

# CORBA NBI Developer Guide

## Contents

- 9 CORBA NBI Developer Guide
  - 9.1 CORBA NBI Developer Guide (Alarm)
    - 9.1.1 About This Document
    - 9.1.2 Guideline
    - 9.1.2.1 What Is Northbound Model
    - 9.1.2.2 What Is NBI
    - 9.1.2.3 Getting Started
    - 9.1.2.4 Example
    - 9.1.3 Overview
      - 9.1.3.1 Introduction
      - 9.1.3.2 Alarm Management
      - 9.1.3.3 Interface Model
    - 9.1.4 emsMgr\_I
      - 9.1.4.1.1 getAllEMSAndMEActiveAlarms
      - 9.1.4.1.2 getAllEMSSystemActiveAlarms
      - 9.1.4.1.3 acknowledgeAlarms
      - 9.1.4.1.4 unacknowledgeAlarms
      - 9.1.4.1.5 clearAlarms
      - 9.1.4.1.6 getAllSecondlyAlarms
      - 9.1.4.1.7 setAlarmReportingOff
      - 9.1.4.1.8 getAlarmAffectedServiceNames
      - 9.1.4.1.9 setAlarmReportingOn
      - 9.1.4.1.10 redefineAlarmData
      - 9.1.4.1.11 getAllRedefineAlarmDatas
      - 9.1.4.1.12 getAllAlarmStaticInfo
      - 9.1.4.1.13 getAllHistoryAlarmsByFTP
      - 9.1.4.1.14 getHistoryAlarmDataByPull
    - 9.1.4.2 EquipmentInventoryMgr\_I
      - 9.1.4.2.1 setAlarmReportingOn
      - 9.1.4.2.2 setAlarmReportingOff
    - 9.1.4.3 ManagedElementMgr\_I
      - 9.1.4.3.1 getAllActiveAlarms
      - 9.1.4.3.2 getAllAlarmsByFTP
      - 9.1.4.3.3 getActiveAlarms
    - 9.1.4.4 MaintenanceMgr\_I
      - 9.1.4.4.1 setServiceAlarmReportingOn
      - 9.1.4.4.2 setServiceAlarmReportingOff
    - 9.1.5 Information Model
      - 9.1.5.1 emsMgr
      - 9.1.5.1.1 AlarmStaticInfo\_T

- 9.1.5.1.2 [RedefineAlarmData\\_T](#)
- 9.1.5.1.3 [RedefineAlarmData\\_T::redefineInfo](#)
- 9.1.5.1.4 [QueryRedefineAlarmData\\_T](#)
- 9.1.6 [Format of Notification Events](#)
  - 9.1.6.1 [NT\\_ALARM Event Format](#)
    - 9.1.6.1.1 [Header Format of the NT\\_ALARM Event](#)
    - 9.1.6.1.2 [Format of the NT\\_ALARM Event \(filterable\\_data\)](#)
    - 9.1.6.1.3 [Format of the NT\\_ALARM Event \(remainder\\_of\\_body\)](#)
  - 9.1.6.2 [NT\\_TCA Event Format](#)
    - 9.1.6.2.1 [Header Format of the NT\\_TCA Event](#)
    - 9.1.6.2.2 [Format of the NT\\_TCA Event \(filterable\\_data\)](#)
    - 9.1.6.2.3 [Format of the NT\\_TCA Event \(remainder\\_of\\_body\)](#)
  - 9.1.6.3 [NT\\_ALARM\\_UPDATED Event Format](#)
    - 9.1.6.3.1 [Header Format of the NT\\_ALARM\\_UPDATED Event](#)
    - 9.1.6.3.2 [Format of the NT\\_ALARM\\_UPDATED Event \(filterable\\_data\)](#)
    - 9.1.6.3.3 [Format of the NT\\_ALARM\\_UPDATED Event \(remainder\\_of\\_body\)](#)
- 9.1.7 [Notification Event Samples](#)
  - 9.1.7.1 [NT\\_ALARM Event Sample](#)
  - 9.1.7.2 [NT\\_TCA Event Sample](#)
  - 9.1.7.3 [NT\\_ALARM\\_UPDATED Event Sample](#)
- 9.1.8 [Object Naming Rules](#)
  - 9.1.8.1 [EMS](#)
  - 9.1.8.2 [ManagedElement](#)
  - 9.1.8.3 [EquipmentHolder](#)
  - 9.1.8.4 [Equipment](#)
- 9.1.9 [AdditionalInfo Description](#)
  - 9.1.9.1 [NT\\_ALARM](#)
  - 9.1.9.2 [NT\\_TCA](#)
  - 9.1.9.3 [NT\\_ALARM\\_UPDATED](#)
- 9.1.10 [Alarm Cause List](#)
- 9.1.11 [IDL Description](#)
- 9.1.12 [Description of Unimplemented and Customized Interfaces](#)
- 9.1.13 [Layer Rate Description](#)
- 9.1.14 [Glossary](#)
- 9.1.15 [Acronyms and Abbreviations](#)
- 9.2 [CORBA NBI Developer Guide \(Configuration\)](#)
  - 9.2.1 [About This Document](#)
  - 9.2.2 [Guideline](#)
    - 9.2.2.1 [What Is Northbound Model](#)
    - 9.2.2.2 [What Is NBI](#)
    - 9.2.2.3 [Getting Started](#)
    - 9.2.2.4 [Example](#)
    - 9.2.3 [Overview](#)
    - 9.2.3.1 [Introduction](#)
    - 9.2.3.2 [Configuration Management](#)
    - 9.2.4 [Interface Model](#)

9.2.4.1 [Common\\_I](#)  
9.2.4.1.1 [setUserLabel](#)  
9.2.4.1.2 [setNativeEMSName](#)  
9.2.4.1.3 [setOwner](#)  
9.2.4.1.4 [setAdditionalInfo](#)  
9.2.4.2 [EquipmentInventoryMgr\\_I](#)  
9.2.4.2.1 [provisionEquipment](#)  
9.2.4.2.2 [unprovisionEquipment](#)  
9.2.4.3 [ManagedElementMgr\\_I](#)  
9.2.4.3.1 [setTPData](#)  
9.2.4.3.2 [createCrossConnections](#)  
9.2.4.3.3 [deleteCrossConnections](#)  
9.2.4.3.4 [activateCrossConnections](#)  
9.2.4.3.5 [deactivateCrossConnections](#)  
9.2.4.3.6 [createFTP](#)  
9.2.4.3.7 [deleteFTP](#)  
9.2.4.3.8 [modifyFTPMembers](#)  
9.2.4.3.9 [modifyCrossConnection](#)  
9.2.4.4 [MultiLayerSubnetworkMgr\\_I](#)  
9.2.4.4.1 [createSNC](#)  
9.2.4.4.2 [modifySNC](#)  
9.2.4.4.3 [activateSNC](#)  
9.2.4.4.4 [createAndActivateSNC](#)  
9.2.4.4.5 [deactivateSNC](#)  
9.2.4.4.6 [deleteSNC](#)  
9.2.4.4.7 [deactivateAndDeleteSNC](#)  
9.2.4.4.8 [checkValidSNC](#)  
9.2.4.4.9 [setConjunctionSNC](#)  
9.2.4.4.10 [swapSNC](#)  
9.2.4.4.11 [switchRoute](#)  
9.2.4.4.12 [createPresetRoute](#)  
9.2.4.4.13 [deletePresetRoute](#)  
9.2.4.4.14 [setConjunctionSNCEx](#)  
9.2.4.4.15 [createSharedRoute](#)  
9.2.4.4.16 [deleteSharedRoute](#)  
9.2.4.5 [ProtectionMgr\\_I](#)  
9.2.4.5.1 [performProtectionCommand](#)  
9.2.4.5.2 [performWDMProtectionCommand](#)  
9.2.4.5.3 [createProtectionGroup](#)  
9.2.4.5.4 [setProtectionGroup](#)  
9.2.4.5.5 [deleteProtectionGroup](#)  
9.2.4.5.6 [modifyProtectionGroup](#)  
9.2.4.6 [HW\\_MSTPInventoryMgr\\_I](#)  
9.2.4.6.1 [setMstpEndPoint](#)  
9.2.4.6.2 [createVirtualBridge](#)  
9.2.4.6.3 [deleteVirtualBridge](#)

9.2.4.6.4 [createVLAN](#)  
9.2.4.6.5 [deleteVLAN](#)  
9.2.4.6.6 [addVLANForwardPort](#)  
9.2.4.6.7 [delVLANForwardPort](#)  
9.2.4.6.8 [setVLANData](#)  
9.2.4.6.9 [addBindingPath](#)  
9.2.4.6.10 [delBindingPath](#)  
9.2.4.6.11 [setLCASSState](#)  
9.2.4.6.12 [createQosRule](#)  
9.2.4.6.13 [setQosRule](#)  
9.2.4.6.14 [createFlow](#)  
9.2.4.6.15 [deleteQosRule](#)  
9.2.4.6.16 [setFlow](#)  
9.2.4.6.17 [deleteFlow](#)  
9.2.4.6.18 [createLinkAggregationGroup](#)  
9.2.4.6.19 [modifyLinkAggregationGroup](#)  
9.2.4.6.20 [deleteLinkAggregationGroup](#)  
9.2.4.6.21 [setMstpEndPointShapingQueue](#)  
9.2.4.6.22 [setSTProtocolParam](#)  
9.2.4.6.23 [setSTBridgeParam](#)  
9.2.4.6.24 [setSTPortParam](#)  
9.2.4.7 [HW\\_MSTPProtectionMgr\\_I](#)  
9.2.4.7.1 [performRPRProtectionCommand](#)  
9.2.4.7.2 [performAtmPGProtectionCommand](#)  
9.2.4.7.3 [modifyRPRLinkPara](#)  
9.2.4.7.4 [modifyAtmProtectGroup](#)  
9.2.4.8 [HW\\_MSTPSERVICEMgr\\_I](#)  
9.2.4.8.1 [createEthService](#)  
9.2.4.8.2 [deleteEthService](#)  
9.2.4.8.3 [createAtmService](#)  
9.2.4.8.4 [deleteAtmService](#)  
9.2.4.8.5 [activateAtmService](#)  
9.2.4.8.6 [deactivateAtmService](#)  
9.2.4.9 [TrafficDescriptorMgr\\_I](#)  
9.2.4.9.1 [activateTrafficDescriptor](#)  
9.2.4.9.2 [deactivateTrafficDescriptor](#)  
9.2.4.9.3 [HW\\_createTrafficDescriptor](#)  
9.2.4.9.4 [deleteTrafficDescriptor](#)  
9.2.4.10 [HW\\_controlPlaneMgr\\_I](#)  
9.2.4.10.1 [setSRLG](#)  
9.2.4.11 [EncapsulationLayerLinkMgr\\_I](#)  
9.2.4.11.1 [createELLink](#)  
9.2.4.11.2 [activateELLink](#)  
9.2.4.11.3 [deactivateELLink](#)  
9.2.4.11.4 [deleteELLink](#)  
9.2.4.11.5 [increaseBandwidthOfELLink](#)

9.2.4.11.6 [decreaseBandwidthOfELLLink](#)  
9.2.4.11.7 [setELLLinkLCASState](#)  
9.2.4.12 [FlowDomainMgr\\_I](#)  
9.2.4.12.1 [createFDFr](#)  
9.2.4.12.2 [activateFDFr](#)  
9.2.4.12.3 [deactivateFDFr](#)  
9.2.4.12.4 [deleteFDFr](#)  
9.2.4.12.5 [performEthernetOAMCommand](#)  
9.2.4.12.6 [createFTP](#)  
9.2.4.12.7 [deleteFTP](#)  
9.2.4.13 [MaintenanceMgr\\_I](#)  
9.2.4.13.1 [performMaintenanceOperation](#)  
9.2.4.13.2 [enablePRBSTest](#)  
9.2.4.13.3 [disablePRBSTest](#)  
9.2.4.13.4 [createMaintenanceDomain](#)  
9.2.4.13.5 [createMaintenanceAssociation](#)  
9.2.4.13.6 [createMaintenancePoints](#)  
9.2.4.13.7 [deleteMaintenanceDomain](#)  
9.2.4.13.8 [deleteMaintenanceAssociation](#)  
9.2.4.13.9 [deleteMaintenancePoint](#)  
9.2.4.13.10 [setOAMPARAMETERS](#)  
9.2.4.14 [TCPProfileMgr\\_I](#)  
9.2.4.14.1 [HW\\_createTCPProfile](#)  
9.2.4.14.2 [HW\\_modifyTCPProfile](#)  
9.2.4.14.3 [deleteTCPProfile](#)  
9.2.4.14.4 [assignTrafficConditioningProfile](#)  
9.2.4.14.5 [deassignTrafficConditioningProfile](#)  
9.2.4.15 [Session\\_I](#)  
9.2.4.15.1 [ping](#)  
9.2.4.15.2 [endSession](#)  
9.2.4.16 [HW\\_securityMgr\\_I](#)  
9.2.4.16.1 [modifyPassword](#)  
9.2.4.17 [HW\\_VPNMgr\\_I](#)  
9.2.4.17.1 [createMFDFr](#)  
9.2.4.17.2 [deleteMFDFr](#)  
9.2.4.17.3 [activateMFDFr](#)  
9.2.4.17.4 [deactivateMFDFr](#)  
9.2.4.17.5 [modifyMFDFr](#)  
9.2.4.17.6 [createTrafficTrunk](#)  
9.2.4.17.7 [deleteTrafficTrunk](#)  
9.2.4.17.8 [activateTrafficTrunk](#)  
9.2.4.17.9 [deactivateTrafficTrunk](#)  
9.2.4.17.10 [modifyTrafficTrunk](#)  
9.2.4.17.11 [createIPCrossConnections](#)  
9.2.4.17.12 [deleteIPCrossConnections](#)  
9.2.4.17.13 [activateIPCrossConnections](#)

9.2.4.17.14 [deactivateIPCrossConnections](#)  
9.2.4.17.15 [modifyIPCrossConnection](#)  
9.2.4.17.16 [createFDFr](#)  
9.2.4.17.17 [activateFDFr](#)  
9.2.4.17.18 [deactivateFDFr](#)  
9.2.4.17.19 [deleteFDFr](#)  
9.2.4.18 [TrailNtwProtMgr\\_I](#)  
9.2.4.18.1 [createTrailNtwProtection](#)  
9.2.4.18.2 [deleteTrailNtwProtection](#)  
9.2.5 [Information Model](#)  
9.2.5.1 [emsMgr](#)  
9.2.5.1.1 [EMS\\_T](#)  
9.2.5.2 [equipment](#)  
9.2.5.2.1 [Equipment\\_T](#)  
9.2.5.2.2 [EquipmentHolder\\_T](#)  
9.2.5.2.3 [EQTCREATEData\\_T](#)  
9.2.5.3 [managedElement](#)  
9.2.5.3.1 [ManagedElement\\_T](#)  
9.2.5.4 [subnetworkConnection](#)  
9.2.5.4.1 [CrossConnect\\_T](#)  
9.2.5.4.2 [TPData\\_T](#)  
9.2.5.4.3 [SubnetworkConnection\\_T](#)  
9.2.5.4.4 [SNCCREATEData\\_T](#)  
9.2.5.4.5 [SNCModifyData\\_T](#)  
9.2.5.4.6 [CreatePresetRouteData\\_T](#)  
9.2.5.4.7 [PresetRoute\\_T](#)  
9.2.5.4.8 [SharedRoute\\_T](#)  
9.2.5.4.9 [CreateSharedRouteData\\_T](#)  
9.2.5.5 [multiLayerSubnetwork](#)  
9.2.5.5.1 [MultiLayerSubnetwork\\_T](#)  
9.2.5.6 [topologicalLink](#)  
9.2.5.6.1 [TopologicalLink\\_T](#)  
9.2.5.7 [terminationPoint](#)  
9.2.5.7.1 [TerminationPoint\\_T](#)  
9.2.5.8 [protection](#)  
9.2.5.8.1 [ProtectionGroup\\_T](#)  
9.2.5.8.2 [SwitchData\\_T](#)  
9.2.5.8.3 [WDMProtectionGroup\\_T](#)  
9.2.5.8.4 [WDMSwitchData\\_T](#)  
9.2.5.8.5 [EProtectionGroup\\_T](#)  
9.2.5.8.6 [ESwitchData\\_T](#)  
9.2.5.8.7 [IPProtectionGroup\\_T](#)  
9.2.5.8.8 [IPSwitchData\\_T](#)  
9.2.5.8.9 [PGPCREATEData\\_T](#)  
9.2.5.8.10 [PGPModifyData\\_T](#)  
9.2.5.9 [HW\\_mstpInventory](#)

