 60
HP-UX Itanium 132
Linux 275
Solaris 204
Windows 334
programming requirements
compilers 369
user exits 369
protocol
Windows 333

PROTOCOL parameter
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195

R

recovery log
Tivoli Storage Manager
AIX 32
HP-UX Itanium 104
Linux 248
Solaris 176
Windows 316
registering client nodes
Tivoli Storage Manager
AIX 35
HP-UX Itanium 107
Linux 251
Solaris 179
Windows 316, 318
registering licenses
Tivoli Storage Manager
AIX 30
HP-UX Itanium 102
Linux 246
Solaris 174
Windows 315
report specifications archive definition exit 377
report wizard 406
requirements
AIX 17
compilers 369
HP-UX Itanium 89
Linux 233
programming requirements 369
Solaris 161
user exits 369
Windows 305
retrieval preview exit 383
root user
instance owner
AIX 21
HP-UX Itanium 93
Linux 237
Solaris 165

S

scheduling programs
AIX 73
HP-UX Itanium 145
Linux 289
Solaris 217
Windows 338
security user exit
API definition 385
user exit programs 385
server configurations
LDAP server 5
library server 5
object server 5
OnDemand servers 5
server options
Tivoli Storage Manager
AIX 29
HP-UX Itanium 101
Linux 245
Solaris 173
Windows 317
server print software
AIX 15
HP-UX Itanium 87
Linux 231
Solaris 159
temporary space
AIX 60
HP-UX Itanium 132
Linux 275
Solaris 204
Windows 334
Windows 303
servers
Tivoli Storage Manager
HP-UX Itanium 101
Linux 245
Solaris 173
services
configuring on Windows 315, 337
Download for the z/OS feature 337
installing on Windows 336
library server 337
LibSrvr 337
Load Data 337
MVSD 337
object server 337
ObjSrvr 337
Scheduler 337
Tivoli Storage Manager server and scheduler 315
Shift Out Shift In structured fields 405
silently installing OnDemand 365
software
configuration files
AIX 19
HP-UX Itanium 91
Linux 235
Solaris 163
DB2
AIX 23
HP-UX Itanium 95
installing 167, 239
Linux 239
Solaris 167
Windows 309
Download for the z/OS feature
AIX 15
HP-UX Itanium 87
Linux 231
Solaris 159
Windows 302
Oracle
AIX 24
HP-UX Itanium 97
Linux 241
Solaris 169
Windows 309
print software
AIX 15
HP-UX Itanium 87
Linux 231

software *(continued)*
print software *(continued)*
Solaris 159
Windows 303
server print
AIX 15
HP-UX Itanium 87
Linux 231
Solaris 159
Windows 303
SQL Server
Windows 311
Tivoli Storage Manager
AIX 27
HP-UX Itanium 99
Linux 243
Solaris 171
Windows 313
software requirements
AIX 17
HP-UX Itanium 89
Linux 233
Solaris 161
Windows 305
Solaris
ARS.CACHE file 208
ARS.CFG file 196
ARS.DBFS file 207
ARS.INI file 194
ARSPRT file 159
checklist 155
configuration files 163
database 167
DB2 167
DB2 files in Tivoli Storage Manager 180
DB2 instance 168
DB2 instance owner 167
DB2 table spaces 168
Download for the z/OS feature 159
hardware requirements 161
installation checklist 155
installing 153
instance
ARS.CACHE file 208
ARS.CFG file 196
ARS.DBFS file 207
ARS.INI file 194
automating operations 217
configuring 193
creating 211
operations, automating and scheduling 217
scheduling operations 217
starting 217
instance name, OnDemand 168, 169
instance owner 165
instance, DB2 168
maintaining DB2 files in Tivoli Storage Manager 180
OnDemand instance name 168, 169
OnDemand software 191
Oracle 169
Oracle database 169
Oracle database, creating 169
Oracle table spaces 169
Oracle userid 169
print software 159
requirements 161
root user 165
Solaris *(continued)*
server print 159
software requirements 161
system load log
initializing 214
system log
initializing 213
system migration
initializing 214
system table space 168, 169
table spaces 168, 169
Tivoli Storage Manager software 171
SOSI structured fields 405
SP
See Symmetric Processor
SQL Server
archived log files
Windows 335
connections
Windows 333
database engine
Windows 335
installing
Windows 311
log files
Windows 335
primary logs
Windows 335
SRVR_DB_CFG parameter
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
SRVR_INSTANCE parameter
HP-UX Itanium 97
SRVR_INSTANCE_OWNER parameter
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
SRVR_OD_CFG parameter
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
SRVR_SM_CFG parameter
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
starting programs
AIX 73
HP-UX Itanium 145
Linux 289
Solaris 217
Windows 337
starting Tivoli Storage Manager servers
AIX 31
HP-UX Itanium 103
Linux 247
Solaris 175
stopping Tivoli Storage Manager servers
AIX 31
HP-UX Itanium 103
Linux 247
Solaris 175

