MTOSI 3.0 Release Notes

RN306

Version 2.4

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Notice

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1 Overview of MTOSI Release 3.0

Release 3.0 of the MTOSI product is a major release introducing the following new features:

- Control Plane (adapted from MTNM 3.5),
- Facilitate the management and operations of remote units attached to GPON and DSL transmission facilities
- Harmonized Probable Cause Specification
- Protection Group Provisioning (based on earlier PBB-TE work)
- Connectionless Termination (enhanced explanations but no model updates)

In addition, a number of bugs have been fixed from the MTOSI 2.1 release.

Regarding the introduction of Control Plane adapted from MTNM 3.5 a generalization and extension of the resource provisioning requirements and use cases from TMF 513 v3.0/v3.1 have been carried out. While TMF 513 (MTNM) focuses exclusively on the NML-EML interface MTOSI considers the more general scenario of OS-OS communications with NML-EML as a special case.

Both formerly separated specifications of OS-OS and NML-EML communications (MTOSI and MTNM products) have been considered. More in detail, MTOSI 2.1 has been enhanced with the MTNM 3.5 requirements and use cases for Control Plane Provisioning.

The MTNM requirements and use cases have been added, using the OS-OS terminology.

All references to TMF 513 v3.0 have been updated to TMF 513 v3.1 where applicable.

Regarding remote units, the MTOSI 3.0 specification has been enhanced to facilitate the management and operations of remote units attached to GPON and DSL transmission facilities.
Updates to the Document Delivery Packages (DDPs) ManageResourceInventory (MRI) and ResourceProvisioning (RP) were necessary.

A RemoteUnitControlService with the operations create/modify/delete RemoteUnit and resetResource was added. The ResourceInventoryRetrievalService was enhanced by the operation getRemoteUnitProfiles.

1.1 MTOSI Jargon and DDP Structure for new comers

The overall structure has not changed. We simply highlight the most important aspects to help the reader.

The MTOSI artifacts are structured into self-contained (though not independent) units called Document Delivery Packages (DDPs).

This is similar to the 3GPP concept of Integration Reference Point (IRP). The basic idea is that the Interface, which is specified by the entire document set (of a release), is partitioned into DDPs where each DDP specifies “a certain aspect” of the Interface, which needs to be very clearly scoped.

There are three kinds of DDPs:

- the FrameWork DDP (FMW) – this DDP contains the generic artifacts that are applicable to all the other DDPs.
- Data Model DDP (DM-DDP) – a DDP that concerns a data model (entities, data structures, attributes, state, but no operations)
- Operation Model DDP (OM-DDP) – a DDP that concerns a computational model (operations, notifications, transactions) for a given functional area (such as resource inventory management)

The unified deliverables structure for each DDP is as follows:

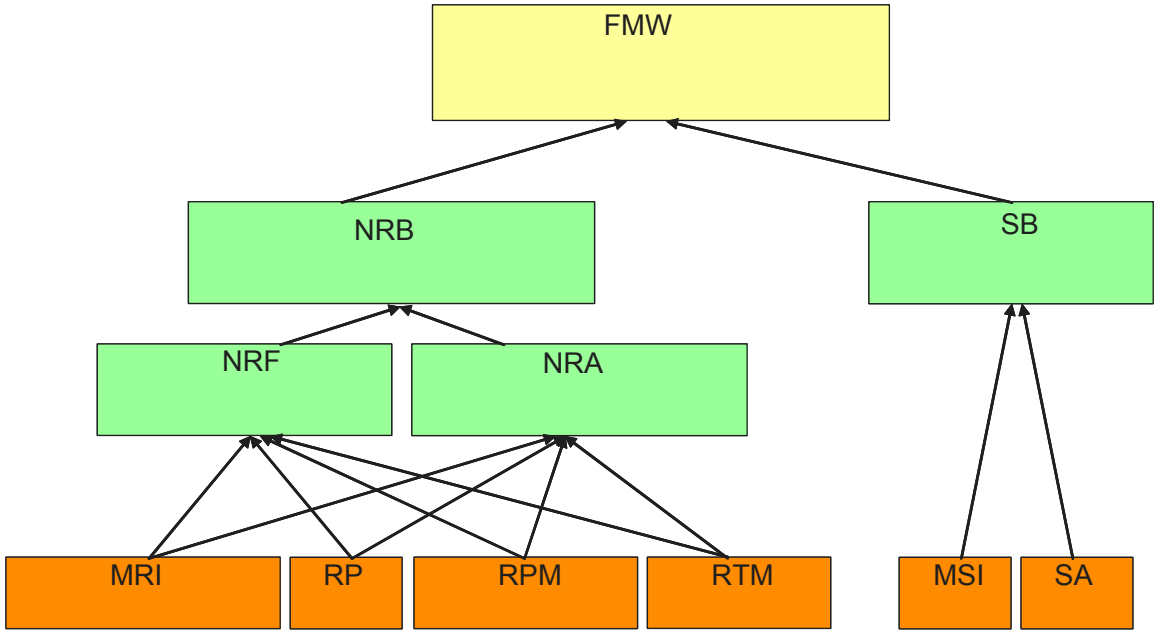
- Business Agreements (BAs): a business view specification
- Information Agreements (IAs): a system view specification
- Interface Implementation Specifications (ISSs): implementation and deployment view specification for XML (WSDL, XSD, bindings…)
- Supporting Documentation: normative and informative supporting documents.

The MTOSI 3.0 Release is constituted of several DDPs which names are presented in the table below (no change compared to MTOSI 2.1).

	DDP long name	DDP short name
General		
	Framework	FMW
RM related		
	DM-DDPs	
	NetworkResourceBasic	NRB
	NetworkResourceFulfilment	NRF
	NetworkResourceAssurance	NRA
	OM-DDPs	
	ManageResourceInventory	MRI
	ResourceProvisioning	RP
	ResourceTroubleManagement	RTM
	ResourcePerformanceManagement	RPM
SM related		
	DM-DDPs	
	ServiceBasic	SB
	OM-DDPs	
	ServiceActivation	SA
	ManageServiceInventory	MSI

The OM-DDPs reflect business scenarios as highlighted in the next sub section.

It may happen that artifacts defined in one DDP may use artifacts defined in one or several other DDPs. The figure below shows the DDP dependency graph:



2 Bugs Fixed and Modifications

2.1 Bugs reported as CRs

The table below references the bugs documented in the gforge tracker which have been fixed in this Release 3.0.

No	Problem description	Solution
Artf 1224	Change the definition of the Flow Domain Fragment (FDFr) type value from "MULTIPOINT" to "ROOTED_MULITPLOINT" is requested to be added to better align the TIP Ethernet model with that defined in ITU-T Q840.1	Modified R_TMF518_NRF_I_0056 Modified NetworkResourceFulfillment->IIS->xsd>CommonTypes.xsd To support: FDFRT_POINT_TO_POINT FDFRT_ROOTED_MULTIPOINT FDFRT_MULTIPOINT_TO_MULTIPOINT
Artf 1226	The operation mauAutoNegRestart of Q840.1 MAUTransportPort is not represented in the MTNM model	Add appropriate entry to section 4.1.6 Ethernet MAU Parameters in SD 1-16 Layered Transmission parameters
Artf 1931	The asapRef is missing in Equipment Protection Group	Change asapRef in NRA=> epg.xsd to a NamingAttributeType.
Artf 1974	The TCProfile MO has a boolean attribute (defaultProfile) to mark it as default. No mention in TMF doc on how to set/modify it.	Added parameter Default Profile in R_TMF518_RP_II_0056 R_TMF518_RP_II_0057
Artf 2008	The supported layered parameters for a TC profile are only for an ingress profile.	Egress values defined in SD1-16.
Artf 2210	General structural changes needed for Service Management	Added SAPDefinition and SAPTemplate as sub-classes of SAPSpecification Added a 2-ways association between ServiceDefinition and SAPDefinition Added containsSapSpecRefList and containedBySapSpecRef Added SSCRelationship Added SSCVRelationship Added SSCValueUse Added attributes name, description, unique, package to SSCUse

No	Problem description	Solution
Artf 1224	Change the definition of the Flow Domain Fragment (FDFr) type value from "MULTIPOINT" to "ROOTED_MULITPLOINT" is requested to be added to better align the TIP Ethernet model with that defined in ITU-T Q840.1	Modified R_TMF518_NRF_I_0056 Modified NetworkResourceFulfillment->IIS->xsd>CommonTypes.xsd To support: FDFRT_POINT_TO_POINT FDFRT_ROOTED_MULTIPOINT FDFRT_MULTIPOINT_TO_MULTIPOINT
Artf 1226	The operation mauAutoNegRestart of Q840.1 MAUTransportPort is not represented in the MTNM model	Add appropriate entry to section 4.1.6 Ethernet MAU Parameters in SD 1-16 Layered Transmission parameters
Artf 1931	The asapRef is missing in Equipment Protection Group	Change asapRef in NRA=> epg.xsd to a NamingAttributeType.
Artf 3242	Both ituStateAndStatusList and ituArcStateAndStatusList respectively as elements in CommonObjectInfoType and CommonResourceInfoType are defined as "mandatory". Need to add "minOccurs=0" for both	Changed ituStateAndStatusList in Network Resource Basic
Artf 3879	The SCAI doesn't have "RFSRequestData", and is passing in the entire Service (RFS) object upon creation. Hence, one is obliged to specify the parameters that are really only required for inventory retrieval	Set operation parameters optional for all operations (tables 3.1 to 3.7). Added an RFSRequestDataType that gets referenced by four operations: feasibilityCheck provision, activate, and modify.