9.2.5.9.1 [HW\\_MSTPEndPoint\\_T](#)  
9.2.5.9.2 [HW\\_VirtualBridge\\_T](#)  
9.2.5.9.3 [HW\\_VirtualLAN\\_T](#)  
9.2.5.9.4 [HW\\_ForwardEndPoint\\_T](#)  
9.2.5.9.5 [HW\\_MSTPBindingPath\\_T](#)  
9.2.5.9.6 [HW\\_QosRule\\_T](#)  
9.2.5.9.7 [HW\\_Flow\\_T](#)  
9.2.5.9.8 [HW\\_LinkAggregationGroup\\_T](#)  
9.2.5.9.9 [HW\\_LAGBranchPort\\_T](#)  
9.2.5.9.10 [HW\\_SpanningTree\\_T](#)  
9.2.5.9.11 [HW\\_STCurrentPort\\_T](#)  
9.2.5.9.12 [ShapingQueue](#)  
9.2.5.10 [HW\\_mstpProtection](#)  
9.2.5.10.1 [HW\\_RPRNNode\\_T](#)  
9.2.5.10.2 [HW\\_RPRTopoInfo\\_T](#)  
9.2.5.10.3 [HW\\_RPRSwitchData\\_T](#)  
9.2.5.10.4 [HW\\_AtmProtectGroup\\_T](#)  
9.2.5.10.5 [HW\\_AtmServiceProtectPair\\_T](#)  
9.2.5.10.6 [HW\\_AtmPGSwitchData\\_T](#)  
9.2.5.10.7 [HW\\_AtmPGSingleEndSwitchPara\\_T](#)  
9.2.5.10.8 [HW\\_RPRLinkInfo\\_T](#)  
9.2.5.11 [HW\\_mstpService](#)  
9.2.5.11.1 [HW\\_EthServiceTP\\_T](#)  
9.2.5.11.2 [HW\\_EthService\\_T](#)  
9.2.5.11.3 [HW\\_AtmService\\_T](#)  
9.2.5.11.4 [HW\\_AtmServiceTP\\_T](#)  
9.2.5.11.5 [HW\\_EthServiceCreateData\\_T](#)  
9.2.5.11.6 [HW\\_AtmServiceCreateData\\_T](#)  
9.2.5.12 [trafficDescriptor](#)  
9.2.5.12.1 [TrafficDescriptor\\_T](#)  
9.2.5.12.2 [TDCreateData\\_T](#)  
9.2.5.13 [encapsulationLayerLink](#)  
9.2.5.13.1 [EncapsulationLayerLink\\_T](#)  
9.2.5.13.2 [ELLinkCreateData\\_T](#)  
9.2.5.14 [flowDomain](#)  
9.2.5.14.1 [FlowDomain\\_T](#)  
9.2.5.14.2 [FlowDomainFragment\\_T](#)  
9.2.5.14.3 [EthernetOAMPoint\\_T](#)  
9.2.5.14.4 [EthernetOAMOperation\\_T](#)  
9.2.5.14.5 [EthernetOAMParamer\\_T](#)  
9.2.5.14.6 [EthernetLTTestResult\\_T](#)  
9.2.5.14.7 [FDFrCreateData\\_T](#)  
9.2.5.14.8 [FTPCreateData\\_T](#)  
9.2.5.15 [HW\\_controlPlane](#)  
9.2.5.15.1 [HW\\_SnppLink\\_T](#)  
9.2.5.15.2 [HW\\_Capacity\\_T](#)

9.2.5.16 [maintenanceOps](#)  
9.2.5.16.1 [CurrentMaintenanceOperation\\_T](#)  
9.2.5.16.2 [PRBSTestResult\\_T](#)  
9.2.5.16.3 [PRBSTestParameter\\_T](#)  
9.2.5.16.4 [SampleResult\\_T](#)  
9.2.5.16.5 [TestDuration\\_T](#)  
9.2.5.16.6 [HW\\_MaintenanceDomain\\_T](#)  
9.2.5.16.7 [HW\\_MaintenanceAssociation\\_T](#)  
9.2.5.16.8 [HW\\_MaintenancePoint\\_T](#)  
9.2.5.16.9 [HW\\_MaintenancePointCreateData\\_T](#)  
9.2.5.17 [TopoManagementManager](#)  
9.2.5.17.1 [Node\\_T](#)  
9.2.5.17.2 [Position\\_T](#)  
9.2.5.18 [trafficConditioningProfile](#)  
9.2.5.18.1 [HW\\_TrafficClassifier\\_T](#)  
9.2.5.18.2 [HW\\_TCProfile\\_T](#)  
9.2.5.18.3 [TrafficConditioningProfileAssign\\_T](#)  
9.2.5.18.4 [TrafficConditioningProfileDeassign\\_T](#)  
9.2.5.18.5 [HW\\_TCProfileCreateData\\_T](#)  
9.2.5.19 [HW\\_vpnManager](#)  
9.2.5.19.1 [MatrixFlowDomainFragment\\_T](#)  
9.2.5.19.2 [MultipointServiceAttr\\_T](#)  
9.2.5.19.3 [StaticMacAddress\\_T](#)  
9.2.5.19.4 [SplitHorizonGroup\\_T](#)  
9.2.5.19.5 [IPCrossConnection\\_T](#)  
9.2.5.19.6 [TrafficTrunk\\_T](#)  
9.2.5.19.7 [MFDFrModifyData\\_T](#)  
9.2.5.19.8 [TrafficTrunkCreateData\\_T](#)  
9.2.5.19.9 [TrafficTrunkModifyData\\_T](#)  
9.2.5.19.10 [FlowDomainFragment\\_T](#)  
9.2.5.19.11 [FDFrCreateData\\_T](#)  
9.2.5.19.12 [ServerTrailType\\_T](#)  
9.2.5.19.13 [ServerConnectionType\\_T](#)  
9.2.5.20 [trailNtwProtection](#)  
9.2.5.20.1 [TrailNtwProtCreateData\\_T](#)  
9.2.5.20.2 [TrailNtwProtModifyData\\_T](#)  
9.2.5.20.3 [TrailNtwProtection\\_T](#)  
9.2.6 [Supported Notification](#)  
9.2.6.1 [Common\\_I Notification](#)  
9.2.6.2 [EquipmentInventoryMgr\\_I Notifications](#)  
9.2.6.3 [ManagedElementMgr\\_I Notifications](#)  
9.2.6.4 [MultiLayerSubnetworkMgr\\_I Notifications](#)  
9.2.6.5 [ProtectionMgr\\_I Notifications](#)  
9.2.6.6 [HW\\_MSTPInventoryMgr\\_I Notifications](#)  
9.2.6.7 [HW\\_MSTPProtectionMgr\\_I Notifications](#)  
9.2.6.8 [HW\\_MSTPServicesMgr\\_I Notifications](#)

- 9.2.6.9 [TrafficDescriptorMgr\\_I Notifications](#)
- 9.2.6.10 [HW\\_controlPlaneMgr\\_I Notifications](#)
- 9.2.6.11 [EncapsulationLayerLinkMgr\\_I Notifications](#)
- 9.2.6.12 [FlowDomainMgr\\_I Notifications](#)
- 9.2.6.13 [MaintenanceMgr\\_I Notification](#)
- 9.2.6.14 [TCPProfileMgr\\_I Notification](#)
- 9.2.6.15 [HW\\_VPNMgr\\_I Notification](#)
- 9.2.7 [Format of Notification Events](#)
  - 9.2.7.1 [Format of the NT\\_OBJECT\\_CREATION Event](#)
    - 9.2.7.1.1 [Header Format of the NT\\_OBJECT\\_CREATION Event](#)
    - 9.2.7.1.2 [Format of the NT\\_OBJECT\\_CREATION Event \(filterable\\_data\)](#)
    - 9.2.7.1.3 [Format of the NT\\_OBJECT\\_CREATION Event \(remainder\\_of\\_body\)](#)
  - 9.2.7.2 [Format of the NT\\_OBJECT\\_DELETION Event](#)
    - 9.2.7.2.1 [Header Format of the NT\\_OBJECT\\_DELETION Event](#)
    - 9.2.7.2.2 [Format of the NT\\_OBJECT\\_DELETION Event \(filterable\\_data\)](#)
    - 9.2.7.2.3 [Format of the NT\\_OBJECT\\_DELETION Event \(remainder\\_of\\_body\)](#)
  - 9.2.7.3 [Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event](#)
    - 9.2.7.3.1 [Header Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event](#)
    - 9.2.7.3.2 [Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event \(filterable\\_data\)](#)
    - 9.2.7.3.3 [Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event \(remainder\\_of\\_body\)](#)
  - 9.2.7.4 [Format of the NT\\_STATE\\_CHANGE Event](#)
    - 9.2.7.4.1 [Header Format of the NT\\_STATE\\_CHANGE Event](#)
    - 9.2.7.4.2 [Format of the NT\\_STATE\\_CHANGE Event \(filterable\\_data\)](#)
    - 9.2.7.4.3 [Format of the NT\\_STATE\\_CHANGE Event \(remainder\\_of\\_body\)](#)
  - 9.2.7.5 [Format of the NT\\_PROTECTION\\_SWITCH Event](#)
    - 9.2.7.5.1 [Header Format of the NT\\_PROTECTION\\_SWITCH Event](#)
    - 9.2.7.5.2 [Format of the NT\\_PROTECTION\\_SWITCH Event \(filterable\\_data\)](#)
    - 9.2.7.5.3 [Format of the NT\\_PROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)](#)
  - 9.2.7.6 [Format of the NT\\_ATMPROTECTION\\_SWITCH Event](#)
    - 9.2.7.6.1 [Header Format of the NT\\_ATMPROTECTION\\_SWITCH Event](#)
    - 9.2.7.6.2 [Format of the NT\\_ATMPROTECTION\\_SWITCH Event \(filterable\\_data\)](#)
    - 9.2.7.6.3 [Format of the NT\\_ATMPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)](#)
  - 9.2.7.7 [Format of the NT\\_WDMPROTECTION\\_SWITCH Event](#)
    - 9.2.7.7.1 [Header Format of the NT\\_WDMPROTECTION\\_SWITCH Event](#)
    - 9.2.7.7.2 [Format of the NT\\_WDMPROTECTION\\_SWITCH Event \(filterable\\_data\)](#)
    - 9.2.7.7.3 [Format of the NT\\_WDMPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)](#)
  - 9.2.7.8 [Format of the NT\\_RPRPROTECTION\\_SWITCH Event](#)
    - 9.2.7.8.1 [Header Format of the NT\\_RPRPROTECTION\\_SWITCH Event](#)
    - 9.2.7.8.2 [Format of the NT\\_RPRPROTECTION\\_SWITCH Event \(filterable\\_data\)](#)
    - 9.2.7.8.3 [Format of the NT\\_RPRPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)](#)
  - 9.2.7.9 [Format of the NT\\_EPROTECTION\\_SWITCH Event](#)
    - 9.2.7.9.1 [Header Format of the NT\\_EPROTECTION\\_SWITCH Event](#)
    - 9.2.7.9.2 [Format of the NT\\_EPROTECTION\\_SWITCH Event \(filterable\\_data\)](#)
    - 9.2.7.9.3 [Format of the NT\\_EPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)](#)
  - 9.2.7.10 [Format of the NT\\_ROUTE\\_CHANGE Event](#)
    - 9.2.7.10.1 [Header Format of the NT\\_ROUTE\\_CHANGE Event](#)

- 9.2.7.10.2 [Format of the NT\\_ROUTE\\_CHANGE Event \(filterable data\)](#)
- 9.2.7.10.3 [Format of the NT\\_ROUTE\\_CHANGE Event \(remainder of body\)](#)
- 9.2.7.11 [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event](#)
  - 9.2.7.11.1 [Header Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event](#)
  - 9.2.7.11.2 [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event \(filterable data\)](#)
  - 9.2.7.11.3 [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event \(remainder of body\)](#)
- 9.2.7.12 [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event](#)
  - 9.2.7.12.1 [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(header\)](#)
  - 9.2.7.12.2 [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(filterable data\)](#)
  - 9.2.7.12.3 [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(remainder of body\)](#)
- 9.2.7.13 [Format of the NT\\_PRBTEST\\_STATUS Event](#)
  - 9.2.7.13.1 [Header Format of the NT\\_PRBTEST\\_STATUS Event](#)
  - 9.2.7.13.2 [Format of the NT\\_PRBTEST\\_STATUS Event \(filterable data\)](#)
- 9.2.7.14 [Format of the NT\\_HEARTBEAT Event](#)
  - 9.2.7.14.1 [Header Format of the NT\\_HEARTBEAT Event](#)
  - 9.2.7.14.2 [Format of the NT\\_HEARTBEAT Event \(filterable data\)](#)
- 9.2.7.15 [Format of the NT\\_IPPROTECTION\\_SWITCH Event](#)
  - 9.2.7.15.1 [Header Format of the NT\\_IPPROTECTION\\_SWITCH Event](#)
  - 9.2.7.15.2 [Format of the NT\\_IPPROTECTION\\_SWITCH Event \(filterable data\)](#)
  - 9.2.7.15.3 [Format of the NT\\_IPPROTECTION\\_SWITCH Event \(remainder of body\)](#)
- 9.2.8 [Notification Event Samples](#)
  - 9.2.8.1 [NT\\_OBJECT\\_CREATION Event Sample](#)
  - 9.2.8.2 [NT\\_OBJECT\\_DELETION Event Sample](#)
  - 9.2.8.3 [NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event Sample](#)
  - 9.2.8.4 [NT\\_STATE\\_CHANGE Event Sample](#)
  - 9.2.8.5 [NT\\_PROTECTION\\_SWITCH Event Sample](#)
  - 9.2.8.6 [NT\\_ATMPROTECTION\\_SWITCH Event Sample](#)
  - 9.2.8.7 [NT\\_WDMPROTECTION\\_SWITCH Event Sample](#)
  - 9.2.8.8 [NT\\_RPRPROTECTION\\_SWITCH Event Sample](#)
  - 9.2.8.9 [NT\\_EPROTECTION\\_SWITCH Event Sample](#)
  - 9.2.8.10 [NT\\_ASON\\_RESOURCE\\_CHANGE Event Sample](#)
  - 9.2.8.11 [NT\\_PRBTEST\\_STATUS Event Sample](#)
  - 9.2.8.12 [NT\\_ROUTE\\_CHANGE Event Sample](#)
  - 9.2.8.13 [NT\\_HEARTBEAT Event Sample](#)
  - 9.2.8.14 [NT\\_IPPROTECTION\\_SWITCH Event Sample](#)
- 9.2.9 [Object Naming Rules](#)
  - 9.2.9.1 [AID](#)
  - 9.2.9.2 [AtmPG](#)
  - 9.2.9.3 [AtmService](#)
  - 9.2.9.4 [CTP](#)
  - 9.2.9.5 [EMS](#)
  - 9.2.9.6 [EncapsulationLayerLink](#)
  - 9.2.9.7 [EProtectionGroup](#)
  - 9.2.9.8 [Equipment](#)
  - 9.2.9.9 [EquipmentHolder](#)
  - 9.2.9.10 [ERPSPG](#)

- 9.2.9.11 [EthService](#)
- 9.2.9.12 [Flow](#)
- 9.2.9.13 [Flowdomain](#)
- 9.2.9.14 [FlowDomainFragment](#)
- 9.2.9.15 [FTP](#)
- 9.2.9.16 [IFProtectionGroup](#)
- 9.2.9.17 [IPCrossConnection](#)
- 9.2.9.18 [LinkAggregationGroup](#)
- 9.2.9.19 [MaintenanceAssociation](#)
- 9.2.9.20 [MaintenanceDomain](#)
- 9.2.9.21 [ManagedElement](#)
- 9.2.9.22 [MatrixFlowDomainFragment](#)
- 9.2.9.23 [MEP](#)
- 9.2.9.24 [MIP](#)
- 9.2.9.25 [ProtectionGroup](#)
- 9.2.9.26 [ProtectionSubnetwork](#)
- 9.2.9.27 [PTP](#)
- 9.2.9.28 [QosRule](#)
- 9.2.9.29 [RMEP](#)
- 9.2.9.30 [Routing Area](#)
- 9.2.9.31 [RPRNode](#)
- 9.2.9.32 [SNPPLink](#)
- 9.2.9.33 [Subnetwork](#)
- 9.2.9.34 [SubnetworkConnection](#)
- 9.2.9.35 [TCPProfile](#)
- 9.2.9.36 [TopologicalLink](#)
- 9.2.9.37 [TopoSubnetwork](#)
- 9.2.9.38 [TrafficDescriptor](#)
- 9.2.9.39 [TrafficTrunk](#)
- 9.2.9.40 [TunnelPG](#)
- 9.2.9.41 [VirtualBridge](#)
- 9.2.9.42 [WDMPG](#)
- 9.2.9.43 [VLAN](#)
- 9.2.9.44 [XPICGroup](#)
- 9.2.9.45 [TrailNtwProtection](#)
- 9.2.10 [AdditionalInfo Description](#)
- 9.2.10.1 [CrossConnect\\_T](#)
- 9.2.10.2 [CurrentMaintenanceOperation\\_T](#)
- 9.2.10.3 [ELLinkCreateData\\_T](#)
- 9.2.10.4 [EMS\\_T](#)
- 9.2.10.5 [Equipment\\_T](#)
- 9.2.10.6 [EquipmentHolder\\_T](#)
- 9.2.10.7 [EthernetOAMOperation\\_T](#)
- 9.2.10.8 [FDFrCreateData\\_T](#)
- 9.2.10.9 [HW\\_EthService\\_T](#)
- 9.2.10.10 [HW\\_SnppLink\\_T](#)