storage devices
Tivoli Storage Manager
AIX 33
HP-UX Itanium 105
Linux 249
Solaris 177
Windows 316
storage nodes 351
storage pools
Tivoli Storage Manager
AIX 33
HP-UX Itanium 105
Linux 249
Solaris 177
Windows 316
storage sets 351
storage volumes
Tivoli Storage Manager
AIX 36
HP-UX Itanium 108
Linux 252
Solaris 180
Windows 320
Symmetric Processor
AIX 58, 60
HP-UX Itanium 130, 132
Linux 274, 275
Solaris 202, 204
system administrator account
instance owner
Windows 307
system load
application group, configuring 357
system load log
initializing
AIX 70
HP-UX Itanium 142
Linux 286
Solaris 214
Windows 342
system log
API definition 389
application group, configuring 353
ARSLOG program 389
initializing
AIX 69
HP-UX Itanium 141
Linux 285
Solaris 213
Windows 336
user exit programs 389
system migration
application group, configuring 361
initializing
AIX 70
HP-UX Itanium 142
Linux 286
Solaris 214
Windows 336
system table space
AIX 24, 25
HP-UX Itanium 96, 97
Linux 240, 241
Solaris 168, 169

T

table space creation exit
user exit program description 393
table space creation user exit
ARS_DB_TABLESPACE_USEREXIT parameter
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
ARS.CFG file
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
specifying in ARS.CFG file
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
table space file systems
AIX 63
HP-UX Itanium 135
Linux 278
migrating data
AIX 54
HP-UX Itanium 126
Linux 270
Solaris 198
Solaris 207
USERSPACE1
AIX 55
HP-UX Itanium 127
Linux 271
Solaris 199
Windows 335
table spaces
DB2
AIX 24
HP-UX Itanium 96
Linux 240
Solaris 168
Oracle
AIX 25
HP-UX Itanium 97
Linux 241
Solaris 169
TCP/IP port number
AIX 51
HP-UX Itanium 123
Linux 267
Solaris 195
Windows 333
temporary space
AIX 60, 61
HP-UX Itanium 132, 133
Linux 275, 276
Solaris 204, 205
Windows 334
Tivoli Storage Manager
activity log retention
AIX 31
HP-UX Itanium 103
Linux 247
Solaris 175
Windows 318
administrative users
AIX 30

Tivoli Storage Manager *(continued)*
administrative users *(continued)*
HP-UX Itanium 102
Linux 246
Solaris 174
Windows 318
archive copy groups
AIX 34
HP-UX Itanium 106
Linux 250
Solaris 178
Windows 319
ARS_ADSM program
AIX 30, 41
HP-UX Itanium 102, 113
Linux 246, 257
Solaris 174, 185
Windows 318
backup devices
AIX 41
HP-UX Itanium 113
Linux 257
Solaris 185
checking in storage volumes
AIX 36
HP-UX Itanium 108
Linux 252
Solaris 180
Windows 320
client nodes
AIX 35
HP-UX Itanium 107
Linux 251
Solaris 179
Windows 316, 318
client options
AIX 30
HP-UX Itanium 102
Linux 246
Solaris 174
Windows 317
client system
AIX 29
copy groups
AIX 34
HP-UX Itanium 106
Linux 250
Solaris 178
Windows 319
database
AIX 32
HP-UX Itanium 104
Linux 248
Solaris 176
Windows 316
database backup
AIX 42
HP-UX Itanium 115
Linux 259
Solaris 187
Windows 324
DB2 backup files
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
Windows 336
Tivoli Storage Manager *(continued)*
DB2 files, maintaining
AIX 36
HP-UX Itanium 108
Linux 252
Solaris 180
Windows 321
DB2 log files
AIX 56
HP-UX Itanium 128
Linux 272
Solaris 200
Windows 336
defining devices
AIX 33, 41
HP-UX Itanium 105, 113
Linux 249, 257
Solaris 177, 185
Windows 316
devices
AIX 33, 41
HP-UX Itanium 105, 113
Linux 249, 257
Solaris 177, 185
Windows 316
DSM_CONFIG parameter
AIX 61
HP-UX Itanium 133
Linux 277
Solaris 205
DSM_DIR parameter
AIX 61
HP-UX Itanium 133
Linux 277
Solaris 205
DSM_LOG parameter
AIX 61
HP-UX Itanium 133
Linux 277
Solaris 205
DSM.OPT file
AIX 30, 56, 61, 62
HP-UX Itanium 102, 128, 133, 134
Linux 246, 272, 277
Solaris 174, 200, 205, 206
Windows 317, 336
DSM.SYS file
AIX 29
HP-UX Itanium 101
Linux 245
Solaris 173
DSMG_CONFIG parameter
AIX 62
HP-UX Itanium 134
Linux 277
Solaris 206
DSMG_DIR parameter
AIX 62
HP-UX Itanium 134
Linux 277
Solaris 206
DSMG_LOG parameter
AIX 62
HP-UX Itanium 134
Linux 277
Solaris 206