2.2 Bugs fixed not reported as CRs and modifications introduced

2.2.1 BAs and SDs

- Framework – DDP BA
  Added the NML-EML specific parts, with the purpose to merge former MTNM and MTOSI BAs into a single suite of DDP documents.
  Aligned with MTNM 3.5 features.

- SD1-16_LayeredParameters
  - Added Egress TC Profile values in section 4.1.3 Traffic conditioning parameters
  - Added "TrafficMappingTo_Table_EgressTcProfile" in section 4.1.2 VLAN related Parameters

  - Added “EgressTcProfile” in section 4.1.11 Traffic Mapping Table
  - Added a second example of **TrafficMappingTable**
  - **Added** MauAutoNegRestart to Layered Transmission parameters section 4.1.16.

- SD1-17_LayerRates
  - Minor editorial fixes.

- SD1-18_layers
  - Added missing Ethernet material
  - Added section 3.11.4 on Relaxed Containment

- SD1-25_objectNaming
  - Addition of “Relaxed Containment” feature.

- SD1-33_ProbableCauses
  - Aligned with current version of TMF 063

- SD1-44_ConnectionlessTechnologyManagement
  - Editorial change due to the addition of Egress TC Profile
  - Added a second example in section 9.1 with Egress TC Profile

- SD1-45_ASONControlPlaneManagement-Primer
  New document from MTNM added with the introduction of Control Plane features in MTOSI.

- SD1-46_ASONControlPlaneManagement-Scenarios
  New document from MTNM added with the introduction of Control Plane features in MTOSI.

- Network Resource Basic - DDP BA
  Added the NML-EML specific parts, with the purpose to merge former MTNM and MTOSI BAs into a single suite of DDP documents.
  Aligned with MTNM 3.5 features
- Network Resource Fulfillment - DDP BA
  Added the NML-EML specific parts, with the purpose to merge former MTNM and MTOSI BAs into a single suite of DDP documents.
  Aligned with MTNM 3.5 features
  Added ***server TP name*** **to Requirement** R_TMF518_NRF_I_0010 to introduce the “Relaxed Containment” feature.

- SD2-12_Resource_Inventory_Layout
  Added Control Plane entities: Call, MLNPP and MLSNPPLink and the corresponding relationships.

- Network Resource Assurance - DDP BA
  Verified the alignment to the NML-EML specific parts, with the purpose to merge former MTNM and MTOSI BAs into a single suite of DDP documents.Aligned with MTNM 3.5 features.
- Manage Resource Inventory - DDP BA
  Added the NML-EML specific parts, with the purpose to merge former MTNM and MTOSI BAs into a single suite of DDP documents.
  Aligned with MTNM 3.5 features.
- Resource Provisioning - DDP BA
  - Added “DefaultProfile” to Rq 0056 and Rq 0057
  - Enhanced with the MTNM 3.5 requirements and use cases:
    - Control Plane Provisioning

    The MTNM requirements and use cases have been added, using the OS-OS terminology.
    All references to TMF 513 v3,0 have been updated to TMF 513 v3,1 where applicable.
- Resource Trouble Management - DDP BA
  Enhanced with the MTNM 3.5 requirements and use cases:
  - Control Plane Provisioning

  The MTNM requirements and use cases have been added, using the OS-OS terminology.
  All references to TMF 513 v3,0 have been updated to TMF 513 v3,1 where applicable.
  Also added RQs #70 to #74 and UCs #28 to #30 related to create, delete, modify PG.
- Resource Performance Management - DDP BA
  Removed Requirements II_0024 and II_0025
  Added the NML-EML specific parts, with the purpose to merge former MTNM and MTOSI BAs into a single suite of DDP documents.

  Aligned with MTNM 3.5 features.
- Service Component Activation - DDP BA
  Set operation parameters optional for all operations (tables 3.1 to 3.7).
- Service Basic - DDP BA
  - Added SAPDefinition and SAPTemplate as sub-classes of SAPSpecification
  - Added a 2-ways association between ServiceDefinition and SAPDefinition
  - Added containsSapSpecRefList and containedBySapSpecRef to SAPSpecification
  - Added validatedByRef to ServiceTemplate Service
  - Added SSCRelationship
  - Added SSCVRelationship
- SD2-21_Ethernet_Service_Specifications
  The Ethernet service specification model definitions and examples were changed to reflect the addition of SAP Definitions and SAP Templates (as inherited from the SAP Specification), and the associated change of defining SAP characteristics in a SAP definition rather than in the Service Definition. This allows for decoupling of the SAP characteristics from the Service characteristics, providing more flexibility in implementing a solution supporting MEF services.

2.2.2 IAs

2.2.2.1 Framework

- MTOSI naming tree Class Diagram enhanced with Control Plane object classes

2.2.2.2 ManageResourceInventory

2.2.2.2.1 New Specifications

- Interfaces::CallConnectionRetrievalService added
- Interfaces::CallConnectionRetrievalService::getAllCallIdsWithSNPPOrTNAName added
- Interfaces::CallConnectionRetrievalService::getAllCallIdsWithTP added
- Interfaces::CallConnectionRetrievalService::getAllCallsAndTopLevelConnections added
- Interfaces::CallConnectionRetrievalService::getAllCallsAndTopLevelConnectionsAndSNCs added
- Interfaces::CallConnectionRetrievalService::getAllCallsAndTopLevelConnectionsAndSNCsWithME added
- Interfaces::CallConnectionRetrievalService::getAllCallsAndTopLevelConnectionsAndSNCsWithTP added
- Interfaces::CallConnectionRetrievalService::getAllCallsAndTopLevelConnectionsWithME added
- Interfaces::CallConnectionRetrievalService::getAllConnectionsWithMLSNPPLinks?? added
- Interfaces::CallConnectionRetrievalService::getBackupRoutes?? added
- Interfaces::CallConnectionRetrievalService::getCall added
- Interfaces::CallConnectionRetrievalService::getCallAndTopLevelConnections added
- Interfaces::CallConnectionRetrievalService::getCallAndTopLevelConnectionsAndSNCs added
- Interfaces::CallConnectionRetrievalService::getConnection?? added
- Interfaces::CallConnectionRetrievalService::getConnectionsAndRouteDetails added
- Interfaces::CallConnectionRetrievalService::getIntendedRoute?? added
- Interfaces::CallConnectionRetrievalService::getRoute?? added
- Interfaces::CallConnectionRetrievalService::getRouteAndMLSNPPLinks?? added
- Interfaces::ControlPlaneRetrievalService added
- Interfaces::MultiLayerRoutingAreaRetrievalService added
- Interfaces::MultiLayerRoutingAreaRetrievalService::getAllMultiLayerRoutingAreas added
- Interfaces::MultiLayerRoutingAreaRetrievalService::getAllMultiLayerRoutingAreasWrtOs added
- Interfaces::MultiLayerRoutingAreaRetrievalService::getAllSubordinateMultiLayerRoutingAreas added
- Interfaces::MultiLayerRoutingAreaRetrievalService::getAllSubordinateRoutingAreaIdsWithConnection added