9.2.10.11 [HW\\_VirtualBridge\\_T](#)  
9.2.10.12 [ManagedElement\\_T](#)  
9.2.10.13 [NT\\_EPROTECTION\\_SWITCH](#)  
9.2.10.14 [NT\\_PROTECTION\\_SWITCH](#)  
9.2.10.15 [NT\\_WDMPROTECTION\\_SWITCH](#)  
9.2.10.16 [ProtectionSubnetwork\\_T](#)  
9.2.10.17 [SNCCreateData\\_T](#)  
9.2.10.18 [SNCModifyData\\_T](#)  
9.2.10.19 [SplitHorizonGroup\\_T](#)  
9.2.10.20 [StaticMacAddress\\_T](#)  
9.2.10.21 [SubnetworkConnection\\_T](#)  
9.2.10.22 [TerminationPoint\\_T](#)  
9.2.10.23 [TopologicalLink\\_T](#)  
9.2.10.24 [FTPCreateData\\_T](#)  
9.2.10.25 [HW\\_STCurrentPort\\_T](#)  
9.2.10.26 [TrafficDescriptor\\_T](#)  
9.2.10.27 [STInfo\\_T](#)  
9.2.10.28 [TrafficConditioningProfileAssign\\_T](#)  
9.2.10.29 [TrafficTrunk\\_T](#)  
9.2.10.30 [STCurrentBridge\\_T](#)  
9.2.11 [IDL\\_Description](#)  
9.2.12 [Description of Unimplemented and Customized Interfaces](#)  
9.2.13 [Layer Rate Description](#)  
9.2.14 [Glossary](#)  
9.2.15 [Acronyms and Abbreviations](#)  
9.3 [CORBA NBI Developer Guide \(Performance\)](#)  
9.3.1 [About This Document](#)  
9.3.2 [Guideline](#)  
9.3.2.1 [What Is Northbound Model](#)  
9.3.2.2 [What Is NBI](#)  
9.3.2.3 [Getting Started](#)  
9.3.2.4 [Example](#)  
9.3.3 [Overview](#)  
9.3.3.1 [Introduction](#)  
9.3.3.2 [Performance Management](#)  
9.3.4 [Interface Model](#)  
9.3.4.1 [PerformanceManagementMgr\\_I](#)  
9.3.4.1.1 [createPMCollectionTask](#)  
9.3.4.1.2 [deletePMCollectionTask](#)  
9.3.4.1.3 [selectPMCollectionTask](#)  
9.3.4.1.4 [getMEPMcapabilities](#)  
9.3.4.1.5 [disablePMData](#)  
9.3.4.1.6 [enablePMData](#)  
9.3.4.1.7 [clearPMData](#)  
9.3.4.1.8 [getAllCurrentPMData](#)  
9.3.4.1.9 [getHistoryPMData](#)

- 9.3.4.1.10 [getHoldingTime](#)
- 9.3.4.1.11 [getTCATPParameter](#)
- 9.3.4.1.12 [getHistoryPMDataByPull](#)
- 9.3.4.1.13 [setTCATPParameter](#)
- 9.3.4.1.14 [createPerformanceMonitoringData](#)
- 9.3.4.1.15 [deletePerformanceMonitoringData](#)
- 9.3.4.1.16 [getPfmInstanceByResource](#)
- 9.3.5 [Information Model](#)
  - 9.3.5.1 [performance](#)
    - 9.3.5.1.1 [HoldingTime\\_T](#)
    - 9.3.5.1.2 [PMParameter\\_T](#)
    - 9.3.5.1.3 [PMMeasurement\\_T](#)
    - 9.3.5.1.4 [PMData\\_T](#)
    - 9.3.5.1.5 [PMThreshold\\_T](#)
    - 9.3.5.1.6 [PMThresholdValue\\_T](#)
    - 9.3.5.1.7 [TCAParameter\\_T](#)
    - 9.3.5.1.8 [TCAParameters\\_T](#)
    - 9.3.5.1.9 [PMTPSelect\\_T](#)
    - 9.3.5.1.10 [CollectTaskInfo\\_T](#)
    - 9.3.5.1.11 [PerformanceCreateInstance\\_T](#)
    - 9.3.5.1.12 [PerformanceMonitoringInstance\\_T](#)
    - 9.3.5.1.13 [PerformanceTemplate\\_T](#)
    - 9.3.5.1.14 [PerformanceCreateResource\\_T](#)
    - 9.3.5.1.15 [PmMonitorConditioning\\_T](#)
    - 9.3.5.1.16 [ActivityStatusEnum\\_T](#)
    - 9.3.5.1.17 [InstanceEnum\\_T](#)
  - 9.3.6 [Format of Notification Events](#)
    - 9.3.6.1 [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event](#)
      - 9.3.6.1.1 [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(header\)](#)
      - 9.3.6.1.2 [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(filterable\\_data\)](#)
      - 9.3.6.1.3 [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(remainder\\_of\\_body\)](#)
    - 9.3.6.2 [Format of the NT\\_PERFORMANCE\\_TASK\\_CHANGE Event](#)
      - 9.3.6.2.1 [Format of the NT\\_PERFORMANCE\\_TASK\\_CHANGE Event \(header\)](#)
      - 9.3.6.2.2 [Format of the NT\\_PERFORMANCE\\_TASK\\_CHANGE Event \(filterable\\_data\)](#)
      - 9.3.6.2.3 [Format of the NT\\_PERFORMANCE\\_TASK\\_CHANGE Event \(remainder\\_of\\_body\)](#)
  - 9.3.7 [Notification Event Samples](#)
    - 9.3.7.1 [NT\\_FILE\\_TRANSFER\\_STATUS Event Sample](#)
    - 9.3.7.2 [NT\\_PERFORMANCE\\_TASK\\_CHANGE Event Sample](#)
  - 9.3.8 [Object Naming Rules](#)
    - 9.3.8.1 [ManagedElement](#)
    - 9.3.8.2 [EquipmentHolder](#)
    - 9.3.8.3 [PTP](#)
    - 9.3.8.4 [CTP](#)
  - 9.3.9 [Performance Parameter List](#)
  - 9.3.10 [IDL Description](#)
  - 9.3.11 [Description of Unimplemented and Customized Interfaces](#)

- 9.3.12 [Layer Rate Description](#)
- 9.3.13 [Glossary](#)
- 9.3.14 [Acronyms and Abbreviations](#)
- 9.4 [CORBA NBI Developer Guide \(Inventory\)](#)
  - 9.4.1 [About This Document](#)
  - 9.4.2 [Guideline](#)
    - 9.4.2.1 [What Is Northbound Model](#)
    - 9.4.2.2 [What Is NBI](#)
    - 9.4.2.3 [Getting Started](#)
    - 9.4.2.4 [Example](#)
    - 9.4.3 [Overview](#)
  - 9.4.3.1 [Introduction](#)
  - 9.4.3.2 [Resource Management](#)
  - 9.4.4 [Interface Model](#)
    - 9.4.4.1 [Common\\_I](#)
      - 9.4.4.1.1 [getCapabilities](#)
      - 9.4.4.1.2 [emsMgr\\_I](#)
      - 9.4.4.1.2.1 [getEMS](#)
      - 9.4.4.1.2.2 [getAllTopLevelSubnetworkNames](#)
      - 9.4.4.1.2.3 [getAllTopLevelSubnetworks](#)
      - 9.4.4.1.2.4 [getAllTopLevelTopologicalLinkNames](#)
      - 9.4.4.1.2.5 [getAllTopLevelTopologicalLinks](#)
      - 9.4.4.1.2.6 [getTopLevelTopologicalLink](#)
      - 9.4.4.1.2.7 [getObjectClockSourceStatus](#)
    - 9.4.4.3 [EquipmentInventoryMgr\\_I](#)
      - 9.4.4.3.1 [getEquipment](#)
      - 9.4.4.3.2 [getAllEquipment](#)
      - 9.4.4.3.3 [getAllEquipmentNames](#)
      - 9.4.4.3.4 [getContainedEquipment](#)
      - 9.4.4.3.5 [getAllSupportedPTPs](#)
      - 9.4.4.3.6 [getAllSupportedPTPNames](#)
      - 9.4.4.3.7 [getAllSupportingEquipment](#)
      - 9.4.4.3.8 [getAllSupportingEquipmentNames](#)
      - 9.4.4.3.9 [getEquipmentStaticInfo](#)
      - 9.4.4.3.10 [getPhysicalLocationInfo](#)
      - 9.4.4.3.11 [getAllEquipmentAdditionalInfo](#)
    - 9.4.4.4 [ManagedElementMgr\\_I](#)
      - 9.4.4.4.1 [getAllManagedElements](#)
      - 9.4.4.4.2 [getAllManagedElementNames](#)
      - 9.4.4.4.3 [getContainingSubnetworkNames](#)
      - 9.4.4.4.4 [getAllPTPs](#)
      - 9.4.4.4.5 [getAllPTPNames](#)
      - 9.4.4.4.6 [getTP](#)
      - 9.4.4.4.7 [getManagedElement](#)
      - 9.4.4.4.8 [getContainedPotentialTPs](#)
      - 9.4.4.4.9 [getContainedPotentialTPNames](#)

9.4.4.4.10 [getContainedInUseTPs](#)  
9.4.4.4.11 [getContainedInUseTPNames](#)  
9.4.4.4.12 [getContainedCurrentTPs](#)  
9.4.4.4.13 [getContainedCurrentTPNames](#)  
9.4.4.4.14 [getContainingTPs](#)  
9.4.4.4.15 [getContainingTPNames](#)  
9.4.4.4.16 [getAllCrossConnections](#)  
9.4.4.4.17 [getNEStaticInfo](#)  
9.4.4.4.18 [getFTPMembers](#)  
9.4.4.4.19 [getAvailableTimeSlot](#)  
9.4.4.5 [MultiLayerSubnetworkMgr\\_I](#)  
9.4.4.5.1 [getAllManagedElements](#)  
9.4.4.5.2 [getAllManagedElementNames](#)  
9.4.4.5.3 [getMultiLayerSubnetwork](#)  
9.4.4.5.4 [getAllTopologicalLinks](#)  
9.4.4.5.5 [getAllTopologicalLinkNames](#)  
9.4.4.5.6 [getAllInternalTopologicalLinks](#)  
9.4.4.5.7 [getAllInternalTopologicalLinkNames](#)  
9.4.4.5.8 [getTopologicalLink](#)  
9.4.4.5.9 [getAllEdgePoints](#)  
9.4.4.5.10 [getAllEdgePointNames](#)  
9.4.4.5.11 [getAllSubnetworkConnections](#)  
9.4.4.5.12 [getAllSubnetworkConnectionNames](#)  
9.4.4.5.13 [getAllSubnetworkConnectionsWithTP](#)  
9.4.4.5.14 [getAllSubnetworkConnectionNamesWithTP](#)  
9.4.4.5.15 [getRoute](#)  
9.4.4.5.16 [getSNC](#)  
9.4.4.5.17 [getSNCsByUserLabel](#)  
9.4.4.5.18 [getSNCsByEndObjectName](#)  
9.4.4.5.19 [getRouteAndTopologicalLinks](#)  
9.4.4.5.20 [getWaveLengthStatusByEndObject](#)  
9.4.4.5.21 [getOrginalRoute](#)  
9.4.4.5.22 [getAllSNCNamesWithHigherOrderSNC](#)  
9.4.4.5.23 [getPresetRoute](#)  
9.4.4.5.24 [getSNCNamesByRouteModificationTime](#)  
9.4.4.5.25 [getRouteAndTopologicalLinksBySNCs](#)  
9.4.4.5.26 [getAllMicrowaveLinksReport](#)  
9.4.4.5.27 [getAllConjunctionSNCs](#)  
9.4.4.5.28 [getConjunctionSNC](#)  
9.4.4.5.29 [getSharedRoute](#)  
9.4.4.5.30 [getOrginalPresetRoute](#)  
9.4.4.5.31 [getServerConnections](#)  
9.4.4.6 [ProtectionMgr\\_I](#)  
9.4.4.6.1 [retrieveSwitchData](#)  
9.4.4.6.2 [retrieveESwitchData](#)  
9.4.4.6.3 [retrieveWDMSwitchData](#)

9.4.4.6.4 [retrieveIPSwitchData](#)  
9.4.4.6.5 [getAllProtectionGroups](#)  
9.4.4.6.6 [getProtectionGroup](#)  
9.4.4.6.7 [getAllProtectedTPNames](#)  
9.4.4.6.8 [getAllPreemptibleTPNames](#)  
9.4.4.6.9 [getAllWDMProtectionGroups](#)  
9.4.4.6.10 [getWDMProtectionGroup](#)  
9.4.4.6.11 [getAllIEProtectionGroups](#)  
9.4.4.6.12 [getEProtectionGroup](#)  
9.4.4.6.13 [getAllIPPProtectionGroups](#)  
9.4.4.6.14 [getIPProtectionGroup](#)  
9.4.4.6.15 [HW\\_getAllERPSProtectionGroups](#)  
9.4.4.6.16 [HW\\_getERPSProtectionGroup](#)  
9.4.4.6.17 [HW\\_getAllIFProtectionGroups](#)  
9.4.4.6.18 [HW\\_getIFProtectionGroup](#)  
9.4.4.6.19 [HW\\_getAllXPICGroups](#)  
9.4.4.6.20 [HW\\_getXPICGroup](#)  
9.4.4.6.21 [getAllProtectionSubnetworks](#)  
9.4.4.6.22 [retrieveFSwitchData](#)  
9.4.4.7 [HW\\_MSTPInventoryMgr\\_I](#)  
9.4.4.7.1 [getAllMstpEndPoints](#)  
9.4.4.7.2 [getAllMstpEndPointNames](#)  
9.4.4.7.3 [getMstpEndPoint](#)  
9.4.4.7.4 [getAllVBs](#)  
9.4.4.7.5 [getAllVBNames](#)  
9.4.4.7.6 [getVirtualBridge](#)  
9.4.4.7.7 [getAllVLANs](#)  
9.4.4.7.8 [getAllVLANNames](#)  
9.4.4.7.9 [getVLAN](#)  
9.4.4.7.10 [getBindingPath](#)  
9.4.4.7.11 [getLCASSState](#)  
9.4.4.7.12 [getAllQosRules](#)  
9.4.4.7.13 [getQosRule](#)  
9.4.4.7.14 [getAllFlows](#)  
9.4.4.7.15 [getAllFlowNames](#)  
9.4.4.7.16 [getFlow](#)  
9.4.4.7.17 [getAllLinkAggregationGroupNames](#)  
9.4.4.7.18 [getAllLinkAggregationGroups](#)  
9.4.4.7.19 [getMstpEndPointShapingQueue](#)  
9.4.4.7.20 [getLinkAggregationGroup](#)  
9.4.4.7.21 [getAllSpanningTreeNames](#)  
9.4.4.7.22 [getAllSpanningTrees](#)  
9.4.4.7.23 [getSpanningTree](#)  
9.4.4.7.24 [getAllContainedInUseTPNames](#)  
9.4.4.7.25 [getAllQosRuleNames](#)  
9.4.4.7.26 [getAvailablePortNames](#)

9.4.4.8 [HW\\_MSTPProtectionMgr\\_I](#)  
9.4.4.8.1 [getAllRPRNode](#)  
9.4.4.8.2 [getRPRNode](#)  
9.4.4.8.3 [getRPRTopoPara](#)  
9.4.4.8.4 [getAllAtmProtectGroup](#)  
9.4.4.8.5 [getAtmProtectGroup](#)  
9.4.4.8.6 [retrieveRPRSwitchData](#)  
9.4.4.8.7 [getAllRPRLinkInfo](#)  
9.4.4.8.8 [retrieveAtmPGSwitchData](#)  
9.4.4.9 [HW\\_MSTPSERVICEMgr\\_I](#)  
9.4.4.9.1 [getAllETHService](#)  
9.4.4.9.2 [getETHService](#)  
9.4.4.9.3 [getAllATMService](#)  
9.4.4.9.4 [getAtmService](#)  
9.4.4.10 [TrafficDescriptorMgr\\_I](#)  
9.4.4.10.1 [HW\\_getAllTrafficDescriptors](#)  
9.4.4.10.2 [HW\\_getAllTrafficDescriptorNames](#)  
9.4.4.10.3 [getTrafficDescriptor](#)  
9.4.4.11 [HW\\_controlPlaneMgr\\_I](#)  
9.4.4.11.1 [getAllRoutingAreaNames](#)  
9.4.4.11.2 [getAllSnppLinks](#)  
9.4.4.11.3 [getAllRoutingNodeNames](#)  
9.4.4.11.4 [getAllSnppNames](#)  
9.4.4.11.5 [getAllContainedSnpNames](#)  
9.4.4.11.6 [getNodeIDByMEName](#)  
9.4.4.11.7 [getMENameByNodeID](#)  
9.4.4.11.8 [getSnppLink](#)  
9.4.4.12 [EncapsulationLayerLinkMgr\\_I](#)  
9.4.4.12.1 [getAllELLLinkNames](#)  
9.4.4.12.2 [getAllELLLinks](#)  
9.4.4.12.3 [getELLLink](#)  
9.4.4.13 [FlowDomainMgr\\_I](#)  
9.4.4.13.1 [getAllFlowDomainNames](#)  
9.4.4.13.2 [getAllFlowDomains](#)  
9.4.4.13.3 [getFlowDomain](#)  
9.4.4.13.4 [getAllFDFrNames](#)  
9.4.4.13.5 [getAllFDFrs](#)  
9.4.4.13.6 [getFDFr](#)  
9.4.4.13.7 [getFDFrServerTrail](#)  
9.4.4.13.8 [getAllEthernetOAMPoint](#)  
9.4.4.14 [MaintenanceMgr\\_I](#)  
9.4.4.14.1 [getActiveMaintenanceOperations](#)  
9.4.4.14.2 [getPRBSTestResult](#)  
9.4.4.14.3 [getAllMaintenanceDomains](#)  
9.4.4.14.4 [getAllMaintenanceAssociations](#)  
9.4.4.14.5 [getAllMaintenancePoints](#)