Tivoli Storage Manager *(continued)*
DSMI_CONFIG parameter
AIX 62
HP-UX Itanium 134
Linux 277
Solaris 206
DSMI_DIR parameter
AIX 62
HP-UX Itanium 134
Linux 278
Solaris 206
DSMI_LOG parameter
AIX 62
HP-UX Itanium 134
Linux 278
Solaris 206
DSMSERV_CONFIG parameter
AIX 62
HP-UX Itanium 134
Linux 278
Solaris 206
DSMSERV_DIR parameter
AIX 63
HP-UX Itanium 135
Linux 278
Solaris 207
DSMSERV.OPT file
AIX 29, 62
HP-UX Itanium 101, 134
Linux 245, 278
Solaris 173, 206
Windows 317
installing and configuring
AIX 27
HP-UX Itanium 99
Linux 243
Solaris 171
Windows 313
labeling storage volumes
AIX 36
HP-UX Itanium 108
Linux 252
Solaris 180
Windows 320
licenses
AIX 30
HP-UX Itanium 102
Linux 246
Solaris 174
Windows 315
log retention
AIX 31
HP-UX Itanium 103
Linux 247
Solaris 175
Windows 318
management classes
AIX 34
HP-UX Itanium 106
Linux 250
Solaris 178
Windows 319
password expiration
AIX 31
HP-UX Itanium 103
Linux 247
Solaris 175

Tivoli Storage Manager *(continued)*
password expiration *(continued)*
Windows 318
policy domains
AIX 34
HP-UX Itanium 106
Linux 250
Solaris 178
Windows 319
policy sets
AIX 34
HP-UX Itanium 106
Linux 250
Solaris 178
Windows 319
recovery log
AIX 32
HP-UX Itanium 104
Linux 248
Solaris 176
Windows 316
registering client nodes
AIX 35
HP-UX Itanium 107
Linux 251
Solaris 179
Windows 316, 318
scheduler service
Windows 315
server options
AIX 29
HP-UX Itanium 101
Linux 245
Solaris 173
Windows 317
server service
Windows 315
servers
HP-UX Itanium 101
Linux 245
Solaris 173
servers, starting
AIX 31
HP-UX Itanium 103
Linux 247
Solaris 175
servers, stopping
AIX 31
HP-UX Itanium 103
Linux 247
Solaris 175
services
Windows 315
storage devices
AIX 33
HP-UX Itanium 105
Linux 249
Solaris 177
Windows 316
storage pools
AIX 33
HP-UX Itanium 105
Linux 249
Solaris 177
Windows 316
storage volumes
AIX 36

Tivoli Storage Manager *(continued)*
storage volumes *(continued)*
HP-UX Itanium 108
Linux 252
Solaris 180
Windows 320
TSM
See Tivoli Storage Manager

U

unified login 307
Universal Database
See DB2
upgrading
AIX 19
HP-UX Itanium 91
Linux 235
Solaris 163
user exits
ARSJESD program 371
ARSLOG program 389
ARSUTBL 393
ARSUUPD 377
client retrieval preview 383
Download for the z/OS feature 371
loading data 371
programming requirements 369
report specification archive definition 377
requirements 369
retrieval preview 383
security user exit 385
system log 389
table space creation 393
user exit programs 385
userid
ARS_ORACLE_USERID
AIX 60
HP-UX Itanium 132
Solaris 204
ARSLOAD program
AIX 75
HP-UX Itanium 147
Linux 291
Solaris 219
Oracle
AIX 25, 60
HP-UX Itanium 97, 132
Linux 241
Solaris 169, 204
Windows 310
USERID parameter
AIX 76
HP-UX Itanium 148
Linux 292
Solaris 220
users
DB2 instance owner
AIX 23
HP-UX Itanium 95
Linux 239
Solaris 167
Windows 309
maximum number of concurrent users, specifying
AIX 59
HP-UX Itanium 131
Linux 275
users *(continued)*
maximum number of concurrent users, specifying *(continued)*
Solaris 203
Windows 333
OnDemand instance owner
AIX 21
HP-UX Itanium 93
Linux 237
Solaris 165
Windows 307

V

verifying the installation 349

W

Windows
administrative user 307
ARSPRT file 303
cache storage file systems 336
checklist 299
database 309
creating 336
DB2 309
DB2 file systems 335
DB2 files in Tivoli Storage Manager 321
Download for the z/OS feature 302
hardware requirements 305
installation checklist 299
installing 297
instance
automating operations 337, 338
cache storage file systems 336
configuring 331
creating 336
DB2 file systems 335
operations, automating 337
operations, automating and scheduling 338
scheduling operations 338
starting 337
instance owner 307
logging on 307
maintaining DB2 files in Tivoli Storage Manager 321
OnDemand software 329
Oracle 309
Oracle database, creating 310
Oracle userid 310
print software 303
requirements 305
server print 303
services, configuring 337
services, installing 336
software requirements 305
SQL Server 311
system load log
initializing 342
system log
initializing 336
system migration
initializing 336
Tivoli Storage Manager software 313
unified login 307

Program Number: 5724-J33

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