- Interfaces::MultiLayerRoutingAreaRetrievalService::getAllTopLevelMultiLayerRoutingAreas added
- Interfaces::MultiLayerRoutingAreaRetrievalService::getMultiLayerRoutingArea added
- Interfaces::MultiLayerSubNetworkPointPoolLinkRetrievalService added
- Interfaces::MultiLayerSubNetworkPointPoolLinkRetrievalService::getAllEdgeMultiLayerSubNetworkPointPoolLinks added
- Interfaces::MultiLayerSubNetworkPointPoolLinkRetrievalService::getAllInternalMultiLayerSubNetworkPointPoolLinks added
- Interfaces::MultiLayerSubNetworkPointPoolLinkRetrievalService::getAllMultiLayerSubNetworkPointPoolLinks added
- Interfaces::MultiLayerSubNetworkPointPoolLinkRetrievalService::getAllMultiLayerSubNetworkPointPoolLinksWithMlras added
- Interfaces::MultiLayerSubNetworkPointPoolLinkRetrievalService::getAllMultiLayerSubNetworkPointPoolLinksWithTna added
- Interfaces::MultiLayerSubNetworkPointPoolLinkRetrievalService::getAllMultiLayerSubNetworkPointPoolLinksWithTp added
- Interfaces::MultiLayerSubNetworkPointPoolLinkRetrievalService::getAvailableCapacity added
- Interfaces::MultiLayerSubNetworkPointPoolLinkRetrievalService::getMultiLayerSubNetworkPointPoolLink added
- Interfaces::MultiLayerSubNetworkPointPoolRetrievalService added
- Interfaces::MultiLayerSubNetworkPointPoolRetrievalService::getMultiLayerSubNetworkPointPool added
- Interfaces::MultiLayerSubNetworkPointPoolRetrievalService::getAllMultiLayerSubNetworkPointPools added
- Interfaces::MultiLayerSubNetworkPointPoolRetrievalService::getAllMultiLayerSubNetworkPointPoolsWithTna added
- Interfaces::MultiLayerSubNetworkPointPoolRetrievalService::getAllMultiLayerSubNetworkPointPoolsWithTp added
- Interfaces::ResourceInventoryRetrievalService::getRemoteUnitProfiles added

- Type Definitions::CallAndTopLevelConnections added
- Type Definitions::CallAndTopLevelConnectionsAndSNCs added
- Type Definitions::ConnectionAndSupportingSNCsList added
- Type Definitions::RouteType added
- Type Definitions::ConnectionAndRoute added
- Type Definitions::LayeredCapacity added
- Type Definitions::RemoteUnitProfile added

2.2.2.2.2 Modified Specifications

- Interfaces::ConnectionRetrievalService::getAllSubnetworkConnections: Documentation enhanced
- Interfaces::ConnectionRetrievalService::getAllSubnetworkConnectionsWithTp: Documentation enhanced
- Interfaces::ConnectionRetrievalService::getRoute: Documentation enhanced
- Interfaces::ConnectionRetrievalService::getSubnetworkConnection: Documentation enhanced
- Interfaces::ConnectionRetrievalService::getSubnetworkConnectionsByUserLabel: Documentation enhanced
- Interfaces::ConnectionRetrievalService::getSubnetworkConnectionsByUserLabel: NeCommLoss exception replaced by CommLoss
- Interfaces::TransmissionDescriptorRetrievalService::getTransmissionParameters: Documentation enhanced to cover additional parameter groupings (artf1670).
- Interfaces::TransmissionDescriptorRetrievalService::getTransmissionParameters::transmissionParameterGroupFilterList: Documentation enhanced to cover additional parameter groupings (artf1670).

2.2.2.3 NetworkResourceAssurance

- NRA Protection Group Relationships Class Diagram added
- Data Object Classes::ProtectionGroup::protectionRelatedTpRefList converted into a navigable relationship and replaced "PTP" by "TP" in the description.
- Data Object Classes::TcaParameterProfile::associatedTpRefList converted into a navigable relationship
- Data Object Classes::ProtectionGroup::layerRate: Replaced "PTP" by "TP" in the description.

2.2.2.4 NetworkResourceFulfillment

- Data Object Classes::Call added
- Data Object Classes::MultiLayerSubNetworkPointPool added
- Data Object Classes::MultiLayerSubNetworkPointPoolLink added
- Data Object Classes::LayeredSubNetworkPointPool added
- Data Object Classes::SubNetworkPointPool added
- Data Object Classes::SubNetworkPoint added
- Data Object Classes::LayeredSubNetworkPointPoolLink added
- Data Object Classes::SubNetworkPointPoolLink added
- Data Object Classes::MultiLayerRoutingArea added
- Data Object Classes::Connection added
- Data Object Classes::ConnectionParameterProfile added
- Data Object Classes::ConnectionTerminatioPoint::serverTpRef added

- NRF Termination Points Class Diagram added

- Type Definitions::CallState added
- Type Definitions::CallEndType added
- Type Definitions::CallParameterProfile added
- Type Definitions::DiversityConstraints added
- Type Definitions::LevelOfEffort added
- Type Definitions::DiversityViolations added
- Type Definitions::RoutingAreaLevel added
- Type Definitions::DiversityInfo added
- Type Definitions::SharedResource added
- Type Definitions::InterfaceType added
- Type Definitions::LayeredRoutingArea added
- Type Definitions::RoutingConstraintEffort added
- Type Definitions::ConnectionType added
- Type Definitions::CrossConnect::aEndTpRefList: Description enhanced by "If the cross connection represents a Control Plane (Routing Node) connection, the end points are the SNPs."
- Type Definitions::CrossConnect::zEndTpRefList: Description enhanced by "If the cross connection represents a Control Plane (Routing Node) connection, the end points are the SNPs."
- Type Definitions::OperationsSystemInventory::managesMlraRefList added
- Type Definitions::OperationsSystemInventory::managesCallRefList added
- Type Definitions::OperationsSystemInventory::managesMlsnppRefList added
- Type Definitions::OperationsSystemInventory::managesMlsnpplinkRefList added
- Type Definitions::ManagementDomainInventory::mlraList added
- Type Definitions::ManagementDomainInventory::callList added
- Type Definitions::ManagementDomainInventory::mlsnppList added
- Type Definitions::ManagementDomainInventory::mlsnppLinkList added
- Type Definitions::MultiLayerRoutingAreaInventory added
- Type Definitions::ConnectionInventory added
- Type Definitions::CallInventory added
- Type Definitions::MlsnppInventory added
- Type Definitions::MlsnppLinkInventory added
- Type Definitions::SignallingProtocol added

2.2.2.5 ResourceProvisioning

- Call Control Service Interface Diagram added
- Interfaces::CallControlService added
- Interfaces::CallControlService::addConnections added
- Interfaces::CallControlService::addRoute?? added
- Interfaces::CallControlService::establishCall added
- Interfaces::CallControlService::modifyCall added
- Interfaces::CallControlService::modifyDiversityAndCorouting added
- Interfaces::CallControlService::releaseCall added
- Interfaces::CallControlService::removeConnections added
- Interfaces::CallControlService::removeRoute?? added
- Interfaces::CallControlService::setIntendedRoute?? added
- Interfaces::CallControlService::setRoutesAdminState?? added
- Interfaces::CallControlService::switchRoute?? added

- Multi Layer SNPP Link Control Service Interface Diagram added
- Interfaces::MultiLayerSNPPLinkControlService added
- Interfaces::MultiLayerSNPPLinkControlService::assignSignallingController added
- Interfaces::MultiLayerSNPPLinkControlService::deassignSignallingController added
- Interfaces::MultiLayerSNPPLinkControlService::disableSignalling added
- Interfaces::MultiLayerSNPPLinkControlService::enableSignalling added
- Interfaces::MultiLayerSNPPLinkControlService::setSignallingProtocolAndParameters added
- Interfaces::MultiLayerSNPPLinkControlService::modifySignallingProtocolParameters added
- Interfaces::MultiLayerSNPPLinkControlService::setMlsnppLinkTnaName added

- Multi Layer SNPP Control Service Interface Diagram added
- Interfaces::MultiLayerSNPPControlService added
- Interfaces::MultiLayerSNPPControlService::setMlsnppTnaName added

- Interfaces::RemoteUnitControlService added
- Interfaces::RemoteUnitControlService::createRemoteUnit added
- Interfaces::RemoteUnitControlService::deleteRemoteUnit added
- Interfaces::RemoteUnitControlService::modifyRemoteUnit added
- Interfaces::CommonResourceProvisioningService::resetResource added

- Type Definitions::CallCreateData added
- Type Definitions::CallModifyData added
- Type Definitions::ConnectionCreateData added
- Type Definitions::RoutingInfo added
- Type Definitions::SnpTnaData added
- Type Definitions::SnpTnaPair added
- Type Definitions::SnppTnaPair added
- Type Definitions::Authentication added
- Type Definitions::EquipmentHolderCreateData added
- Type Definitions::EquipmentHolderModifyData added
- Type Definitions::EquipmentHolderSetData added
- Type Definitions::EquipmentModifyData added
- Type Definitions::PhysicalTerminationPointCreateData added
- Type Definitions::PhysicalTerminationPointModifyData added
- Type Definitions::RemoteUnitCreateData added
- Type Definitions::RemoteUnitModifyData added
- Type Definitions::TerminationPointSetData added
- Type Definitions::AuthenticationMode added