9.4.4.14.6 [getOAMParameters](#)  
9.4.4.15 [TopoMgr\\_I](#)  
9.4.4.15.1 [getTopoSubnetworkViewInfo](#)  
9.4.4.15.2 [getProtectSubnetworkViewInfo](#)  
9.4.4.15.3 [getViewInfoByTopoSubnetwork](#)  
9.4.4.16 [TCPProfileMgr\\_I](#)  
9.4.4.16.1 [HW\\_getAllTCProfileNames](#)  
9.4.4.16.2 [HW\\_getTCProfile](#)  
9.4.4.16.3 [HW\\_getAllTCProfiles](#)  
9.4.4.16.4 [getTCPProfileAssociatedResouces](#)  
9.4.4.17 [EmsSession\\_I](#)  
9.4.4.17.1 [getSupportedManagers](#)  
9.4.4.17.2 [getManager](#)  
9.4.4.17.3 [getEventChannel](#)  
9.4.4.18 [EmsSessionFactory\\_I](#)  
9.4.4.18.1 [getEmsSession](#)  
9.4.4.19 [Version\\_I](#)  
9.4.4.19.1 [getVersion](#)  
9.4.4.20 [HW\\_VPNMgr\\_I](#)  
9.4.4.20.1 [getAllTrafficTrunksWithME](#)  
9.4.4.20.2 [getAllTrafficTrunkNamesWithME](#)  
9.4.4.20.3 [getAllIPCrossConnections](#)  
9.4.4.20.4 [getAllIPCrossConnectionNames](#)  
9.4.4.20.5 [getAllMFDs](#)  
9.4.4.20.6 [getAllMFDNames](#)  
9.4.4.20.7 [getMFD](#)  
9.4.4.20.8 [getIPCrossConnection](#)  
9.4.4.20.9 [getTrafficTrunk](#)  
9.4.4.20.10 [getTrafficTrunksByNativeEmsName](#)  
9.4.4.20.11 [getAllTrafficTrunkNames](#)  
9.4.4.20.12 [getAllTrafficTrunks](#)  
9.4.4.20.13 [getAllFDFNames](#)  
9.4.4.20.14 [getAllFDFs](#)  
9.4.4.20.15 [getFDF](#)  
9.4.4.20.16 [getFDFRoute](#)  
9.4.4.20.17 [getIPRoutes](#)  
9.4.4.20.18 [getSelfLearningMACAddressTable](#)  
9.4.4.20.19 [getIPRoutesByTrafficTrunks](#)  
9.4.4.20.20 [getFDFRoutes](#)  
9.4.4.21 [TrailNtwProtMgr\\_I](#)  
9.4.4.21.1 [getAllTrailNtwProtections](#)  
9.4.4.21.2 [getTrailNtwProtection](#)  
9.4.4.22 [IPMgr\\_I](#)  
9.4.4.22.1 [getAllBridges](#)  
9.4.4.22.2 [getAllStaticRoutings](#)  
9.4.4.22.3 [getAllVRFs](#)

9.4.4.22.4 [getFDFrVRFs](#)  
9.4.4.22.5 [getAllFRRs](#)  
9.4.4.22.6 [getAllVRRPs](#)  
9.4.5 [Information Model](#)  
9.4.5.1 [emsMgr](#)  
9.4.5.1.1 [EMS\\_T](#)  
9.4.5.1.2 [ClockSourceStatusList\\_T](#)  
9.4.5.2 [equipment](#)  
9.4.5.2.1 [Equipment\\_T](#)  
9.4.5.2.2 [EquipmentHolder\\_T](#)  
9.4.5.2.3 [ObjectAdditionalInfo\\_T](#)  
9.4.5.2.4 [PhysicalLocationInfo\\_T\(Subrack\)](#)  
9.4.5.2.5 [PhysicalLocationInfo\\_T\(Equipment Room\)](#)  
9.4.5.2.6 [PhysicalLocationInfo\\_T\(Rack\)](#)  
9.4.5.3 [managedElement](#)  
9.4.5.3.1 [ManagedElement\\_T](#)  
9.4.5.4 [subnetworkConnection](#)  
9.4.5.4.1 [CrossConnect\\_T](#)  
9.4.5.4.2 [TPData\\_T](#)  
9.4.5.4.3 [SubnetworkConnection\\_T](#)  
9.4.5.4.4 [WaveLengthStatus\\_T](#)  
9.4.5.4.5 [ServerTrail\\_T](#)  
9.4.5.4.6 [PresetRoute\\_T](#)  
9.4.5.5 [multiLayerSubnetwork](#)  
9.4.5.5.1 [MultiLayerSubnetwork\\_T](#)  
9.4.5.5.2 [RouteAndTopologicalLink\\_T](#)  
9.4.5.5.3 [HW\\_ConjunctionSNC\\_T](#)  
9.4.5.6 [topologicalLink](#)  
9.4.5.6.1 [TopologicalLink\\_T](#)  
9.4.5.7 [terminationPoint](#)  
9.4.5.7.1 [TerminationPoint\\_T](#)  
9.4.5.8 [protection](#)  
9.4.5.8.1 [ProtectionGroup\\_T](#)  
9.4.5.8.2 [SwitchData\\_T](#)  
9.4.5.8.3 [WDMProtectionGroup\\_T](#)  
9.4.5.8.4 [WDMSwitchData\\_T](#)  
9.4.5.8.5 [EProtectionGroup\\_T](#)  
9.4.5.8.6 [ESwitchData\\_T](#)  
9.4.5.8.7 [IPProtectionGroup\\_T](#)  
9.4.5.8.8 [IPSwitchData\\_T](#)  
9.4.5.8.9 [HW\\_ERPSProtectionGroup\\_T](#)  
9.4.5.8.10 [HW\\_IFProtectionGroup\\_T](#)  
9.4.5.8.11 [HW\\_XPICGroup\\_T](#)  
9.4.5.8.12 [ProtectionSubnetworkLink\\_T](#)  
9.4.5.8.13 [ProtectionSubnetwork\\_T](#)  
9.4.5.8.14 [IFSwitchData\\_T](#)

9.4.5.9 [HW\\_mstpInventory](#)  
9.4.5.9.1 [HW\\_MSTPEndPoint\\_T](#)  
9.4.5.9.2 [HW\\_VirtualBridge\\_T](#)  
9.4.5.9.3 [HW\\_VirtualLAN\\_T](#)  
9.4.5.9.4 [HW\\_ForwardEndPoint\\_T](#)  
9.4.5.9.5 [HW\\_MSTPBindingPath\\_T](#)  
9.4.5.9.6 [HW\\_QosRule\\_T](#)  
9.4.5.9.7 [HW\\_Flow\\_T](#)  
9.4.5.9.8 [HW\\_LinkAggregationGroup\\_T](#)  
9.4.5.9.9 [HW\\_LAGBranchPort\\_T](#)  
9.4.5.9.10 [HW\\_SpanningTree\\_T](#)  
9.4.5.9.11 [HW\\_STCurrentPort\\_T](#)  
9.4.5.9.12 [ShapingQueue](#)  
9.4.5.10 [HW\\_mstpProtection](#)  
9.4.5.10.1 [HW\\_RPRNode\\_T](#)  
9.4.5.10.2 [HW\\_RPRTopoInfo\\_T](#)  
9.4.5.10.3 [HW\\_RPRSwitchData\\_T](#)  
9.4.5.10.4 [HW\\_AtmProtectGroup\\_T](#)  
9.4.5.10.5 [HW\\_AtmServiceProtectPair\\_T](#)  
9.4.5.10.6 [HW\\_AtmPGSwitchData\\_T](#)  
9.4.5.10.7 [HW\\_AtmPGSingleEndSwitchPara\\_T](#)  
9.4.5.10.8 [HW\\_RPRLinkInfo\\_T](#)  
9.4.5.10.9 [HW\\_AtmPGSingEndPara\\_T](#)  
9.4.5.11 [HW\\_mstpService](#)  
9.4.5.11.1 [HW\\_EthServiceTP\\_T](#)  
9.4.5.11.2 [HW\\_EthService\\_T](#)  
9.4.5.11.3 [HW\\_AtmService\\_T](#)  
9.4.5.11.4 [HW\\_AtmServiceTP\\_T](#)  
9.4.5.12 [trafficDescriptor](#)  
9.4.5.12.1 [TrafficDescriptor\\_T](#)  
9.4.5.12.2 [TDCreateData\\_T](#)  
9.4.5.13 [encapsulationLayerLink](#)  
9.4.5.13.1 [EncapsulationLayerLink\\_T](#)  
9.4.5.14 [flowDomain](#)  
9.4.5.14.1 [FlowDomain\\_T](#)  
9.4.5.14.2 [FlowDomainFragment\\_T](#)  
9.4.5.14.3 [EthernetOAMPoint\\_T](#)  
9.4.5.14.4 [EthernetOAMOperation\\_T](#)  
9.4.5.14.5 [EthernetOAMParamer\\_T](#)  
9.4.5.14.6 [EthernetLTTestResult\\_T](#)  
9.4.5.15 [HW\\_controlPlane](#)  
9.4.5.15.1 [HW\\_SnppLink\\_T](#)  
9.4.5.15.2 [HW\\_Capacity\\_T](#)  
9.4.5.16 [maintenanceOps](#)  
9.4.5.16.1 [CurrentMaintenanceOperation\\_T](#)  
9.4.5.16.2 [PRBSTestResult\\_T](#)

9.4.5.16.3 [PRBSTestParameter\\_T](#)  
9.4.5.16.4 [SampleResult\\_T](#)  
9.4.5.16.5 [TestDuration\\_T](#)  
9.4.5.16.6 [HW\\_MaintenanceDomain\\_T](#)  
9.4.5.16.7 [HW\\_MaintenanceAssociation\\_T](#)  
9.4.5.16.8 [HW\\_MaintenancePoint\\_T](#)  
9.4.5.17 [TopoManagementManager](#)  
9.4.5.17.1 [Node\\_T](#)  
9.4.5.17.2 [Position\\_T](#)  
9.4.5.18 [HW\\_vpnManager](#)  
9.4.5.18.1 [MatrixFlowDomainFragment\\_T](#)  
9.4.5.18.2 [MultipointServiceAttr\\_T](#)  
9.4.5.18.3 [StaticMacAddress\\_T](#)  
9.4.5.18.4 [SplitHorizonGroup\\_T](#)  
9.4.5.18.5 [IPCrossConnection\\_T](#)  
9.4.5.18.6 [TrafficTrunk\\_T](#)  
9.4.5.18.7 [FlowDomainFragment\\_T](#)  
9.4.5.18.8 [SelfLearningMACAddressTable\\_T](#)  
9.4.5.18.9 [SelfLearningMACAddress\\_T](#)  
9.4.5.19 [trafficConditioningProfile](#)  
9.4.5.19.1 [HW\\_TrafficClassifier\\_T](#)  
9.4.5.19.2 [HW\\_TCProfile\\_T](#)  
9.4.5.19.3 [TrafficConditioningProfileAssign\\_T](#)  
9.4.5.19.4 [TrafficConditioningProfileDeassign\\_T](#)  
9.4.5.20 [trailNtwProtection](#)  
9.4.5.20.1 [TrailNtwProtection\\_T](#)  
9.4.5.21 [ipMgr](#)  
9.4.5.21.1 [Bridge\\_T](#)  
9.4.5.21.2 [StaticRouting\\_T](#)  
9.4.5.21.3 [VRF\\_T](#)  
9.4.5.21.4 [VRRPProtection\\_T](#)  
9.4.5.21.5 [FRRProtection\\_T](#)  
9.4.6 [Transmission Parameters](#)  
9.4.6.1 [terminationPoint](#)  
9.4.6.1.1 [LAG Ports](#)  
9.4.6.1.2 [MPPorts](#)  
9.4.6.1.3 [Logical Serial Ports](#)  
9.4.6.1.4 [IMA Ports](#)  
9.4.6.1.5 [Logical VE Ports](#)  
9.4.6.1.6 [Ports on IP Tunnels](#)  
9.4.6.1.7 [Member Ports](#)  
9.4.6.1.8 [Physical PDH Ports in the IP Domain](#)  
9.4.6.1.9 [Physical SDH Ports in the IP Domain](#)  
9.4.6.1.10 [Ethernet Ports in the IP Domain](#)  
9.4.6.1.11 [Microwave IF Ports\(Packet IF\)](#)  
9.4.6.1.12 [Microwave IF Ports\(SDH IF\)](#)

- [9.4.6.1.13 Microwave Radio Ports](#)
- [9.4.6.1.14 PDH Ports in the Transport Domain](#)
- [9.4.6.1.15 SDH Ports in the Transport Domain](#)
- [9.4.6.1.16 WDM Ports in the Transport Domain](#)
- [9.4.6.1.17 MSTP ATM Ports in the Transport Domain](#)
- [9.4.6.1.18 MSTP Ethernet Ports in the Transport Domain](#)
- [9.4.6.1.19 WDM Ethernet Ports in the Transport Domain](#)
- [9.4.6.1.20 WDM Ethernet Trunk Ports in the Transport Domain](#)
- [9.4.6.1.21 WDM CTP Ports in the Transport Domain](#)
- [9.4.6.2 HW\\_vpnManager](#)
  - [9.4.6.2.1 MFDFr \(PWE3\)](#)
  - [9.4.6.2.2 MFDFr \(PWE3\) UNI](#)
  - [9.4.6.2.3 MFDFr \(PWE3\) NNI \(PW\)](#)
  - [9.4.6.2.4 MFDFr \(VPLS\)](#)
  - [9.4.6.2.5 MFDFr \(VPLS\) UNI](#)
  - [9.4.6.2.6 MFDFr \(VPLS\) NNI](#)
  - [9.4.6.2.7 MFDFr \(VPLS\) NNI\(Port\)](#)
  - [9.4.6.2.8 MFDFr \(nativeETH\)](#)
  - [9.4.6.2.9 MFDFr \(nativeETH\) UNI](#)
  - [9.4.6.2.10 MFDFr\(nativeETH\) NNI](#)
  - [9.4.6.2.11 IP Cross-Connections](#)
  - [9.4.6.2.12 Source and Sink Ends of Static Tunnels](#)
  - [9.4.6.2.13 Source and Sink Ends of PW Switches](#)
  - [9.4.6.2.14 Traffic Trunk](#)
  - [9.4.6.2.15 FDFr\(PWE3\)](#)
  - [9.4.6.2.16 Source Ends of FDFrs \(PWE3\)](#)
  - [9.4.6.2.17 Sink Ends of FDFrs \(PWE3\)](#)
  - [9.4.6.2.18 FDFr \(VPLS\)](#)
  - [9.4.6.2.19 Source Ends of FDFrs \(VPLS\)](#)
  - [9.4.6.2.20 Tunnel Trails](#)
  - [9.4.6.2.21 PW Trails](#)
  - [9.4.6.2.22 Source Ends of PW Trails](#)
  - [9.4.6.2.23 MFDFr \(AGGR\)](#)
  - [9.4.6.2.24 Source Ends of MFDFrs \(AGGR\)](#)
  - [9.4.6.2.25 Sink Ends of MFDFrs \(AGGR\)](#)
- [9.4.6.3 trafficConditioningProfile](#)
  - [9.4.6.3.1 Port Policies](#)
  - [9.4.6.3.2 V-UNI Ingress Policies](#)
  - [9.4.6.3.3 V-UNI Egress Policies](#)
  - [9.4.6.3.4 PW Policies](#)
  - [9.4.6.3.5 ATM Policies](#)
  - [9.4.6.3.6 ATM CoS Mapping](#)
  - [9.4.6.3.7 HQoS Policy](#)
  - [9.4.6.3.8 DS Domain Mapping](#)
  - [9.4.6.3.9 CBQoS Policy](#)
  - [9.4.6.3.10 Behavior](#)