2.2.2.6 ResourceTroubleManagement

- Interfaces::AlarmControlService::setAlarmReporting: Documentation updated to cover setting of alarm reporting for Connections
- Protection Interface Diagram added
- Interfaces::ProtectionControlService::createProtectionGroup added
- Interfaces::ProtectionControlService::deleteProtectionGroup added
- Interfaces::ProtectionControlService::modifyProtectionGroup added

- Type Definitions::SwitchData::pgRef converted into a navigable relationship
- Type Definitions::SwitchData::protectedTpRef converted into a navigable relationship
- Type Definitions::SwitchData::switchToTpRef converted into a navigable relationship

- Type Definitions::ProtectionGroupSetData added
- Type Definitions::ProtectionGroupCreateData added
- Type Definitions::ProtectionGroupModifyData added

2.2.3 IISs

2.2.3.1 MRI

- File created: DDPs\ ManageResourceInventory \IIS\xsd\ CallConnRetrievalMessages.xsd
  File created: DDPs\ ManageResourceInventory \IIS\wsdl\CallConnRetrieval\ CallConnRetrievalMessages.wsdl
  File created: DDPs\ ManageResourceInventory \IIS\wsdl\CallConnRetrieval\ CallConnRetrievalHttp.wsdl
  File created: DDPs\ ManageResourceInventory \IIS\wsdl\CallConnRetrieval\ CallConnRetrievalJms.wsdl
  - with operations "getAllCallsAndTopLevelConnections"
    "getAllCallsAndTopLevelConnectionsAndSNCs"
    "getAllCallsAndTopLevelConnectionsWithME"
    "getAllCallsAndTopLevelConnectionsAndSNCsWithME"
    "getAllCallsAndTopLevelConnectionsAndSNCsWithTP"
    "getAllCallIdsWithTP"
    "getAllCallIdsWithSNPPOrTNAName"
    "getCallAndTopLevelConnectionsAndSNCs"
    "getCallAndTopLevelConnections"
    "getCall"
    "getConnectionsAndRouteDetails"
    "getCallAndTopLevelConnectionsListIterator"
    "getCallAndTopLevelConnectionsAndSNCsListIterator"
- File created: DDPs\ ManageResourceInventory\IIS\xsd\ MultiLayerRoutingAreaRetrievalMessages.xsd
  File created: DDPs\ ManageResourceInventory\IIS\wsdl\MultiLayerRoutingAreaRetrieval\ MultiLayerRoutingAreaRetrievalMessages.wsdl
  File created: DDPs\ ManageResourceInventory\IIS\wsdl\MultiLayerRoutingAreaRetrieval\ MultiLayerRoutingAreaRetrievalHttp.wsdl
  File created: DDPs\ ManageResourceInventory\IIS\wsdl\MultiLayerRoutingAreaRetrieval\ MultiLayerRoutingAreaRetrievalJms.wsdl
  - with operations "getAllMultiLayerRoutingAreasWrtOs"
    "getAllMultiLayerRoutingAreas"
    "getAllSubordinateMultiLayerRoutingAreas"
    "getAllSubordinateRoutingAreaIDsWrtConnection"
    "getMultiLayerRoutingAreasIterator"
    "getMultiLayerRoutingAreaNamesIterator"
- File created: DDPs\ ManageResourceInventory \IIS\xsd\ MultiLayerSNPPLinkRetrievalMessages.xsd
  File created: DDPs\ ManageResourceInventory \IIS\wsdl\MultiLayerSNPPLinkRetrieval\ MultiLayerSNPPLinkRetrievalMessages.wsdl
  File created: DDPs\ ManageResourceInventory \IIS\wsdl\MultiLayerSNPPLinkRetrieval\ MultiLayerSNPPLinkRetrievalHttp.wsdl
  File created: DDPs\ ManageResourceInventory \IIS\wsdl\MultiLayerSNPPLinkRetrieval\ MultiLayerSNPPLinkRetrievalJms.wsdl
  - with operations "getAllMLSNPPLinksGeneral"
    "getAllMLSNPPLinksWithTP"
    "getAllMLSNPPLinksWithMLSNs"

"getAllMLSNPPLinksWithTNAs"
"getMLSNPPLink"
"getAllMLSNPPLinks"
"getAllInternalMLSNPPLinks"
"getAllEdgeMLSNPPLinks"
"getMultiLayerSNPPLinksIterator"

- File created: DDPs\ ManageResourceInventory \IIS\xsd\ MultiLayerSNPPRetrievalMessages.xsd
  File created: DDPs\ ManageResourceInventory \IIS\wsdl\MultiLayerSNPPRetrieval\ MultiLayerSNPPRetrievalMessages.wsdl
  File created: DDPs\ ManageResourceInventory \IIS\wsdl\MultiLayerSNPPRetrieval\ MultiLayerSNPPRetrievalHttp.wsdl
  File created: DDPs\ ManageResourceInventory \IIS\wsdl\MultiLayerSNPPRetrieval\ MultiLayerSNPPRetrievalJms.wsdl
  - with operations "getAllMLSNPPsGeneral"
    "getAllMLSNPPsWithTP"
    "getAllMLSNPPsWithTNA"
    "getAllMLSNPPs"
    "getMultiLayerSNPPsIterator"
- File modified: DDPs\ ManageResourceInventory \IIS\xsd\ ConnectionRetrievalMessages.xsd
  File modified: DDPs\ ManageResourceInventory \IIS\wsdl\ConnectionRetrieval\ ConnectionRetrievalMessages.wsdl
  File modified: DDPs\ ManageResourceInventory \IIS\wsdl\ConnectionRetrieval\ ConnectionRetrievalHttp.wsdl
  File modified: DDPs\ ManageResourceInventory \IIS\wsdl\ConnectionRetrieval\ ConnectionRetrievalJms.wsdl
  - deleted operation "getSubnetworkConnectionModeOfOperation"
  - changed documentation
- File modified: DDPs\ ManageResourceInventory \IIS\xsd \ManagedElementRetrievalMessages.xsd
  - changed documentation
- File modified: DDPs\ ManageResourceInventory \IIS\xsd \ MultiLayerSubnetworkRetrievalMessages.xsd
  - changed documentation
- File modified: DDPs\ ManageResourceInventory \IIS\xsd \ TerminationPointRetrievalMessages.xsd
  - changed documentation
- File modified: DDPs\ ManageResourceInventory \IIS\xsd \ TopologicalLinkRetrievalMessages.xsd
  - changed documentation

2.2.3.2 NRF

- File created: DDPs\ NetworkResourceFulfillment\IIS\xsd\ Call.xsd
- File created: DDPs\ NetworkResourceFulfillment\IIS\xsd\ CommonControlPlaneTypes.xsd
- File created: DDPs\ NetworkResourceFulfillment\IIS\xsd\ MISnpp.xsd

- File created: DDPs\ NetworkResourceFulfillment\IIS\xsd\ MISnppLink.xsd

- File modified: DDPs\ NetworkResourceFulfillment\IIS\xsd\ Cc.xsd
- File modified: DDPs\ NetworkResourceFulfillment\IIS\xsd\ CommonTypes.xsd
- File modified: DDPs\ NetworkResourceFulfillment\IIS\xsd\ Route.xsd
- File modified: DDPs\ NetworkResourceFulfillment\IIS\xsd\ RouteDescriptor.xsd
- File modified: DDPs\ NetworkResourceFulfillment\IIS\xsd\ Snc.xsd
- File modified: DDPs\ NetworkResourceFulfillment\IIS\xsd\ TpData.xsd

2.2.3.3 RP

- File created: DDPs\ ResourceProvisioning \IIS\xsd\ CallControlMessages.xsd
  File created: DDPs\ ResourceProvisioning \IIS\ wsdl\CallControl \ CallControlPortType.wsdl
  File created: DDPs\ ResourceProvisioning \IIS\ wsdl\CallControl \ CallControlMessages.wsdl
  File created: DDPs\ ResourceProvisioning \IIS\ wsdl\CallControl \ CallControlHttp.wsdl
  File created: DDPs\ ResourceProvisioning \IIS\ wsdl\CallControl \ CallControlJms.wsdl
  - with operations "establishCall"
    "modifyCall"
    "releaseCall"
    "addConnections"
    "removeConnections"
    "modifyDiversityAndCorouting"
- File modified: DDPs\ ResourceProvisioning \IIS\xsd \ ConnectionControlMessages.xsd
  - Added enum type ControlStateType
- File modified: DDPs\ ResourceProvisioning \IIS\xsd \ TerminationPointControlMessages.xsd
  - Added enum type ActionType
  - Changed documentation