#### [9.4.6.3.11 Classification](#)

#### [9.4.6.4 trailNtwProtection](#)

#### [9.4.6.4.1 trailNtwProtection](#)

#### [9.4.6.5 encapsulationLayerLink](#)

#### [9.4.6.5.1 ELL\\_T](#)

#### [9.4.6.6 flowDomain](#)

#### [9.4.6.6.1 FlowDomainFragment](#)

#### [9.4.7 Format of Notification Events](#)

##### [9.4.7.1 Format of the NT\\_OBJECT\\_CREATION Event](#)

###### [9.4.7.1.1 Header Format of the NT\\_OBJECT\\_CREATION Event](#)

###### [9.4.7.1.2 Format of the NT\\_OBJECT\\_CREATION Event \(filterable\\_data\)](#)

###### [9.4.7.1.3 Format of the NT\\_OBJECT\\_CREATION Event \(remainder\\_of\\_body\)](#)

##### [9.4.7.2 Format of the NT\\_OBJECT\\_DELETION Event](#)

###### [9.4.7.2.1 Header Format of the NT\\_OBJECT\\_DELETION Event](#)

###### [9.4.7.2.2 Format of the NT\\_OBJECT\\_DELETION Event \(filterable\\_data\)](#)

###### [9.4.7.2.3 Format of the NT\\_OBJECT\\_DELETION Event \(remainder\\_of\\_body\)](#)

##### [9.4.7.3 Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event](#)

###### [9.4.7.3.1 Header Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event](#)

###### [9.4.7.3.2 Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event \(filterable\\_data\)](#)

###### [9.4.7.3.3 Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event \(remainder\\_of\\_body\)](#)

##### [9.4.7.4 Format of the NT\\_STATE\\_CHANGE Event](#)

###### [9.4.7.4.1 Header Format of the NT\\_STATE\\_CHANGE Event](#)

###### [9.4.7.4.2 Format of the NT\\_STATE\\_CHANGE Event \(filterable\\_data\)](#)

###### [9.4.7.4.3 Format of the NT\\_STATE\\_CHANGE Event \(remainder\\_of\\_body\)](#)

##### [9.4.7.5 Format of the NT\\_PROTECTION\\_SWITCH Event](#)

###### [9.4.7.5.1 Header Format of the NT\\_PROTECTION\\_SWITCH Event](#)

###### [9.4.7.5.2 Format of the NT\\_PROTECTION\\_SWITCH Event \(filterable\\_data\)](#)

###### [9.4.7.5.3 Format of the NT\\_PROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)](#)

##### [9.4.7.6 Format of the NT\\_ATMPROTECTION\\_SWITCH Event](#)

###### [9.4.7.6.1 Header Format of the NT\\_ATMPROTECTION\\_SWITCH Event](#)

###### [9.4.7.6.2 Format of the NT\\_ATMPROTECTION\\_SWITCH Event \(filterable\\_data\)](#)

###### [9.4.7.6.3 Format of the NT\\_ATMPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)](#)

##### [9.4.7.7 Format of the NT\\_WDMPROTECTION\\_SWITCH Event](#)

###### [9.4.7.7.1 Header Format of the NT\\_WDMPROTECTION\\_SWITCH Event](#)

###### [9.4.7.7.2 Format of the NT\\_WDMPROTECTION\\_SWITCH Event \(filterable\\_data\)](#)

###### [9.4.7.7.3 Format of the NT\\_WDMPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)](#)

##### [9.4.7.8 Format of the NT\\_RPRPROTECTION\\_SWITCH Event](#)

###### [9.4.7.8.1 Header Format of the NT\\_RPRPROTECTION\\_SWITCH Event](#)

###### [9.4.7.8.2 Format of the NT\\_RPRPROTECTION\\_SWITCH Event \(filterable\\_data\)](#)

###### [9.4.7.8.3 Format of the NT\\_RPRPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)](#)

##### [9.4.7.9 Format of the NT\\_EPROTECTION\\_SWITCH Event](#)

###### [9.4.7.9.1 Header Format of the NT\\_EPROTECTION\\_SWITCH Event](#)

###### [9.4.7.9.2 Format of the NT\\_EPROTECTION\\_SWITCH Event \(filterable\\_data\)](#)

###### [9.4.7.9.3 Format of the NT\\_EPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)](#)

##### [9.4.7.10 Format of the NT\\_ROUTE\\_CHANGE Event](#)

###### [9.4.7.10.1 Header Format of the NT\\_ROUTE\\_CHANGE Event](#)

- 9.4.7.10.2 [Format of the NT\\_ROUTE\\_CHANGE Event \(filterable data\)](#)
- 9.4.7.10.3 [Format of the NT\\_ROUTE\\_CHANGE Event \(remainder of body\)](#)
- 9.4.7.11 [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event](#)
  - 9.4.7.11.1 [Header Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event](#)
  - 9.4.7.11.2 [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event \(filterable data\)](#)
  - 9.4.7.11.3 [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event \(remainder of body\)](#)
- 9.4.7.12 [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event](#)
  - 9.4.7.12.1 [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(header\)](#)
  - 9.4.7.12.2 [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(filterable data\)](#)
  - 9.4.7.12.3 [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(remainder of body\)](#)
- 9.4.7.13 [Format of the NT\\_PRBTEST\\_STATUS Event](#)
  - 9.4.7.13.1 [Header Format of the NT\\_PRBTEST\\_STATUS Event](#)
  - 9.4.7.13.2 [Format of the NT\\_PRBTEST\\_STATUS Event \(filterable data\)](#)
- 9.4.7.14 [Format of the NT\\_HEARTBEAT Event](#)
  - 9.4.7.14.1 [Header Format of the NT\\_HEARTBEAT Event](#)
  - 9.4.7.14.2 [Format of the NT\\_HEARTBEAT Event \(filterable data\)](#)
- 9.4.7.15 [Format of the NT\\_IPPROTECTION\\_SWITCH Event](#)
  - 9.4.7.15.1 [Header Format of the NT\\_IPPROTECTION\\_SWITCH Event](#)
  - 9.4.7.15.2 [Format of the NT\\_IPPROTECTION\\_SWITCH Event \(filterable data\)](#)
  - 9.4.7.15.3 [Format of the NT\\_IPPROTECTION\\_SWITCH Event \(remainder of body\)](#)
- 9.4.8 [Notification Event Samples](#)
  - 9.4.8.1 [NT\\_OBJECT\\_CREATION Event Sample](#)
  - 9.4.8.2 [NT\\_OBJECT\\_DELETION Event Sample](#)
  - 9.4.8.3 [NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event Sample](#)
  - 9.4.8.4 [NT\\_STATE\\_CHANGE Event Sample](#)
  - 9.4.8.5 [NT\\_PROTECTION\\_SWITCH Event Sample](#)
  - 9.4.8.6 [NT\\_ATMPROTECTION\\_SWITCH Event Sample](#)
  - 9.4.8.7 [NT\\_WDMPROTECTION\\_SWITCH Event Sample](#)
  - 9.4.8.8 [NT\\_RPRPROTECTION\\_SWITCH Event Sample](#)
  - 9.4.8.9 [NT\\_EPROTECTION\\_SWITCH Event Sample](#)
  - 9.4.8.10 [NT\\_ASON\\_RESOURCE\\_CHANGE Event Sample](#)
  - 9.4.8.11 [NT\\_PRBTEST\\_STATUS Event Sample](#)
  - 9.4.8.12 [NT\\_ROUTE\\_CHANGE Event Sample](#)
  - 9.4.8.13 [NT\\_HEARTBEAT Event Sample](#)
  - 9.4.8.14 [NT\\_IPPROTECTION\\_SWITCH Event Sample](#)
- 9.4.9 [Object Naming Rules](#)
  - 9.4.9.1 [AID](#)
  - 9.4.9.2 [AtmPG](#)
  - 9.4.9.3 [AtmService](#)
  - 9.4.9.4 [CTP](#)
  - 9.4.9.5 [EMS](#)
  - 9.4.9.6 [EncapsulationLayerLink](#)
  - 9.4.9.7 [EProtectionGroup](#)
  - 9.4.9.8 [Equipment](#)
  - 9.4.9.9 [EquipmentHolder](#)
  - 9.4.9.10 [ERPSPG](#)

- 9.4.9.11 [EthService](#)
- 9.4.9.12 [Flow](#)
- 9.4.9.13 [Flowdomain](#)
- 9.4.9.14 [FlowDomainFragment](#)
- 9.4.9.15 [FTP](#)
- 9.4.9.16 [IFProtectionGroup](#)
- 9.4.9.17 [IPCrossConnection](#)
- 9.4.9.18 [LinkAggregationGroup](#)
- 9.4.9.19 [MaintenanceAssociation](#)
- 9.4.9.20 [MaintenanceDomain](#)
- 9.4.9.21 [ManagedElement](#)
- 9.4.9.22 [MatrixFlowDomainFragment](#)
- 9.4.9.23 [MEP](#)
- 9.4.9.24 [MIP](#)
- 9.4.9.25 [ProtectionGroup](#)
- 9.4.9.26 [ProtectionSubnetwork](#)
- 9.4.9.27 [PTP](#)
- 9.4.9.28 [QosRule](#)
- 9.4.9.29 [RMEP](#)
- 9.4.9.30 [Routing Area](#)
- 9.4.9.31 [RPRNode](#)
- 9.4.9.32 [SNPPLink](#)
- 9.4.9.33 [Subnetwork](#)
- 9.4.9.34 [SubnetworkConnection](#)
- 9.4.9.35 [TCPProfile](#)
- 9.4.9.36 [TopologicalLink](#)
- 9.4.9.37 [TopoSubnetwork](#)
- 9.4.9.38 [TrafficDescriptor](#)
- 9.4.9.39 [TrafficTrunk](#)
- 9.4.9.40 [TunnelPG](#)
- 9.4.9.41 [VirtualBridge](#)
- 9.4.9.42 [VLAN](#)
- 9.4.9.43 [WDMPG](#)
- 9.4.9.44 [XPICGroup](#)
- 9.4.9.45 [TrailNtwProtection](#)
- 9.4.10 [AdditionalInfo Description](#)
- 9.4.10.1 [CrossConnect\\_T](#)
- 9.4.10.2 [CurrentMaintenanceOperation\\_T](#)
- 9.4.10.3 [ELLinkCreateData\\_T](#)
- 9.4.10.4 [EMS\\_T](#)
- 9.4.10.5 [Equipment\\_T](#)
- 9.4.10.6 [EquipmentHolder\\_T](#)
- 9.4.10.7 [EthernetOAMOperation\\_T](#)
- 9.4.10.8 [FDFrCreateData\\_T](#)
- 9.4.10.9 [HW\\_EthService\\_T](#)
- 9.4.10.10 [HW\\_SnppLink\\_T](#)

- 9.4.10.11 [HW\\_VirtualBridge\\_T](#)
- 9.4.10.12 [ManagedElement\\_T](#)
- 9.4.10.13 [NT\\_EPROTECTION\\_SWITCH](#)
- 9.4.10.14 [NT\\_PROTECTION\\_SWITCH](#)
- 9.4.10.15 [NT\\_WDMPROTECTION\\_SWITCH](#)
- 9.4.10.16 [ProtectionSubnetwork\\_T](#)
- 9.4.10.17 [SNCCreateData\\_T](#)
- 9.4.10.18 [SNCModifyData\\_T](#)
- 9.4.10.19 [SplitHorizonGroup\\_T](#)
- 9.4.10.20 [StaticMacAddress\\_T](#)
- 9.4.10.21 [SubnetworkConnection\\_T](#)
- 9.4.10.22 [TerminationPoint\\_T](#)
- 9.4.10.23 [TopologicalLink\\_T](#)
- 9.4.10.24 [MultipointServiceAttr\\_T](#)
- 9.4.10.25 [TrafficDescriptor\\_T](#)
- 9.4.10.26 [TrafficTrunk\\_T](#)
- 9.4.10.27 [HW\\_STCurrentPort\\_T](#)
- 9.4.10.28 [FlowDomainFragment\\_T](#)
- 9.4.10.29 [TrafficConditioningProfileAssign\\_T](#)
- 9.4.10.30 [STInfo\\_T](#)
- 9.4.10.31 [STCurrentBridge\\_T](#)
- 9.4.10.32 [HW\\_ConjunctionSNC\\_T](#)
- 9.4.10.33 [IPProtectionGroup\\_T](#)
- 9.4.11 [UniqueName Naming Rules](#)
- 9.4.11.1 [Meaning of UniqueName](#)
- 9.4.11.2 [Enabling the UniqueName Naming Rules](#)
- 9.4.11.3 [Objects and Examples Supported by UniqueName](#)
- 9.4.11.4 [Restrictions and Precautions](#)
- 9.4.12 [IDL Description](#)
- 9.4.13 [Description of Unimplemented and Customized Interfaces](#)
- 9.4.14 [Big Data Inventory Query](#)
- 9.4.15 [Layer Rate Description](#)
- 9.4.16 [Glossary](#)
- 9.4.17 [Acronyms and Abbreviations](#)

## 9 CORBA NBI Developer Guide

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The following shows the contents provided in the *CORBA NBI Developer Guide*.

- [\*\*CORBA NBI Developer Guide \(Alarm\)\*\*](#)  
Focusing on the alarm management of the CORBA NBI, this document describes the secondary

development of the NBI from the aspects as follows: basic information, interface function, information model, and interface model.

- **CORBA NBI Developer Guide (Configuration)**

Focusing on the configuration management of the CORBA NBI, this document describes the secondary development of the NBI from the aspects as follows: basic information, interface function, information model, and interface model.

- **CORBA NBI Developer Guide (Performance)**

Focusing on the performance management of the CORBA NBI, this document describes the secondary development of the NBI from the aspects as follows: basic information, interface function, information model, and interface model.

- **CORBA NBI Developer Guide (Inventory)**

Focusing on the resource management of the CORBA NBI, this document describes the secondary development of the NBI from the aspects as follows: basic information, interface function, information model, and interface model.

## **9.1 CORBA NBI Developer Guide (Alarm)**

---

Focusing on the alarm management of the CORBA NBI, this document describes the secondary development of the NBI from the aspects as follows: basic information, interface function, information model, and interface model.

- **Guideline**

The *NBI Developer Guide* is an important document for users to know NBI specifications. This topic describes how to read this document.

- **Overview**

Unless otherwise specified, the CORBA NBI described in this document refers to the standardized NBI that complies with the TMF MTNM standards.

- **Interface Model**

This topic provides models of interfaces (such as customized interfaces and TMF 814 recommendation interfaces) applied to the CORBA NBI.

- **Information Model**

This topic describes information models supported by the CORBA NBI, including TMF 814 recommendation-based models and customized models.

- **Format of Notification Events**

In the additionalInfoUsage.pdf and AVC\_SC\_Notifications.pdf among the supporting documentation of the TMF 814 recommendation, the structure of each notification event of the CORBA interface is described. This chapter presents the detailed definitions of the structure of the notification events.

- [Notification Event Samples](#)  
This topic describes samples of notification events that the CORBA NBI supports.
- [Object Naming Rules](#)  
This chapter lists the naming rules for various objects in the U2000 CORBA interface. The naming rules are in accordance with the TMF recommendations.
- [AdditionalInfo Description](#)  
This chapter describes the usage of additional fields in each functional module of the CORBA NBI. The additional fields, consisting of additionalInfo and additionalCreationInfo.
- [Alarm Cause List](#)  
This topic describes alarm causes supported by the CORBA NBI.
- [IDL Description](#)  
This topic describes the IDL defined in the CORBA NBI.
- [Description of Unimplemented and Customized Interfaces](#)
- [Layer Rate Description](#)
- [Glossary](#)  
This appendix lists the glossary used in the guide.
- [Acronyms and Abbreviations](#)  
This topic lists acronyms and abbreviations that are used in this guide.

**Parent topic:** [CORBA NBI Developer Guide](#)

## 9.1.1 About This Document

---

### Related Versions

The following table lists the product versions related to this document.

Product Name	Version
iManager U2000	V200R015C60

### Intended Audience

Focusing on the alarm management of the CORBA NBI (northbound interface), this document describes the secondary development of the CORBA NBI from the aspects as follows: basic information, interface function, interface model, and format of notification events.

This document provides the reference information about the alarms management of the CORBA NBI.

This document is intended for:

- Application Developer
- Data Configuration Engineer

## Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 <b>DANGER</b>	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 <b>CAUTION</b>	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
 <b>NOTICE</b>	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
 <b>NOTE</b>	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

## Command Conventions

The command conventions that may be found in this document are defined as follows.

Convention	Description
<b>Boldface</b>	The keywords of a command line are in <b>boldface</b> .

Convention	Description
<i>Italic</i>	Command arguments are in <i>italics</i> .
[ ]	Items (keywords or arguments) in brackets [ ] are optional.
{ x   y   ... }	Optional items are grouped in braces and separated by vertical bars. One item is selected.
[ x   y   ... ]	Optional items are grouped in brackets and separated by vertical bars. One item is selected or no item is selected.
{ x   y   ... }*	Optional items are grouped in braces and separated by vertical bars. A minimum of one item or a maximum of all items can be selected.
[ x   y   ... ]*	Optional items are grouped in brackets and separated by vertical bars. Several items or no item can be selected.

## GUI Conventions

The GUI conventions that may be found in this document are defined as follows.

Convention	Description
<b>Boldface</b>	Buttons, menus, parameters, tabs, window, and dialog titles are in <b>boldface</b> . For example, click <b>OK</b> .
>	Multi-level menus are in <b>boldface</b> and separated by the ">" signs. For example, choose <b>File &gt; Create &gt; Folder</b> .

## Change History

Updates between document issues are cumulative. Therefore, the latest document issue contains all updates made in previous issues.

### Changes in Issue 06 (2017-06-29) Based on Product Version V200R015C60

Sixth release.

### Changes in Issue 05 (2017-03-20) Based on Product Version V200R015C60

Fifth release.

### Changes in Issue 04 (2016-09-12) Based on Product Version V200R015C60

Fourth release.

## **Changes in Issue 03 (2016-06-20) Based on Product Version V200R015C60**

Third release.

## **Changes in Issue 02 (2016-03-31) Based on Product Version V200R015C60**

Second release.

## **Changes in Issue 01 (2016-01-15) Based on Product Version V200R015C60**

Initial release.

**Parent topic:** [CORBA NBI Developer Guide \(Alarm\)](#)

## **9.1.2 Guideline**

---

The *NBI Developer Guide* is an important document for users to know NBI specifications. This topic describes how to read this document.

- [\*\*What Is Northbound Model\*\*](#)

Considering networks from the perspective of the OSS, to prevent the OSS from understanding diversified devices and services, you need to convert the objects managed by the EMS or NMS to objects that can be understood by the OSS. This is the northbound model.

- [\*\*What Is NBI\*\*](#)

Data interactions between the OSS and U2000 are implemented through NBIs. For ease of understanding, NBI names adopt a verb-object structure, that is, each NBI is a combination of an "Action" and "Object".

- [\*\*Getting Started\*\*](#)

This topic provides suggestions on reading of interface manuals.

- [\*\*Example\*\*](#)

The following uses the query of a fiber as an example to describe how to query information in the NBI Developer Guide.