2.2.3.4 RTM

- File: DDPs\ ResourceTroubleManagement\IIS\xsd\ ProtectionControlMessages.xsd
  - Added "createProtectionGroupRequest"
  - Added "createProtectionGroupResponse"
  - Added "createProtectionGroupException"
  - Added "deleteProtectionGroupRequest"
  - Added "deleteProtectionGroupResponse"
  - Added "deleteProtectionGroupException"
  - Added "modifyProtectionGroupRequest"
  - Added "modifyProtectionGroupResponse"
  - Added "modifyProtectionGroupException"
  - Added "ProtectionGroupSetDataType"
  - Added "ProtectionGroupCreateDataType"
  - Added "ProtectionGroupModifyDataType"

- File: DDPs\ ResourceTroubleManagement\IIS\ wsdl\ProtectionControl\ ProtectionControlPortType.wsdl
  File: DDPs\ ResourceTroubleManagement\IIS\ wsdl\ProtectionControl\ ProtectionControlMessages.wsdl
  File: DDPs\ ResourceTroubleManagement\IIS\ wsdl\ProtectionControl\ ProtectionControlHttp.wsdl
  File: DDPs\ ResourceTroubleManagement\IIS\ wsdl\ProtectionControl\ ProtectionControlJms.wsdl
  - Added operations "createProtectionGroup"
    "deleteProtectionGroup"
    "modifyProtectionGroup"

2.2.3.5 SB

- File modified: DDPs\ ServiceBasic\IIS\xsd\ Service.xsd
  - Added SAPDefinition and SAPTemplate as sub-classes of SAPSpecification
  - Added a 2-ways association between ServiceDefinition and SAPDefinition
  - Added containsSapSpecRefList and containedBySapSpecRef
  - Added validatedByRef to ServiceAccessPoint, Service
  - Made templateRef optional in ServiceType and ServiceAccessPointType
  - Added SSCRelationship
  - Added SSCVRelationship
  - Added SSCValueUse
  - Added attributes name, description, unique, package to SSCUse

2.2.3.6 SA

- File modified: DDPs\ ServiceActivation\IIS\ ServiceComponentActivationInterfaceMessages.xsd
  - Added an RFSRequestDataType that gets referenced by four operations: feasibilityCheck provision, activate, and modify.

3 Release Definition

This section describes the documents included in MTOSI Release 3.0.

3.1 Document Release Description

Document	Title	New Doc	Version	Doc Status	Latest Date
ProductDescriptions/ RN306_MTOSI_Release3.0.doc (this document)	MTOSI 3.0 Release Notes		2.4	Member Evaluation	Apr 2013
ProductDescriptions/ MTOSI_R3-0_DDP_Maps.xls	MTOSI_R3-0_DDP_Maps		2.4	Member Evaluation	Apr 2013

The following table lists the documents that constitute the full MTOSI 3.0 Release, organized per DDP.

Table 1. Documents in the MTOSI 3.0 Release

DDP	Document	Title	New Doc	Version	Doc Status	Latest Date
FMW	TMF518_FMW	Framework – DDP BA		1.3	Member Evaluation	Oct 2012
FMW	TMF612_FMW	Framework – DDP IA		1.2	Member Evaluation	Apr 2013
FMW	TMF864_FMW_XML	Framework – DDP IIS		1.1	Approved	Sept 2011
FMW	SD0-1_Dictionary	Dictionary		1.3	Approved	June 2011
FMW	SD0-2_Guidelines_BA	BA Guideliness		1.0	Approved	May 2008
FMW	SD0-3_Template_BA.dot	Word template for BA documents		1.0	Approved	May 2008
FMW	SD0-4_Guidelines_IA	IA Guidelines		1.0	Approved	May 2008
FMW	SD0-5_Guidelines_WebServices	Web Services Design Guidelines		1.1	Approved	Dec 2009
FMW	SD0-6_Template_SD.dot	Word template for SD documents		1.0	Approved	May 2008

DDP	Document	Title	New Doc	Version	Doc Status	Latest Date
FMW	SD1-1_additionalInfoUsage	Usage of the *additionalInfo* Field of MTNM Managed Objects		3.2	Approved	April 2008
FMW	SD1-6_ContainedTPs	Examples for contained TPs in different states of usage		3.3	Approved	Nov 2007
FMW	SD1-8_encodingX731M3100	Coding of X.731 and M.3100 State and Status Information		3.2	Approved	Nov 2007
FMW	SD1-14_IMOverview	Inverse Multiplexing Overview		3.2	Approved	Oct 2007
FMW	SD1-16_LayeredParameters	Layered Parameters		3.5	Member Evaluation	March 2013
FMW	SD1-17_LayerRates	Layer Rates		3.6	Member Evaluation	March 2013
FMW	SD1-18_layers	Functional Modeling Concepts		3.5	Member Evaluation	March 2013
FMW	SD1-19_LocationIdentification	Location Identification		3.0	Approved	Apr 2005
FMW	SD1-20_MaintenanceCommands	Maintenance Commands		3.2	Approved	Nov 2007
FMW	SD1-22_modelDiagramComponents.ppt	Modeling Components		3.1	Approved	
FMW	SD1-25_objectNaming.doc	MTNM support for a Naming convention		3.5	Member Evaluation	March 2013
FMW	SD1-28_PerformanceParameters	Performance Parameters		3.1	Approved	Oct 2006
FMW	SD1-33_ProbableCauses	Specification of probableCause strings		4.3	Member Evaluation	Mar 2013
FMW	SD1-36_SNCTypes	SNC And Protection		3.1	Approved	Dec 2006
FMW	SD1-44_ ConnectionlessTechnologyManagement	Connectionless Technology Management		1.2	Member Evaluation	March 2013
FMW	SD1-45_ASONControlPlaneManagement-Primer	ASON Control Plane Management – Primer		1.1	Approved	Nov 2007
FMW	SD1-46_ASONControlPlaneManagement-Scenarios	ASON Control Plane Management – Scenarios		1.0	Approved	Nov 2007

DDP	Document	Title	New Doc	Version	Doc Status	Latest Date
FMW	SD2-1_MTOSI_IS_Main.doc	MTOSI Implementation Statement	Deleted, replaced by ProductDescriptions/ MTOSI_R3.0_DDP_Maps.xls			
FMW	SD2-2_XML_ImplementationUserGuide.doc	MTOSI XML Implementation User Guide		2.1	Approved	Sept 2011
FMW	SD2-4_TransportIndependentExampleOfMTOSI.zip	Transport Independent Example of MTOSI		1.2	Approved	May 2008
FMW	SD2-5_Communication_Styles	Communication Styles		1.3	Approved	May 2008
FMW	SD2-6_VersioningAndExtensibility	Versioning and Extensibility		2.0	Approved	May 2008
FMW	SD2-7_ObjectNaming	Object Naming		2.0	Approved	May 2008
FMW	SD2-9_UsingJMSAsMTOSITransport	Using JMS as an MTOSI Transport		1.2	Approved	May 2008
FMW	SD2-10_ExampleUsingJMS	Example using JMS		1.2	Approved	May 2008
FMW	SD2-16_UsingHTTPAsMTOSITransport	Using HTTP as an MTOSI Transport		1.1	Approved	May 2008
NRB	TMF518_NRB	Network Resource Basic - DDP BA		1.3	Member Evaluation	Oct 2012
NRB	TMF612_NRB	Network Resource Basic – DDP IA		1.1	Approved	Sept 2011
NRB	TMF864_NRB_XML	Network Resource Basic – DDP IIS		1.1	Approved	Sept 2011
NRB	SD2-17_EnhancedResourceStates	MTOSI Enhanced Resource States		1.0	Approved	Oct 2007
NRF	TMF518_NRF	Network Resource Fulfillment - DDP BA		1.4	Member Evaluation	March 2013
NRF	TMF612_NRF	Network Resource Fulfillment – DDP IA		1.2	Member Evaluation	Apr 2013
NRF	TMF864_NRF_XML	Network Resource Fulfillment – DDP IIS		1.2	Member Evaluation	Apr 2013
NRF	SD1-3_BundledSNC	Bundled SNC		3.0	Approved	June 2005
NRF	SD1-5_ATMConformanceDefinitions	ATM Conformance Definitions		3.0	Approved	Nov 2006

DDP	Document	Title	New Doc	Version	Doc Status	Latest Date
NRF	SD1-7_DSLOverview	DSL Overview		3.1	Approved	Nov 2005
NRF	SD2-12_MTOSI_Inventory_Layout	Inventory Layout		2.2	Member Evaluation	March 2013
NRF	SD2-20_EquipmentModel	Equipment Model		1.0	Approved	May 2008
NRA	TMF518_NRA	Network Resource Assurance - DDP BA		1.3	Member Evaluation	March 2012
NRA	TMF612_NRA	Network Resource Assurance – DDP IA		1.2	Member Evaluation	Apr 2013
NRA	TMF864_NRA_XML	Network Resource Assurance – DDP IIS		1.1	Approved	Sept 2011
NRA	SD1-29_PGPParameters	PGP Parameters		3.0	Approved	April 2005
NRA	SD1-34_protectionSwitch	Protection Switching		3.0	Approved	April 2005
NRA	SD1-37_TCAs	PM Threshold Types		3.0	Approved	Jun 2005
MRI	TMF518_MRI	Manage Resource Inventory - DDP BA		1.3	Member Evaluation	Oct 2012
MRI	TMF612_MRI	Manage Resource Inventory – DDP IA		1.2	Member Evaluation	Apr 2013
MRI	TMF864_MRI_XML	Manage Resource Inventory – DDP IIS		1.1	Member Evaluation	Apr 2013
MRI	SD1-41_TPPoolRelationship	Relationship between a TPPool and its TerminationPoints		3.0	Approved	April 2005
MRI	SD2-14_AVC_SC_Notifications	Attribute Value Change & State Change Notifications		2.0.2	Approved	Nov 2007
RP	TMF518_RP	Resource Provisioning - DDP BA		1.3	Member Evaluation	Mar 2013
RP	TMF612_RP	Resource Provisioning – DDP IA		1.2	Member Evaluation	Apr 2013
RP	TMF864_RP_XML	Resource Provisioning - DDP IIS		1.2	Member Evaluation	Apr 2013

DDP	Document	Title	New Doc	Version	Doc Status	Latest Date
RP	SD1-13_guiCutThrough	GUI Cut Through		3.0	Approved	Nov 2006
RP	SD1-23_ModesOfOperation	Modes of Operation		3.0	Approved	June 2005
RTM	TMF518_RTM	Resource Trouble Management - DDP BA		1.3	Member Evaluation	Mar 2013
RTM	TMF612_RTM	Resource Trouble Management - DDP IA		1.2	Member Evaluation	Apr 2013
RTM	TMF864_RTM_XML	Resource Trouble Management - DDP IIS		1.2	Member Evaluation	Apr 2013
RPM	TMF518_RPM	Resource Performance Management - DDP BA		1.3	Member Evaluation	Oct 2012
RPM	TMF612_RPM	Resource Performance Management - DDP IA		1.1	Approved	Sept 2011
RPM	TMF864_RPM_XML	Resource Performance Management - DDP IIS		1.1	Approved	Sept 2011
RPM	SD1-30_PMFileFormat	PM File Format Definition		3.5	Approved	Sept 2011
RPM	SD1-31_PMExample	An example of a PM File format in plain text			Approved	
RPM	SD1-32_PMExample	An example of a PM File format in xls			Approved	
SB	TMF518_SB	Service Basic - DDP BA		1.4	Member Evaluation	Apr 2013
SB	TMF612_SB	Service Basic - DDP IA		1.1	Approved	May 2008
SB	TMF864_SB_XML	Service Basic - DDP IIS		1.2	Member Evaluation	Apr 2013
SB	SD2-18_VPNServiceModel.xls	VPN Service Model		1.0	Approved	Nov 2007

DDP	Document	Title	New Doc	Version	Doc Status	Latest Date
SB	SD2-19_VoIPServiceDefinition			1.0	Approved	May 2008
SB	SD2-21_Ethernet_Service_Specification	Ethernet Service Specification		1.1	Member Evaluation	Apr 2013
MSI	TMF518_MSI	Manage Service Inventory – DDP BA		1.1	Ditto	Sept 2011
MSI	TMF864_MSI_XML	Manage Service Inventory – DDP IIS		1.0	Ditto	May 2008
SA	TMF518_SA_1	Service Activation - DDP BA – Part 1: Overview		1.2	Ditto	Sept 2011
SA	TMF518_SA_2	Service Activation - DDP BA – Part 2 : Service Activation Interface (SAI)		1.2	Ditto	Sept 2011
SA	TMF518_SA_3	Service Activation - DDP BA – Part 3 : Service Component Activation		1.2	Ditto	June 2011
SA	TMF612_SA	Service Activation – DDP IA		1.0	Ditto	May 2008
SA	TMF864_SA_XML	Service Activation – DDP IIS		1.1	Ditto	Sept 2011

3.1.1 Major BA Deliverables

3.1.1.1 TMF518_FMW, Framework – DDP BA

This Framework BA covers requirements and use cases concerning both the interface communication mechanisms and the general network resources aspects.

The following items are covered:

- Resource identification
- Functional modeling
- Resources data retrieval mechanisms
- Notification mechanisms

3.1.1.2 TMF518_NRB, Network Resource Basic – DDP BA

The Network Resource Basic BA covers the static requirements for the general aspects of the network resources (Data Model).

3.1.1.3 TMF518_NRF, Network Resource Fulfillment – DDP BA

The Network Resource Fulfillment BA addresses the Data Model (DM) aspects of resource fulfillment and as such it defines all resource related managed entities visible across the Interface that are used in support of resource fulfillment.

3.1.1.4 TMF518_NRA, Network Resource Assurance – DDP BA

The Network Resource Assurance BA addresses the Data Model (DM) aspects of resource assurance and as such it defines all resource related managed entities visible across the Interface that are used in support of resource assurance.

3.1.1.5 TMF518_MRI, Manage Resource Inventory – DDP BA

The Manage Resource Inventory BA covers requirements and use cases concerning the management of resource inventory.

The following management capabilities are covered:

- General Management such as (among others):
  - Bulk inventory retrieval (retrieving selected information in a single operation)
  - Multi-Object Inventory Update
- Inventory Management of Connection Oriented Technologies
- Inventory Management of Connectionless Technologies
- Inventory Notifications

3.1.1.6 TMF518_RP, Resource Provisioning – DDP BA

The Resource Provisioning BA covers requirements and use cases concerning the provisioning of network resources.

The following management capabilities are covered:

- Connection Control
- Equipment Provisioning
- Flow Domain Control
- GUI Cut-Through Control
- Software and Data Control
- Termination Point Control
- Transmission Descriptor Control
- Assignment of Transmission Descriptors
- Topological Link Control

3.1.1.7 TMF518_RTM, Resource Trouble Management (RTM) – DDP BA

The Resource Trouble Management BA covers requirements and use cases for the following aspects of RTM: resource fault management, protection management, and maintenance and diagnostics control.

3.1.1.8 TMF518_RPM, Resource Performance Management – DDP BA

The Resource Performance Management BA covers requirements and use cases concerning resource performance management.

The following management capabilities are covered:

- Monitor Performance Management
  - PM Retrieval – this includes the retrieval of both current and historical PM data
  - Threshold Crossing Alert (TCA) Notifications
- Control Performance Management
  - PM Control – this includes, for example, the enabling and disabling of PM collection
  - TCA Control – this includes, for example, the enabling and disabling of TCA generation

3.1.1.9 TMF518_SB, Service Basic – DDP BA

The Service Management BA presents the service Management technology neutral data model. It initiates from the SID service management information model with several extensions and adaptations introduced to fit the business needs for service activation and inventory (those modifications will be proposed to the SID team as suggestion for improvement).
It defines the static and structural requirements of the managed objects that are visible across the Service Activation Interface(s) and the Service Component Activation Interface.

3.1.1.10 TMF518_SA_1, Service Activation – DDP BA – Part 1: Overview

The Service Activation BA Overview specifies common definitions, architecture aspects and functional requirements for the MTOSI Service Activation feature.

It introduces two interfaces:

- The Service Activation interface between the CRM and SM&O layers
- The Service Component Activation interface is an internal SM&O layer interface.

The primary focus of both interfaces is service activation exclusively.

3.1.1.11 TMF518_SA_2, Service Activation – DDP BA – Part 2: Service Activation Interface (SAI)

The Service Activation BA Service Activation Interface covers requirements and use cases for a service activation interface where it is assumed that one side of the interface supports and understands the eTOM's Customer Relationship Management (CRM) concepts, e.g., product and customer, and the other side of the interface supports and understands the eTOM Service Management & Operations (SM&O) concepts, e.g., customer facing service and service order. This interface also allows for the management of service orders that are created as a result of a service activation request.

3.1.1.12 TMF518_SA_3, Service Activation – DDP BA – Part 3 : Service Component Activation

The Service Activation BA Service Component Activation covers requirements and use cases for a service component activation interface (SCAI). This interface is entirely within the eTOM SM&O layer. As such, it receives activation requests from another SM&O application that is normally responsible for the orchestration of end-to-end service activation.
The interfaces exposed by the SCAI hide the complexity of the underlying resource activation process through the use of service templates and references to service access points.

3.1.1.13 TMF518_MSI, Manage Service Inventory – DDP BA

This Manage Service Inventory BA covers the requirements for a Service Inventory interface.