**Parent topic:** [CORBA NBI Developer Guide \(Alarm\)](#)

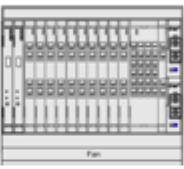
### **9.1.2.1 What Is Northbound Model**

---

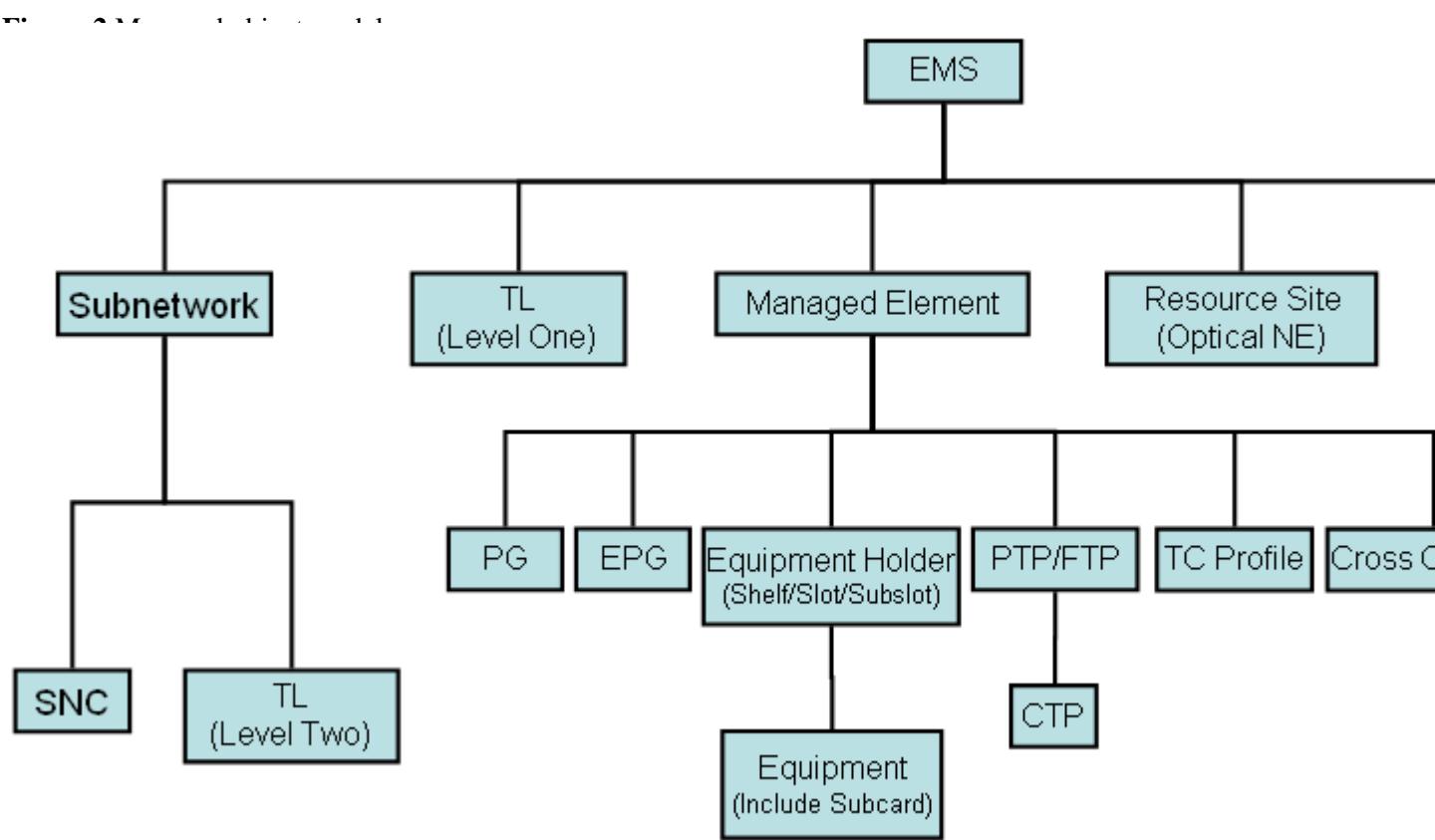
Considering networks from the perspective of the OSS, to prevent the OSS from understanding diversified devices and services, you need to convert the objects managed by the EMS or NMS to objects that can be understood by the OSS. This is the northbound model.

Use NEs, subracks, boards, ports, and fibers/cables as an example. They are abstracted as ME, EquipmentHold, Equipment, TerminationPoint, and TopologicalLink. Getting familiar with the northbound model is the prerequisite for understanding northbound interface (NBI) functions.

**Figure 1** Schematic diagram of the northbound model

				
NE	Subrack	Board	Port	Fiber/cable
ME	EquipmentHold	Equipment	PhysicalTerminationPoint	TopologicalLink

[Figure 2](#) shows the northbound models of all objects managed by the EMS or NMS.



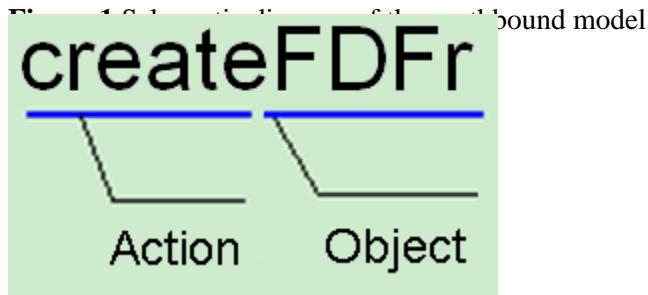
**Parent topic:** [Guideline](#)

## 9.1.2.2 What Is NBI

---

Data interactions between the OSS and U2000 are implemented through NBIs. For ease of understanding, NBI names adopt a verb-object structure, that is, each NBI is a combination of an "Action" and "Object".

Based on the structure, you can learn the NBI function through its name. The following figure shows an example.



## Action

"Action" can be understood as all operations initiated by the OSS.

**Table 1 Description of NBI operations**

Operation	Description
Get	Indicates the query operation.
Set	Indicates the setting operation.
Create	Indicates the creation operation.
Delete	Indicates the deletion operation.
Activate/Deactivate	Indicates the activation or deactivation operation.
Modify	Indicates the modification operation.

## "Intended Object" of "Action"

To a certain extent, you can understand "Object" as the "Intended Object" of NBI operations. Use common inventory management and service configuration operations as an example. The "Intended Objects" are northbound models such as NEs, boards, and ports.

**Table 2 Mapping between NM objects and northbound objects**

Object in U2000 System	Object in CORBA NBI
NMS or EMS	EMS
NE	ME

**Table 2 Mapping between NM objects and northbound objects**

Object in U2000 System	Object in CORBA NBI
Subrack	Shelf
Slot	Slot
Subslot	Sub_Slot
Board	Equipment
Subboard	Equipment
Physical port	PTP
Logical port	FTP
Service protection group	PG
Equipment protection group	EPG
Trail management	SNC
PWE3 service	MFDFr
VSI service	MFDFr
PW	FTP
VLAN management object	FTP
PW switch	IPCrossConnection
MPLS static tunnel	IPCrossConnection
IP tunnel	TrafficTrunk
MPLS dynamic tunnel	TrafficTrunk
Maintenance domain of OAM management	MD
Maintenance association of OAM management	MA
Remote maintenance point	RMEP
Intermediate maintenance point	MIP

Parent topic: [Guideline](#)

## 9.1.2.3 Getting Started

---

This topic provides suggestions on reading of interface manuals.

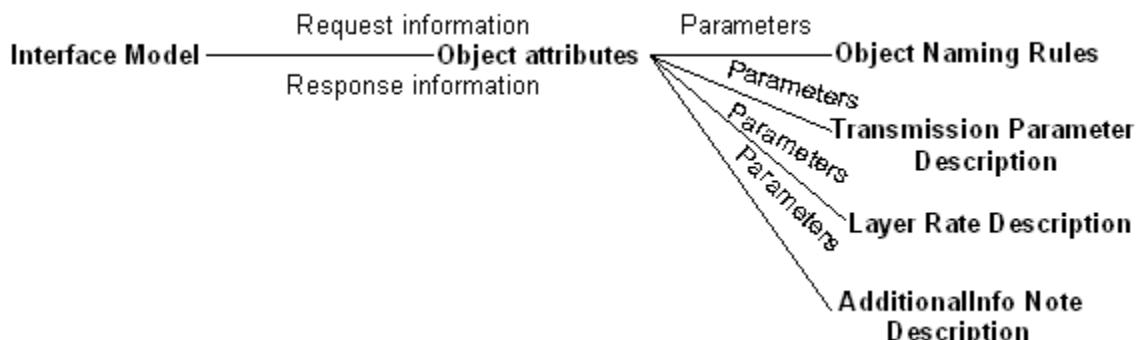
### Volume Description

The U2000 corresponds to the two service processes of telecom carriers: Fulfillment and Assurance, the U2000 classifies NBIs into four fields by function: inventory management, service provisioning, alarm management, and performance management. These four fields respectively correspond to the four volumes of the *NBI Developer Guide*.

### Reading Sequence

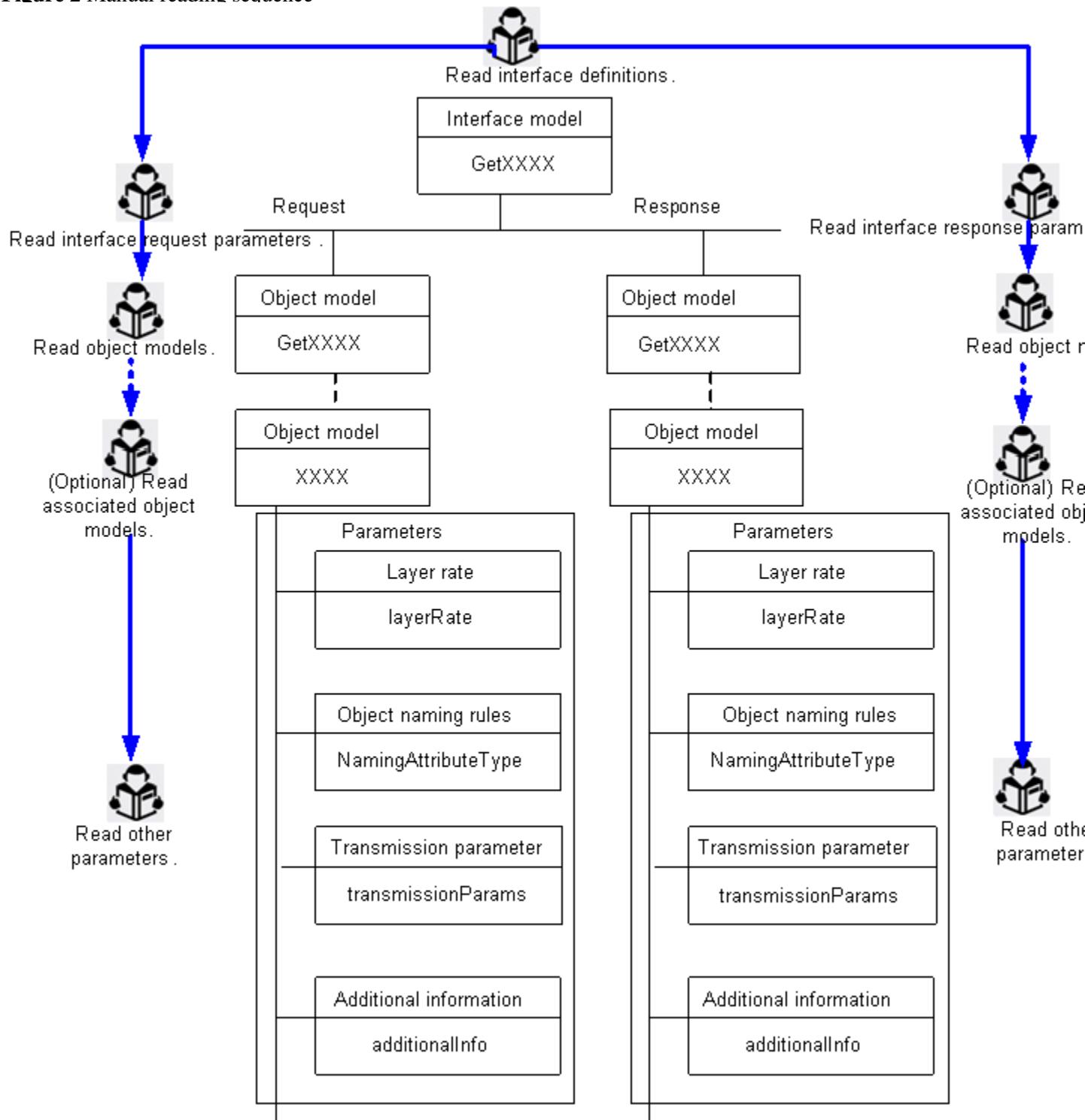
The core of the manual is to describe the request and response information of each interface. The **Interface Model** chapter describes the definition of an interface in detail, and the **Object Attributes** chapter describes the request and response information of the interface. The parameters that are not described in detail in the **Object Attributes** chapter are described in the **Object Naming Rules**, **Transmission Parameter Description**, **Layer Rate Description**, and **AdditionalInfo Usage Note** chapters.

**Figure 1** Structure of chapters in the manual



[Figure 2](#) shows the recommended reading sequence.

**Figure 2** Manual reading sequence



**Parent topic:** [Guideline](#)

## 9.1.2.4 Example

---

The following uses the query of a fiber as an example to describe how to query information in the NBI Developer Guide.

### Querying Interface Models

First, query NBI models based on service scenarios.

1. The fiber northbound model is **TopologicalLink**. Find the **MultiLayerSubnetworkMgr\_I** module in the **Interface Model** chapter. The action corresponding to the query operation is **get**. Based on the model and action, you can find that the desired NBI is

`getTopologicalLink` in the **Interface Model** chapter.

## getTopologicalLink

This interface is used to query information about a topological link by its name.

### Definition

```
void getTopologicalLink(  
    in globaldefs::NamingAttributes_T topoLinkName,  
    out topologicalLink::TopologicalLink_T topoLink)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about a topological link by its name.

### Parameters

Parameter	Input/Output	Description
topoLinkName	Input	Indicates the name of the topological link.
topoLink	Output	Indicates the topological link.

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input value.
EXCPT_ENTITY_NOT_FOUND	Indicates that the entity was not found.
EXCPT_INTERNAL_ERROR	Indicates an internal error.

### Restrictions

There is no restriction.

2. Through the guide, you can learn the parameter details of the interface, including the parameters you need to set for the interface and the returned values of the interface.

## Building Request Information

Query input parameters of the interface model to further know corresponding object models and correctly construct request models of interfaces.

1. In the request information of the `getTopologicalLink` interface, the included parameter is `topoLinkName` and the type is `NamingAttributes_T`. Learn the detailed naming rules in

the **TopologicalLink** section of the **Object Naming Rules** chapter.

## TopologicalLink

This topic describes the naming rule for a topological link. A topological link can be a physical connection between two

**Table 1** TopologicalLink

Object name	TopologicalLink
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="TopologicalLink"; value="TopologicalLinkName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="TopologicalLink"; value="2008-10-17 19:02:47 -"
Remarks	More description for the value of TopologicalLinkName: If a topological link is created on the U2000 earlier than V2, the value of TopologicalLinkName adopts a format similar to "139981017190247".

2. Build complete request information based on the queried information.

## Querying Response Information

After a request message is sent correctly, response information is returned. You can query the meaning of the response information in the guide.

1. In the response information of the **getTopologicalLink** interface, the included parameter is **topoLink** and the type is **TopologicalLink\_T**. Learn the details about **topologicalLink** in

the **Object Model** chapter.

## TopologicalLink\_T

This topic describes the data structure of topological links.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of topological links.
userLabel	string	User label. This field is blank by default.
nativeEMSName	string	Local name.
owner	string	Name of the owner of the object. This field is blank by default.
direction	"globaldefs ::ConnectionDirection_T"	Direction. The value are: CD_UP, CD_DOWN, CD_BIDIR.
rate	transmissionParameters::LayerRate_T	Layer rate.
aEndTP	globaldefs::NamingAttributes_T	Source.
zEndTP	globaldefs::NamingAttributes_T	Sink.
additionalInfo	globaldefs::NVSList_T	Additional information. For details see the <a href="#">additionalInfo::TopologicalLink_T</a> section.

## Viewing Additional Information

Northbound models are highly abstracted from the logic of different services. For example, **TopologicalLink** can represent fibers, layer 2 links, or IP links. You can distinguish them based on fields such as **rate** and **additionalInfo**.

1. The **TopologicalLinkType** information model contains the **rate** parameter. View the meaning of the layer rate in the response information in the **Rate Layer Description** chapter.
2. The **TopologicalLinkType** information model contains the **additionalInfo** parameter. View the parameter in the **TopologicalLink\_T** section of the **AdditionalInfo Description** chapter.

**Parent topic:** [Guideline](#)

## 9.1.3 Overview

---

Unless otherwise specified, the CORBA NBI described in this document refers to the standardized NBI that complies with the TMF MTNM standards.

- [Introduction](#)
- [Alarm Management](#)

**Parent topic:** [CORBA NBI Developer Guide \(Alarm\)](#)

## 9.1.3.1 Introduction

---

The common object request broker architecture (CORBA) northbound interface (NBI) of Huawei provides excellent alarm management functions for the operations support system (OSS). The functions of automatically reporting alarm events, alarm querying, alarm acknowledging, alarm unacknowledging, and alarm clearing in the transport, routing and access domains are supported. The function of setting alarm suppression for the transport equipment, such as synchronous digital hierarchy (SDH) equipment, wavelength division multiplexing (WDM) equipment, radio transmission node (RTN) is supported too.

**Parent topic:** [Overview](#)

## 9.1.3.2 Alarm Management

---

The U2000 CORBA NBI provides alarm management functions listed in [Table 1](#).



Unless otherwise specified, North America (NA) equipment does not support the following functions.

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**Table 1 Alarm management**

Function	Function Description	Description
Alarm event reporting	<ul style="list-style-type: none"><li>• NMS alarm event reporting</li><li>• Equipment alarm event reporting</li></ul>	Equipment in all domains, including NA equipment supports this function.
Update event reporting	<ul style="list-style-type: none"><li>• Reporting of alarm event associated with trails</li></ul>	Only transport equipment supports this function.

**Table 1 Alarm management**

Function	Function Description	Description
	<ul style="list-style-type: none"><li>Reporting of alarm event associated with fibers</li></ul>	
Alarm query	<ul style="list-style-type: none"><li>NMS alarm query</li><li>Equipment alarm query</li><li>Alarm filtering</li></ul>	Equipment in all domains, including NA equipment supports this function.
Alarm setting	<ul style="list-style-type: none"><li>Setting whether to enable the function of alarm suppression for boards.</li><li>Setting whether to enable the function of alarm suppression for ports.</li><li>Alarm acknowledgment</li><li>Alarm unacknowledgement</li><li>Alarm clearing</li></ul>	NA equipment supports only alarm acknowledgment and alarm unacknowledgement functions. Only non-NA transport equipment supports the setting of whether to enable the function of alarm suppression for boards and ports.

**Parent topic:** [Overview](#)

## 9.1.4 Interface Model

---

This topic provides models of interfaces (such as customized interfaces and TMF 814 recommendation interfaces) applied to the CORBA NBI.

- [emsMgr\\_I](#)

This interface is used to manage an EMS. For example, the getEMS interface enables an NMS to query the information about the EMS.

- [EquipmentInventoryMgr\\_I](#)

This interface is used to manage resources, such as equipment, boards, and ports on boards.

- [ManagedElementMgr\\_I](#)

This interface is used to manage NEs and termination points (TPs), including NEs, ports, and cross-connections on NEs.

- [MaintenanceMgr\\_I](#)

This interface is used to manage maintenance functions.

## 9.1.4.1 emsMgr\_I

---

This interface is used to manage an EMS. For example, the getEMS interface enables an NMS to query the information about the EMS.

- [getAlIEMSAAndMEActiveAlarms](#)

This interface is used to query all uncleared alarms and TCA events on the EMS and NEs managed by the EMS.

- [getAlIEMSSystemActiveAlarms](#)

This interface is used to query all uncleared alarms on the EMS.

- [acknowledgeAlarms](#)

This interface is used to acknowledge alarms according to the entered alarm serial numbers.

- [unacknowledgeAlarms](#)

This interface is used to unacknowledge alarms according to the entered alarm serial numbers.

- [clearAlarms](#)

This interface is used to clear alarms according to the entered alarm serial numbers.

- [getAllSecondlyAlarms](#)

This interface is used to query correlative alarms (caused directly or indirectly by root alarms) by alarm ID.

- [setAlarmReportingOff](#)

This interface is used to set alarm masking for a specified object.

- [getAlarmAffectedServiceNames](#)

This interface is used to query names of multiple alarm-affected services based on alarm SNs.

- [setAlarmReportingOn](#)

This interface is used to delete alarm masking configuration of a specified object.

- [redefineAlarmData](#)

This interface is used to redefine alarm severities. After the redefinition, alarms queried or reported are of new severities.

- [getAllRedefineAlarmDatas](#)

This interface is used to query alarms whose severities are redefined.

- [getAllAlarmStaticInfo](#)

This interface is used to query static alarm data.

- [getAllHistoryAlarmsByFTP](#)

This interface is used to query all historical alarms of a specified NE object or type and store the alarms to a specified FTP server.

- [getHistoryAlarmDataByPull](#)

This interface is used to query all historical alarms of a specified NE object or NMS and store the alarms to a specified FTP server.

**Parent topic:** [Interface Model](#)

## 9.1.4.1.1 getAllEMSAndMEActiveAlarms

---

This interface is used to query all uncleared alarms and TCA events on the EMS and NEs managed by the EMS.

### Definition

```
void getAllEMSAndMEActiveAlarms (
    in notifications::ProbableCauseList_T excludeProbCauseList, in
    notifications::PerceivedSeverityList_T excludeSeverityList, in unsigned long
    how_many, out notifications::EventList_T eventList, out
    notifications::EventIterator_I eventIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

This interface is used to query all uncleared alarms and TCA events on the EMS NEs managed by the EMS.

### Parameters

Parameter	Input/Output	Description	Value
excludeProbCauseList	Input	Indicates the cause of the alarms that are not queried. If the list is null, it indicates that the system does not use this parameter during filtration.	notifications::ProbableCauseList_T (string, such as EQPT, ENV.)
excludeSeverityList	Input	Indicates the level of the alarms that are not queried. If the list is null, it indicates that	notifications::PerceivedSeverityList_T (The value of PerceivedSeverity_T can be PS_INDETERMINATE, PS_CRITICAL, PS_MAJOR,

Parameter	Input/Output	Description	Value
		the system does not use this parameter during filtration. Only the alarm that meets the requirements specified by excludeProbCauseList and excludeSeverityList is filtered.	PS_MINOR, PS_WARNING, or PS_CLEARED.)
how_many	Input	Indicates the returned maximum number of the alarms that are found during the first querying. You are not recommended to query more than 5000 items at a time.	unsigned long
eventList	Output	Indicates the returned list of the alarms.	notifications::EventList_T For the element model, see: NT_ALARM Event Sample or NT_TCA Event Sample.
eventIt	Output	Indicates the iterator.	notifications::EventIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators is excessive.

## Restrictions

The events of the idle optical NEs and virtual NEs are not queried.

The number of returned alarms may be smaller than the how\_many value due to limited license capabilities.

You are not recommended to query more than 5000 items at a time.

**Parent topic:** [emsMgr\\_I](#)

## 9.1.4.1.2 getAllEMSSystemActiveAlarms

---

This interface is used to query all uncleared alarms on the EMS.

### Definition

```
void getAllEMSSystemActiveAlarms(
    in notifications::PerceivedSeverityList_T excludeSeverityList,
    in unsigned long how_many,
    out notifications::EventList_T eventList,
    out notifications::EventIterator_I eventIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

This interface is used to query all uncleared alarms on the EMS. Trail alarms belong to EMS alarms.

### Parameters

Parameter	Input/Output	Description	Value
excludeSeverityList	Input	Indicates the level of the alarms that are not queried. If the list is null, it indicates that the system does not use this parameter during filtration.	notifications::PerceivedSeverityList_T (The value of PerceivedSeverity_T can be PS_INDETERMINATE, PS_CRITICAL, PS_MAJOR, PS_MINOR, PS_WARNING, or PS_CLEARED.)
how_many	Input	Indicates the returned maximum number of the alarms that are found during the first querying. You are not recommended to query more than 5000 items at a time.	unsigned long

Parameter	Input/Output	Description	Value
eventList	Output	Indicates the returned list of the alarms.	notifications::EventList_T For the element model, see: NT_ALARM Event Sample or NT_TCA Event Sample.
eventIt	Output	Indicates the iterator.	notifications::EventIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators is excessive.

## Restrictions

You are not recommended to query more than 5000 items at a time.

**Parent topic:** [emsMgr\\_I](#)

## 9.1.4.1.3 acknowledgeAlarms

---

This interface is used to acknowledge alarms according to the entered alarm serial numbers.

### Definition

```
void acknowledgeAlarms(
    in AlarmSerialNoList_T alarmList,
    out AlarmSerialNoList_T failedAlarmList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

This interface is used to acknowledge alarms according to the entered alarm serial numbers.

### Parameters

Parameter	Input/Output	Description	Value
alarmList	Input	Indicates the list of alarm serial numbers.	emsMgr::AlarmSerialNoList_T (string, such as 32185.)
failedAlarmList	Output	Indicates the list of the serial numbers of alarm acknowledgement failures.	emsMgr::AlarmSerialNoList_T (string, such as 32185.)

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_NOT_IMPLEMENTED	Indicates that the input object is not supported by the NMS.

## Restrictions

This is no restriction.

**Parent topic:** [emsMgr\\_I](#)

## 9.1.4.1.4 unacknowledgeAlarms

---

This interface is used to unacknowledge alarms according to the entered alarm serial numbers.

### Definition

```
void unacknowledgeAlarms(
    in AlarmSerialNoList_T alarmList,
    out AlarmSerialNoList_T failedAlarmList)
    raises(globaldefs::ProcessingFailureException);
```

## Function

This interface is used to unacknowledge alarms according to the entered alarm serial numbers.

## Parameters

Parameter	Input/Output	Description	Value
alarmList	Input	Indicates the list of alarm serial numbers.	emsMgr::AlarmSerialNoList_T (string, such as 32185)
failedAlarmList	Output	Indicates the list of the serial numbers of alarm unacknowledgement failures.	emsMgr::AlarmSerialNoList_T (string, such as 32185)

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_NOT_IMPLEMENTED	Indicates that the input object is not supported by the NMS.

## Restrictions

There is no restriction.

**Parent topic:** [emsMgr\\_I](#)

## 9.1.4.1.5 clearAlarms

---

This interface is used to clear alarms according to the entered alarm serial numbers.

## Definition

```

void clearAlarms(
in AlarmSerialNoList_T alarmList,
out AlarmSerialNoList_T failedAlarmList)
raises(globaldefs::ProcessingFailureException);

```

## Function

The interface is used to clear alarms according to the entered alarm serial numbers.

## Parameters

Parameter	Input/Output	Description	Value
alarmList	Input	Indicates the list of alarm serial numbers.	AlarmSerialNoList_T (string, such as 32185)
failedAlarmList	Output	Indicates the serial number list of alarms that are failed to be cleared.	AlarmSerialNoList_T (string, such as 32185)

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_NOT_IMPLEMENTED	Indicates that the input object is not supported by the NMS.

## Restrictions

There is no restriction.

**Parent topic:** [emsMgr\\_1](#)

## 9.1.4.1.6 getAllSecondlyAlarms

---

This interface is used to query correlative alarms (caused directly or indirectly by root alarms) by alarm ID.

## Definition

```
void getAllSecondlyAlarms(
    in AlarmSerialNoList_T alarmList,
    out notifications::EventList_T eventList)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query correlative alarms (caused directly or indirectly by root alarms) by alarm ID.

## Parameters

Parameter	Input/Output	Description	Value
alarmList	Input	Indicates the IDs of the root alarms whose correlative alarms are to be queried.	AlarmSerialNoList_T
eventList	Output	Indicates the returned correlative alarms caused directly or indirectly by the root alarms.	notifications::EventList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [emsMgr\\_I](#)

## 9.1.4.1.7 setAlarmReportingOff

---

This interface is used to set alarm masking for a specified object.

### Definition

```
void setAlarmReportingOff(  
    in globaldefs::NamingAttributes_T resourceName)  
    raises(globaldefs::ProcessingFailureException);
```

### Function

Set alarm masking for a specified object.

### Parameters

Parameter	Input/Output	Description	Value
resourceName	Input	Indicates the specified object for which alarm masking needs to be set.	globaldefs::NamingAttributes_T. This parameter supports only NEs.

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

### Restrictions

Currently, this interface supports only the access domain.

**Parent topic:** [emsMgr\\_1](#)

## 9.1.4.1.8 getAlarmAffectedServiceNames

---

This interface is used to query names of multiple alarm-affected services based on alarm SNs.

## Definition

```
void getAlarmAffectedServiceNames (
    in string serialNumber,
    out ServiceNameList_T serviceNameList)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query names of multiple alarm-affected services based on alarm SNs.

## Parameters

Parameter	Input/Output	Description	Value
serialNumber	Input	Indicates the alarm SN.	String
serviceNameList	Output	Lists the names of affected services.	ServiceNameList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [emsMgr\\_I](#)

## 9.1.4.1.9 setAlarmReportingOn

---

This interface is used to delete alarm masking configuration of a specified object.

## Definition

```

void setAlarmReportingOn(
in globaldefs::NamingAttributes_T resourceName)
raises(globaldefs::ProcessingFailureException);

```

## Function

Delete alarm masking configuration of a specified object.

## Parameters

Parameter	Input/Output	Description	Value
resourceName	Input	Indicates the specified object on which alarm masking configuration needs to be deleted.	globaldefs::NamingAttributes_T. This parameter supports only NEs.

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

Currently, this interface supports only the access domain.

**Parent topic:** [emsMgr\\_I](#)

## 9.1.4.1.10 redefineAlarmData

---

This interface is used to redefine alarm severities. After the redefinition, alarms queried or reported are of new severities.

## Definition

```

void redefineAlarmData(
in string actionPerformed,
in RedefineAlarmDataList_T redefineAlarmDataList, out
RedefineAlarmDataList_T successRedefineDataList, out RedefineAlarmDataList_T
failedRedefineDataList, out string errorReason)
throws(globaldefs::ProcessingFailureException);

```

## Function

Redefine alarm severities.

## Parameters

Parameter	Input/Output	Description	Value
actionType	Input	Indicates the redefinition type.	string The values include R_ADD, R_DELETE, and R MODIFY.
redefineAlarmDataList	Input	Indicates the alarms whose severities need to be redefined.	RedefineAlarmDataList_T For the element model, see RedefineAlarmData_T. 1. When you add a redefinition rule, ruleID is optional, [groupID,alarmID] and redefinedSeverity are mandatory, and REMARK in the additional field is optional. 2. When you modify a
successRedefineDataList	Input	Indicates the alarms whose severities are redefined successfully.	RedefineAlarmDataList_T For the element model, see RedefineAlarmData_T. After the redefinition, alarm severity redefinition rule IDs are returned. You can use the rule IDs to delete, modify, and query alarms.
failedRedefineDataList	Output	Indicates the alarms whose severities fail to be redefined.	RedefineAlarmDataList_T

Parameter	Input/Output	Description	Value
			For the element model, see RedefineAlarmData_T.
errorReason	Output	Indicates the operation failure cause. The cause of the first failure is displayed.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_NOT_IMPLEMENTED	The operation type is not supported.

## Restrictions

Currently, this interface supports only the access domain. A maximum of 200 redefinition rules are supported.

**Parent topic:** [emsMgr\\_I](#)

## 9.1.4.1.11 getAllRedefineAlarmDatas

---

This interface is used to query alarms whose severities are redefined.

### Definition

```
void getAllRedefineAlarmDatas(
    in QueryRedefineAlarmDataList_T queryConditionList, out
    RedefineAlarmDataList_T redefineAlarmDataList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query alarms whose severities are redefined.

## Parameters

Parameter	Input/Output	Description	Value
queryConditionList	Input	Indicates the query conditions.	QueryRedefineAlarmDataList_T For the element model, see QueryRedefineAlarmData_T.Alarms of a specified alarm severity are queried based on ruleID and [groupID,alarmID]. If the query conditions are blank, alarms of all redefined severities are returned.
redefineAlarmDataList	Output	Indicates the returned query results.	RedefineAlarmDataList_T For the element model, see RedefineAlarmData_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

Currently, this interface supports only the access domain.

**Parent topic:** [emsMgr\\_I](#)

## 9.1.4.1.12 getAllAlarmStaticInfo

---

This interface is used to query static alarm data.

### Definition

```
void getAllAlarmStaticInfo(  
    in unsigned long how_many, out AlarmStaticInfoList_T alarmInfoList, out  
    AlarmStaticInfoIterator_I alarmInfoIt)  
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query static alarm data.

## Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the maximum volume of data returned upon the first query.	unsigned long
alarmInfoList	Output	Indicates the returned static alarm data.	AlarmStaticInfoList_T For the element models, see AlarmStaticInfo_T.
alarmInfoIt	Output	Indicates an iterator.	AlarmStaticInfoIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

Parent topic: [emsMgr\\_I](#)

## 9.1.4.1.13 getAllHistoryAlarmsByFTP

This interface is used to query all historical alarms of a specified NE object or type and store the alarms to a specified FTP server.

### Definition

```
void getAllHistoryAlarmsByFTP(  
in string destination,in string userName,  
in string password,
```

```
in globaldefs::NamingAttributesList_T meNameList,in ManagedElementTypeList_T
typeList,in notifications::ProbableCauseList_T excludeProbCauseList,in
notifications::PerceivedSeverityList_T excludeSeverityList,in
globaldefs::Time_T startTime,in globaldefs::Time_T endTime)
throws(globaldefs::ProcessingFailureException);
```

## Function

Query all historical alarms of a specified NE object or type and store the alarms to a specified FTP server. Status notifications are sent during or after file transfer. Fields in the file are separated by \t and their meanings are as follows:

objectName: Alarm source identifier (represented by a name-value pair)

nativeEMSName: Local EMS name of the alarm source

nativeProbableCause: Local cause of alarm occurrence

objectType: Alarm source object type

emsTime: EMS time (when alarms are generated or cleared)

neTime: NE time (when alarms are generated or cleared)

layerRate: Layer rate

probableCause: Alarm cause

probableCauseQualifier: Alarm cause identifier

perceivedSeverity: Alarm severity (1: critical; 2: major; 3: minor; 4: warning) serviceAffecting: Whether services are affected (0: unknown; 1: yes; 2: no)

AffirmState: Alarm acknowledgement status (TRUE: acknowledged; FALSE: not acknowledged) AlarmSerialNo: Alarm serial number on the EMS

handlingSuggestion: Alarm handling

suggestionsLocationInfo: Alarm locations

X.733::EventType: Alarm event type

objectTypeQualifier: Type of the object that reports alarm events

rcaiIndicator: Alarm identifier (0: root alarm without correlative alarms; 1: root alarm with correlative alarms; blank: other alarms, such as correlative alarms and correlative alarms of root alarms)

X.733::CorrelatedNotifications: IDs of root alarms corresponding to correlative alarms

X.733::ProposedRepairActions: Troubleshooting suggestions

## Parameters

Parameter	Input/Output	Description	Value
destination	Input	Indicates the IP address of the FTP server and the file directory or name. (Format: IP address:Directory/File name. For example, 10.77.0.34:/export/home/zcl/1.txt.)	String. The file suffix must be *.txt. If the file suffix is not of the preceding ones or blank, the U2000 displays an error message indicating that the file suffix is invalid.
userName	Input	Indicates the user name for logging in to the FTP server.	string
password	Input	Indicates the password for logging in to the FTP server.	string
meNameList	Input	Indicates NE names. This parameter cannot be set with the typeList parameter and supports only NEs or optical NEs.	globaldefs::NamingAttributesList_T
typeList	Input	Indicates NE types. This parameter cannot be set with the meNameList parameter.	ManagedElementTypeList_T(String. This parameter supports only the OptiX OSN 8800 T32 and OptiX BWS 1600G during NE type filtering.)
excludeProbCauseList	Input	Indicates that alarms of these causes are not queried. If this parameter is blank, do not use the filter criteria.	notifications::ProbableCauseList_T (String, for example, EQPT and ENV)
excludeSeverityList	Input	Indicates that alarms of these types are not queried. If this parameter is blank, do not use the filter criteria.	notifications::PerceivedSeverityList_T (The values of PerceivedSeverity_T include PS_INDETERMINATE, PS_CRITICAL, PS_MAJOR, PS_MINOR, PS_WARNING, and PS_CLEARED.)
startTime	Input	Indicates the start time. The format is similar to 20130111000000.0Z. This parameter supports both the local time and the UTC time. When using the start time to filter alarm clearance time, the start time is not included.	globaldefs::Time_T
endTime	Input	Indicates the end time. The format is similar to 20130111000000.0Z.	globaldefs::Time_T

Parameter	Input/Output	Description	Value
		This parameter supports both the local time and the UTC time. When using the end time to filter alarm clearance time, the end time is included.	