Only bulk inventory retrieval, retrieving selected information in a single operation, is required. The information of interest is selected by a filter mechanism using a white page of a yellow page style (driven by names or by properties).

As opposed to the Inventory for Network Resources, the objects in the Service Inventory OS are not organized in a hierarchical way and there is no containment tree. Service Inventory Objects do not have a superior and do not have subordinates. However, objects relate together through associations represented by specific reference attributes which values contain the name of the associated object.

3.1.2 Major IA Deliverables

All IA deliverables, for all DDPs, are structured in the same way:

- a “xxx.emx” file containing the UML2 specification of the information model or of the interface operations; those files have been created using the RSM tool
- a “xxx_HTML.zip” file containing the equivalent information in HTML format.

There are two exceptions to this principle:

- the IA for the Framework DDP (TMF612_FMW) contains in addition a RSM file specifying UML Profile specifications.
- the MSI DDP does not contain an specific information model since the entities used are those from the SID (extended version containing ServiceTemplate and ServiceDefinition).

3.1.3 Major IIS Deliverables

The IIS deliverables are structured in the following way:

- a “wsdl” directory containing the wsdl specification of each operation interface, with one wsdl file per interface (relevant only for the OM-DDP)
- a “xsd” directory containing the schema specifications of the entities and data structures specified in the DM or OM DDPs
- a “xml” directory giving concrete examples illustrating the usage of the MTOSI specifications both on the data or the operations aspects.
- a “xxxHtml.zip” file containing a HTML description of the associated specifications of the DDP.

The table below presents the list of interfaces for the FMW-DDP and for each OM-DDP :

DDP name	Functional Interfaces
TMF864_FMW_XML	Mart, NotificationBroker, NotificationConsumer, NotificationProducer
TMF864_MRI_XML	ResourceInventoryRetrieval, ResourceInventoryUpdate ConnectionRetrieval, EquipmentInventoryRetrieval, FlowDomainRetrieval,

	ManagedElementRetrieval, ManagementDomainRetrieval, MultiLayerSubnetworkRetrieval, OperationsSystemRetrieval, TerminationPointRetrieval, TopologicalLinkRetrieval, TrafficConditioningProfileRetrieval, TransmissionDescriptorRetrieval
TMF864_RP_XML	CommonResourceProvisioning, ConnectionControl, EquipmentProvisioning, FlowDomainControl, GuiCutThroughControl, SoftwareAndDataControl, TerminationPointControl, TopologicalLinkControl, TrafficConditioningProfileControl, TransmissionDescriptorControl
TMF864_RTM_XML	AlarmControl, AlarmHandling, AlarmRetrieval, AsapControl, AsapRetrieval, MaintenanceControl, ProtectionControl, ProtectionRetrieval
TMF864_RPM_XML	PerformanceManagementControl, PerformanceManagementRetrieval, ThresholdCrossingAlertControl
TMF864_MSI_XML	ServiceInventoryRetrieval
TMF864_SA_XML	ServiceActivationInterface, ServiceComponentActivationInterface

3.1.4 Joint MTOSI / MTNM Supporting Documents

Few supporting documents present general guidelines, tools or set of terms and as such they are applicable to both MTOSI and MTNM.

3.1.4.1 SD0-1, Dictionary

The document presents the acronyms and the definitions of the essential terms used throughout the different MTOSI documents.

3.1.4.2 SD0-2_Guidelines_BA, SD0-3_Template_BA.dot

The BAs are edited as Word documents, following some guidelines for the editorial presentation of the requirements and use cases and the control of their numbering.
A Word template file (".dot") is available to automate some editorial tasks using Word macros.

3.1.4.3 SD0-4_Guidelines_IA

The purpose of this document is to be the unique design reference for the development of all Information Agreements (IA).

The Unified Modelling Language (UML) is used as the notation for the IA. These guidelines shall ensure that different people can create individual parts of the Information Agreement with the same "look and feel" which can then be combined into an MTOSI Release.

3.1.4.4 SD0-5_Guidelines_WebServices

This supporting document captures all the design guidelines applied to the development of the DDP Web Services Interface Implementation Specifications (IIS). The intent of this document is to be an contributor helper's guide for the generation of the MTOSI WS IIS for any given DDP.

3.1.4.5 SD0-6_Template_SD.dot

This Word template document helps the edition of SDs documents

3.1.5 MTOSI Supporting Documents

In cases where the main MTOSI deliverables need to supply the same information, it was decided to move the common information into the set of supporting documents listed below. This allows for updates to the common information in a single place without needing to coordinate updates in several of the main deliverables.

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3.1.5.1 SD2-2_XML_ImplementationUserGuide.doc

This document provides an overview of the MTOSI data and service interface models and their associated XML definitions, which are described and captured in the various MTOSI Delivery Document Packages (DDPs).

This document provides behavior descriptions and usage guidelines that:

1. require a rather long description
2. require supporting diagrams
3. appear repeatedly throughout the XML.

3.1.5.2 SD2-4_TransportIndependentExampleOfMTOSI.zip

This zip file contains a Word document and an XML file.
The Word document presents a concrete example of a very small network and shows how inventory information is handled by the MTOSI XML. The XML inventory information is available in the appendix file "getInventoryResponse.xml".

3.1.5.3 SD2-5_Communication_Styles

This document outlines the top down approach followed by MTOSI to define the technology neutral abstract interfaces and the various technology specific concrete solutions set.

3.1.5.4 SD2-6_VersioningAndExtensibility

This supporting document addresses versioning and extendibility mechanisms adopted by MTOSI.

Through the versioning mechanism it is possible to evolve the interfaces in a controlled manner maintaining backward and forward compatibility for a class of changes considered minor.

The extendibility mechanism allows a vendor (and\or an MTOSI architect) to tailor the specification to deal with future or specific concerns not addressed in the most current MTOSI release (latest version of the service interfaces).

3.1.5.5 SD2-7_ObjectNaming

This MTOSI Supporting Document provides a normative and informative description of the MTOSI Object Naming. It should be read in conjunction with:

- The MTNM Supporting document SD1-25 ObjectNaming
- The Framework BA, IA and IIS.

3.1.5.6 SD2-9_UsingJMSAsMTOSITransport

This document illustrates how the JMS API can be used as transport mechanism supporting the MTOSI application level requirements in terms of communication and operation exchange.

It gives an introduction to the JMS concepts and then it gives the bindings rules and recommendations to use JMS to support MTOSI operations.

3.1.5.7 SD2-10_ExampleUsingJMS

This document illustrates how the rules and recommendations on how to use JMS as MTOSI transport can be exercised, using the support of a concrete example.
The usage of the JMS API will be demonstrated using code snippets.

3.1.5.8 SD2-12_MTOSI_Inventory_Layout

The document includes a diagram and associated explanation for the MTOSI inventory layout structure. This layout structure is used to transport inventory data via the various bulk inventory operations.

3.1.5.9 SD2-14, Attribute Value Change & State Change Notifications

The document lists the minimum set of attributes for which the OS is expected to provide Attribute Value Change (AVC) and State Change (SC) notifications.

3.1.5.10 SD2-16_UsingHTTPAsMTOSITransport

This document illustrates how MTOSI messages can be encapsulated in SOAP and transported over HTTP in support of the MTOSI application level requirements for communication and operation exchange.

It gives an introduction to the HTTP SOAP concepts and then it gives the bindings rules and recommendations to use SOAP encapsulated message over HTTP to support MTOSI operations.

3.1.5.11 SD2-17_MTOSI_EnhancedResourceStates

The document presents how the static states Planned, Installed Retired are replaced by complex dynamic super-states ‘Planning’ ‘Installing’ ‘Retiring’ each refined into a number of substates.

3.1.5.12 SD2-18_VPNServiceModel.xls

The document presents a simple example illustrating the key concepts of the Service Activation interface.

3.1.5.13 SD2-19_VoIPServiceDefinition

This document contains a Service Definition example for Voice over IP to be used in the context of the overall TM Forum framework for Service Activation. The VoIP Service Definition description in this document will be used for the creation of a formal VoIP Service Definition expressed in XMLSchema. This document also includes an example of a Service Template and shows how it fits into the overall product/service context.

3.1.5.14 SD2-20_EquipmentModel

This document presents some technical aspects related to the equipment model through its various manageable physical components of the Network Element (circuit packs or field replaceable units or also, fan, fuse panel, power supply, etc.).
The document presents the class definitions, the naming structure, the protection aspects and also supplies different illustrative examples.

3.1.5.15 SD2-21_Ethernet_Service_Specification.pdf

This document provides a recommendation on how to use MTOSI Service Management activation interfaces for the provisioning of broadband Ethernet services

3.1.6 MTNM Supporting Documents

For the resource management aspects, MTOSI is based on the MTNM model and, as such, MTOSI relies on much of the background information in the MTNM supporting documents. This section describes how each of the MTNM supporting documents is to be used for MTOSI Release 2.0.

3.1.6.1 SD1-1_additionalInfoUsage

This supporting document specifies the standardized *additionalInfo* parameters that can be used for MTNM managed object classes.

3.1.6.2 SD1-3_BundledSNC

This document illustrates how the concept of bundled SNC service involves the establishment of a bundle of connections (i.e., not necessarily of the same layerRate) from one point in a subnetwork to another. The bundled SNC service is treated as a single SNC.

3.1.6.3 SD1-5_ATMConformanceDefinitions

This document shows different tables representing the mapping Service Category and Conformance Definition values against Supported Traffic Descriptor Combinations for ATM: UNI 4.1, UNI 4.0, UNI 3.1

3.1.6.4 SD1-6, Examples for contained TPs different states of usage

The document provides examples of configurations explaining the expected output of the operations *getContainedPotentialTP(Name)s*, *getContainedInUseTP(Name)s* and *getContainedCurrentTP(Name)s*. MTOSI reuses the MTNM behavior as-is.

3.1.6.5 SD1-7_DSLOverview

This very comprehensive document provides an overview of standard DSL technology and the support of DSL lines by the interface model.

3.1.6.6 SD1-8, Coding of X.731 and M.3100 State and Status Information

The document specifies how X.731 and M.3100 state and status information MUST be mapped to the Interface information model if supported by an OS

3.1.6.7 SD1-13_guiCutThrough

3.1.6.8 SD1-14, Inverse Multiplexing (IM) Overview

The document describes inverse multiplexing and how it is supported in the MTNM model. MTOSI reuses this document “as-is”.

3.1.6.9 SD1-16, Layered Parameters

The document lists all the general and technology-specific transmission parameters for MTNM. MTOSI reuses this document “as-is”.

3.1.6.10 SD1-17, Layer Rates

The document lists all the layer rates for MTNM. MTOSI reuses this document “as-is”.

3.1.6.11 SD1-18, Functional Modeling Concepts

The document extends the layered concepts of ITU-T Recommendation G.805 using encapsulations identified from real network element behavior to provide modeling and performance advantages for information transfer between the management systems. This document provides an explanation of the layering and encapsulation and then builds a view of the use of the layered components in a large number of network scenarios. MTOSI reuses this document “as-is”, with the exception that references to “NMS” should be replaced “Requesting OS” and references to “EMS” should be replaced by “Target OS”, i.e., an OS that fulfills the request of another OS.

3.1.6.12 SD1-19, Location Identification

The document defines and provides examples for terms related to the location of alarms and performance monitoring. Since MTOSI Release 1.1 does not cover performance management, only the sections entitled Probable Causes and Layered Parameters pertain to MTOSI.

3.1.6.13 SD1-20, Maintenance Commands

The document presents figures showing the maintenance operation signal flow for some of the maintenance commands supported by the NML-EML interface.

3.1.6.14 SD1-22, Modeling Components

The document includes diagram components from SD1-18, Functional Modeling Concepts. The components are to be used in proposals to update SD1-18, with the goal of using a single consistent convent for all the diagrams in SD1-18. MTOSI reuses this document “as-is”.

3.1.6.15 SD1-23_ModesOfOperation

This document illustrates how, in the context of the Interface, the target OS can manage the SNCs using different rules that best suit the particular application or architecture of the target OS. The target OS’ ehavior regarding SNCs is called an “SNC management mode of operation”.

Four different SNC management modes of operation can be used by an target OS. Each target OS operates in any one (but only one) of these four modes.

3.1.6.16 SD1-28, Performance Parameters

The document lists various performance measurement parameters.

3.1.6.17 SD1-29_PGPParameters

This document lists in tabular format all the PGP parameters, giving for each of them its name, its valid values, the PG types to which it is applicable and a description.

3.1.6.18 SD1-30, PM File Format

The document describes the PM file format. Also, text and Excel examples are provided.

3.1.6.19 SD1-31, PM File Format

Shows an example of a PM File format in plain text.

3.1.6.20 SD1-32 PM File Format

Shows an example of a PM File format in xls.

3.1.6.21 SD1-33, Specification of probableCause strings

The document describes the probable causes to be used in MTOSI alarms. This version of the document (i.e., Version 4.0) includes all the probable causes from the Version 3.0 of SD1-33 with a few additions for MTOSI.

3.1.6.22 SD1-34_protectionSwitch

This document illustrates through figures and examples different aspects related to protection switching.

3.1.6.23 SD1-36, SNC and Protection

The document describes the various SNC types and protection schemes. MTOSI reuses this document “as-is”.

3.1.6.24 SD1-37, PM Threshold Types

The document presents a figure illustrating the identification of Trigger/Clear for each threshold type.

3.1.6.25 SD1-41_TPPoolRelationship

This short document illustrates that the relationship between a TPPool and its associated TPs (not GTPs) is an “asymmetric” relationship.

3.1.6.26 SD1-44, Connectionless Technology Management

The document aims at specifying a framework for supporting connectionless technologies from the Interface. While seeking compliance with the generic modelling concepts recommended in ITU-T (G.809, G.8010) this work is initially intended to address the management of Ethernet and related technologies as defined in ITU-T G.8011 and MEF 10. The term “Ethernet” refers to the Ethernet MAC layer (ETH). This model is designed to complement and integrates seamlessly with the existing ITU-T G.805 based MTNM release 3.0 interface aimed at connection oriented technologies. Similar modelling activities from ITU-T (Q.840.1) and MEF Phase 1 (MEF 7) have been considered for consistency.

3.1.6.27 SD1-45_ASONControlPlaneManagement-Primer

This document has been written to assist in the understanding of the scope of application and features of release 3.5 of the MTNM interface from a Control Plane management perspective. This document provides a network operations scenario based walk-through of the use of release 3.5 of the MTNM interface.

3.1.6.28 SD1-46_ASONControlPlaneManagement-Scenarios

This document has been written to assist in the understanding of the scope of application and features of MTNM version 3.5 interface from a Control Plane management perspective. The purpose of this document is to describe, through a set of figures, a number of possible scenarios that can be applicable when ASON/ASTN subnetwork is managed.

4 Administrative Appendix

4.1 Document History

Version History (This document)

Version Number	Date Modified	Modified by:	Description of changes
0.1	June 2005	MTOSI Team	Initial version
0.2	27-July 2005	Tina O'Sullivan	Updated version numbers, and other items prior to Member Evaluation.
0.3	Dec. 2005	Stephen Fratini	Updated the version number of the various SD after the Member Evaluation.
1.0	Oct. 2006	Michel Besson	MTOSI Release 1.1 Notes
1.1	Dec 2006	Michel Besson	Aligned document versions
1.2	Dec 2006	Tina O'Sullivan	Final modifications prior to ME web posting.
1.3	Mar 2007	Tina O'Sullivan	Updated document status, to reflect end of Member Evaluation.
2.0	November 2007	Michel Besson	Initial new version
2.1	May 2008	Michel Besson	Added: - the IA for each DDP, - the IIS for each DDP, - the MSI DDP - and several SDs for the full MTOSI 2.0 release.
2.2	March 2009	Michel Besson	Corrections from ME comments
2.3	September 2011	Michel Besson	MTOSI Release 2.1 Notes
2.4	April 2013	Michel Besson	MTOSI Release 3.0 Notes

Release History (MTOSI Release)

Release Number	Date Modified	Modified by:	Description of changes
1.0	June 2005	MTOSI Team	Initial version
1.1	October 2006	MTOSI Team	• Bug fixes • Support for HTTP • MEPs for synchronous communication • Reorganisation of the SS
2.0 BA	November 2007	MTOSI Team	• Service activation management • Resource provisioning and activation • Management of connectionless networks • Performance management and maintenance commands • Inventory updates, multi-event inventory notifications and enhanced inventory retrieval (attribute value matching) • Enhanced model for resource states • Multi-action and request transactions • Division of deliverables into Document Delivery Packages (DDPs) as shown in the next subsection.
2.0ME	May 2008	MTOSI Team	• Added the Service Inventory DDP • For all DDPs, added the IA and the XML IIS • Added several SDs
2.0 final	March 2009	MTOSI Team	• Corrections from ME comments
2.1	September 2011	MTOSI team	• Bug fixes • New SD on Ethernet Service Specification
3.0	April 2013	MMUG team	• Control Plane (adapted

			from MTNM 3.5),
			• Harmonized Probable Cause Specification (TMF063 will replace SD1-33)
			• MTOSI 2.1 bug fixes
			• New items:
			  • Protection Group Provisioning (based on earlier PBB-TE work)
			  • Connectionless Termination (enhanced explanations but no model updates)

4.2 Company Contact Details

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