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

1. NE name filtering supports only the access domain.
2. NE type filtering supports only the OSN 8800 T32 and BWS 1600G.
3. Alarm information exported is in the TXT format.

**Parent topic:** [emsMgr\\_1](#)

## 9.1.4.1.14 getHistoryAlarmDataByPull

---

This interface is used to query all historical alarms of a specified NE object or NMS and store the alarms to a specified FTP server.

### Definition

```
void getHistoryAlarmDataByPull(
    in globaldefs::NamingAttributesList_T nameList,
    in string taskName, in string compressType, in string packingType,
    in notifications::ProbableCauseList_T excludeProbCauseList,
    in notifications::PerceivedSeverityList_T excludeSeverityList,
    in globaldefs::Time_T startTime, in globaldefs::Time_T endTime)
    raises(globaldefs::ProcessingFailureException);
```

### Function

1. Query all historical alarms of a specified NE object or type and store the alarms to a specified FTP server. The NMS obtains files from the specified FTP server based on the file name, IP address of the FTP server, user, password, and other information in the notification.

2. Export files in the format defined by the TeleManagement Forum (TMF) standard, for example, .xml.
3. Configure the FTP server by setting the corresponding configuration items of the big data interface of the deployment tool. The historical performance files are kept for three days by default. You can use the deployment tool to change the settings.

## Parameters

Parameter	Input/Output	Description	Value
startTime	Input	Indicates the start time. The format is similar to 20130111000000.0Z. This parameter supports both the local time and the UTC time. When the start time is used to filter the alarm clearance time, the start time is not included.	globaldefs::Time_T
endTime	Input	Indicates the end time. The format is similar to 20130111000000.0Z. This parameter supports both the local time and the UTC time. When the end time is used to filter the alarm clearance time, the end time is included.	globaldefs::Time_T
excludeProbCauseList	Input	Indicates the causes of alarms that are not queried. If this parameter is blank, this filter criterion is not used.	notifications::ProbableCauseList_T (string. Example: EQPT and ENV)
excludeSeverityList	Input	Indicates the severities of alarms that are not queried. If this parameter is	notifications::PerceivedSeverityList_T (The values of PerceivedSeverity_T include PS_INDETERMINATE, PS_CRITICAL, PS_MAJOR,

Parameter	Input/Output	Description	Value
		blank, this filter criterion is not used.	PS_MINOR, PS_WARNING, and PS_CLEARED.)
compressType	Input	Specifies whether to compress files and the type of the compression package.	String. Value: NO_COMPRESSION/GZIP. NO_COMPRESSION: not compress; GZIP: compress
packingType	Input	Specifies whether to package files and the packaging mode.	String. Value: NO_PACKING/ZIP/TAR. NO_PACKING: not package; ZIP: package to .zip files; TAR: package to .tar files
taskName	Input	Indicates the task name specified by the Manager.	string
nameList	Input	Indicates the list of NE names. The value can be entered by the EMS.	globaldefs::NamingAttributesList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

1. NE name filtering applies only to the transport domain.
2. The exported alarms are in .xml format.
3. For the nameList parameter, if the NE name is entered, all alarms of the specified NE are queried; if the EMS name is entered, all alarms of the specified NMS are queried; if not value is set, all alarms of the NMS and NEs are queried.
4. The packingType field cannot be set to ZIP when the compressType field is set to GZIP.

Parent topic: [emsMgr\\_1](#)

## 9.1.4.2 EquipmentInventoryMgr\_I

---

This interface is used to manage resources, such as equipment, boards, and ports on boards.

### Instruction:

You can query and manage information of computer room configuration through NBIs and maintain the configuration information based on needs. During the application and maintenance of computer room configuration information, personal data will be used. Therefore, you must comply with the laws of the applicable countries or Huawei user privacy policies and take necessary measures to fully protect personal data against leakage.

- [setAlarmReportingOn](#)

This interface is used to enable the alarm reporting function of a board or container.

- [setAlarmReportingOff](#)

This interface is used to disable the alarm reporting function of a board or container.

**Parent topic:** [Interface Model](#)

### 9.1.4.2.1 setAlarmReportingOn

---

This interface is used to enable the alarm reporting function of a board or container.

#### Definition

```
void setAlarmReportingOn(  
    in globaldefs::NamingAttributes_T equipmentOrHolderName)  
raises(globaldefs::ProcessingFailureException);
```

#### Function

This interface is used to enable the alarm reporting function of a board or container.

#### Parameters

Parameter	Input/Output	Description	Value
equipmentOrHolderName	Input	Indicates the name of the board or container that is to be set.	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

Only equipment in the transport domain is supported.

This switch affects only the alarm reporting of boards or containers but does not affect the alarm reporting of their child objects. For example, if you enable the alarm switch of a board or container, alarm reporting of ports on the board is not affected.

A container refers to a rack, shelf, or slot. Huawei equipment supports the suppression of only equipment alarms, but does not support the suppression of alarms of a rack, shelf (alarms of a WDM shelf are alarms on the network management system), or slot.

**Parent topic:** [EquipmentInventoryMgr\\_I](#)

## 9.1.4.2.2 setAlarmReportingOff

---

This interface is used to disable the alarm reporting function of a board or container.

### Definition

```
void setAlarmReportingOff(  
    in globaldefs::NamingAttributes_T equipmentOrHolderName)  
raises(globaldefs::ProcessingFailureException);
```

### Function

This interface is used to disable the alarm reporting function of a board and container.

### Parameters

Parameter	Input/Output	Description	Value
equipmentOrHolderName	Input	Indicates the name of the board or container that is to be set.	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

Only equipment in the transport domain is supported.

This switch affects only the alarm reporting of boards and containers and does not affect the alarm reporting of their child objects. For example, if you disable the alarm switch of a board or container, the alarm reporting of ports on the board is not affected.

A container refers to a rack, shelf, or slot. Huawei equipment supports the suppression of only equipment alarms, but does not support the suppression of alarms of a rack, shelf (alarms of the WDM shelf are alarms on the network management system), or slot.

**Parent topic:** [EquipmentInventoryMgr\\_I](#)

## 9.1.4.3 ManagedElementMgr\_I

---

This interface is used to manage NEs and termination points (TPs), including NEs, ports, and cross-connections on NEs.

- [getAllActiveAlarms](#)

This interface is used to query required uncleared alarms and TCA events on a specified NE.

- [getAllAlarmsByFTP](#)

This interface is used to query all alarm lists of a specified NE and store the lists on a specified FTP server. When the meNameList is empty, all alarms on the NMS will be queried.

- [getActiveAlarms](#)

This interface is used to query current alarms and uncleared threshold crossing alert (TCA) events on a specified NE object.

**Parent topic:** [Interface Model](#)

## 9.1.4.3.1 getAllActiveAlarms

---

This interface is used to query required uncleared alarms and TCA events on a specified NE.

### Definition

```
void getAllActiveAlarms (
    in globaldefs::NamingAttributes_T meName,
    in notifications::ProbableCauseList_T excludeProbCauseList,
    in notifications::PerceivedSeverityList_T excludeSeverityList,
    in unsigned long how_many,
    out notifications::EventList_T eventList,
    out notifications::EventIterator_I eventIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

This interface is used to query all uncleared alarms of specified NEs as required, including threshold crossed alert (TCA) events.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	Indicates the name of the NE that needs to be queried.	globaldefs::NamingAttributes_T
excludeProbCauseList	Input	Indicates the cause of the alarms that are not queried. If the list is null, it indicates that the system does not	notifications::ProbableCauseList_T (string, such as EQPT, ENV.)

Parameter	Input/Output	Description	Value
		use this parameter during filtration.	
excludeSeverityList	Input	Indicates the level of the alarms that are not queried. If the list is null, it indicates that the system does not use this parameter during filtration. Only the alarm that meets the requirements specified by excludeProbCauseList and excludeSeverityList is filtered.	notifications::PerceivedSeverityList_T (The value of PerceivedSeverity_T can be PS_INDETERMINATE, PS_CRITICAL, PS_MAJOR, PS_MINOR, PS_WARNING, or PS_CLEARED.)
how_many	Input	Indicates the returned maximum number of the alarms that are found during the first querying. You are not recommended to query more than 5000 items at a time.	unsigned long
eventList	Output	Indicates the returned list of the alarms.	notifications::EventList_T For the element model, see: NT_ALARM Event Sample.
eventIt	Output	Indicates the iterator.	notifications::EventIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that an input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

Abnormal Value	Description
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

The uncleared alarms are queried from the network management system and are not to be synchronized from NEs.

The alarms about problems such as the NE communication is interrupted, an NE is not logged in to, and the NE communication fails are queried or reported through the NBI, the alarms are adapted to alarms about the NE/subrack.

You are not recommended to query more than 5000 items at a time.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.1.4.3.2 getAllAlarmsByFTP

---

This interface is used to query all alarm lists of a specified NE and store the lists on a specified FTP server. When the meNameList is empty, all alarms on the NMS will be queried.

### Definition

```
void getAllAlarmsByFTP(
    in string destination,
    in string userName,
    in string password,
    in globaldefs::NamingAttributesList_T meNameList,
    in notifications::ProbableCauseList_T excludeProbCauseList,
    in notifications::PerceivedSeverityList_T excludeSeverityList,
    in globaldefs::Time_T startTime,
    in globaldefs::Time_T endTime,
    out globaldefs::NamingAttributesList_T failedMeNameList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

SFTP is recommended for security.

This interface is used to query lists of alarms (cleared and uncleared alarms, but not TCA events) of a specified NE and store the lists to a specified FTP server. If meNameList is empty, all alarms will be queried. When the file is transferred or the file transfer is complete, the system sends a notification on the file transfer status.

The fields in the file are separated by \t. The meanings of each column are as follows:

The first column lists the NE IDs.

The second column lists the subrack IDs. For WDM alarms, this column is the same as the first column. For SDH alarms, this column is 1.

The third column lists the slot IDs. The value 0 indicates that the slot ID is invalid.

The fourth column lists the port IDs, excluding the field number. The value 0 indicates that the port ID is invalid.

The fifth column lists the channel levels. For an alarm of level VC3, the channel level is 1; for an alarm of level VC12, the channel level is 2; for other alarms, the channel level is 0.

The sixth column lists the IDs of the higher order paths.

The seventh column lists the IDs of the lower order paths.

The eighth column lists the equipment types.

The ninth column lists the alarms ID.

The tenth column lists the alarms levels. For a critical alarm, the value is 1; for a major alarm, the value is 2; for a minor alarm, the value is 3; for a warning, the value is 4.

The eleventh column lists the start time of the alarms. The time is the Universal Time Coordinated (UTC) in the ULONG format.

The twelfth column lists the end time of the alarms. The time is the UTC time in the ULONG format. The value 0 indicates that the alarm is not ended.

The thirteenth column lists the subslot ID. This field is not displayed by default.

The fourteenth column lists the group ID. This field is not displayed by default.

The fifteenth column lists the detailed position information. This field is not displayed by default.

## Parameters

Parameter	Input/Output	Description	Value
destination	Input	Indicates the address of the FTP server and path and name of the operation file. The format is IP address/file path/file name, such as 10.77.0.34:/export/home/zcl/1.txt.	String. The file suffix must be *.txt. If the file suffix is not of the preceding ones or blank, the U2000 displays an error message indicating that the file suffix is invalid.
username	Input	Indicates the user name for logging in to the FTP server.	string
password	Input	Indicates the password for logging in to the FTP server.	string

Parameter	Input/Output	Description	Value
meNameList	Input	Indicates the list of the NE names. This parameter can be null.	globaldefs::NamingAttributesList_T
excludeProbCauseList	Input	Indicates the cause of the alarms that are not queried. If the list is null, it indicates that the system does not use this parameter during filtration.	notifications::ProbableCauseList_T (string, such as EQPT, ENV)
excludeSeverityList	Input	Indicates the level of the alarms that are not queried. If the list is null, it indicates that the system does not use this parameter during filtration. Only the alarm that meets the requirements specified by excludeProbCauseList and excludeSeverityList is filtered.	notifications::PerceivedSeverityList_T (The value of PerceivedSeverity_T can be PS_INDETERMINATE, PS_CRITICAL, PS_MAJOR, PS_MINOR, PS_WARNING, or PS_CLEARED.)
startTime	Input	Indicates the start time. For example, 20100903000000.0Z.	globaldefs::Time_T
endTime	Input	Indicates the end time. For example, 20100904000000.0Z.	globaldefs::Time_T
failedMeNameList	Output	Indicates the list of the NEs that the system fails to query. This parameter is not used.	globaldefs::NamingAttributesList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

If the end time of a cleared alarm is in the range between the startTime and the endTime, the alarm can be returned. If the start time of an alarm that is not cleared is in the range between the startTime and the endTime, the alarm can be returned. The time interval between the startTime and the endTime is a half-closed interval in the form of (a, b].

The interface does not report the errors that are generated during the file transfer, such as errors of the IP address, FTP user name, and passwords. The errors are reported in the notification of the file transfer status.

This interface is applicable to SDH and WDM equipment only. The 1600G with multiple subracks, OptiX OSN 6800 and OptiX OSN 8800 are not supported.

Set whether to return the subslot ID by configuring bOutSubSlotID; set whether to return the group ID by configuring bOutGroupID; set whether to return the location information by configuring bOutSpecialInfo. The configuration items are in the bundle.cfg.

By default, the path of bundle.cfg is as follows:

On the Windows OS: %IMAP\_ROOT%\etc\oss\_cfg\nbi\corba\conf\ii\_corbaagent\_bundle

On the Solaris or Linux OS: \$IMAP\_ROOT/etc/oss\_cfg/nbi/corba/conf/ii\_corbaagent\_bundle

Alarm information can only be exported to a TXT file.

**Parent topic:** [ManagedElementMgr\\_I](#)

### 9.1.4.3.3 getActiveAlarms

---

This interface is used to query current alarms and uncleared threshold crossing alert (TCA) events on a specified NE object.

#### Definition

```
void getActiveAlarms(
    in globaldefs::NamingAttributesList_T objectNameList,
    in notifications::ProbableCauseList_T excludeProbCauseList,
    in notifications::PerceivedSeverityList_T excludeSeverityList,
    in unsigned long how_many,
    out notifications::EventList_T eventList,
    out notifications::EventIterator_I eventIt)
    raises(globaldefs::ProcessingFailureException);
```

#### Function

This interface is used to query current alarms and uncleared threshold crossing alert (TCA) events on a specified NE object.

#### Parameters

Parameter	Input/Output	Description	Value
objectNameList	Input	Indicates the name object list.	globaldefs::NamingAttributesList_T
excludeProbCauseList	Input	Indicates that alarms with the cause are not queried. This filter criterion is not used if the list is blank.	notifications::ProbableCauseList_T (example: EQPT and ENV)
excludeSeverityList	Input	Indicates that alarms with the severity are not queried. This filter criterion is not used if the list is blank. An alarm is filtered out only when it meets the excludeProbCauseList and excludeSeverityList filter criteria.	notifications::PerceivedSeverityList_T (PerceivedSeverity_T. The options are: PS_INDETERMINATE, PS_CRITICAL, PS_MAJOR, PS_MINOR, PS_WARNING, and PS_CLEARED)
how_many	Input	Indicates the maximum number of items returned upon the first query. It is recommended that the number of queried items not be larger than 5000 each time.	unsigned long
eventList	Output	Indicates the returned alarm list.	notifications::EventList_T For the element model, see NT_ALARM Event Sample or NT_TCA Event Sample.
eventIt	Output	Indicates the event iterator.	notifications::EventIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_NOT_IMPLEMENTED	Ems not implemented.

## Restrictions

This interface function is not supported.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.1.4.4 MaintenanceMgr\_I

---

This interface is used to manage maintenance functions.

- [\*\*setServiceAlarmReportingOn\*\*](#)  
This interface is used to enable the AIS or RDI alarm reporting function of PW, tunnel and Ethernet services.
- [\*\*setServiceAlarmReportingOff\*\*](#)  
This interface is used to disable the AIS or RDI alarm reporting function of PW, tunnel and Ethernet services.

**Parent topic:** [Interface Model](#)

## 9.1.4.4.1 setServiceAlarmReportingOn

---

This interface is used to enable the AIS or RDI alarm reporting function of PW, tunnel and Ethernet services.

### Definition

```
void setServiceAlarmReportingOn(
    in globaldefs::NamingAttributes_T serviceName,
    in AlarmEventList_T alarmEventList)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Enable the AIS or RDI alarm reporting function of PW, tunnel and Ethernet services.

## Parameters

Parameter	Input/Output	Description	Value
serviceName	Input	Indicates the name of the service for which the alarm reporting function is to be enabled.	globaldefs::NamingAttributes_T
alarmEventList	Input	Indicates the alarm events to be reported.	AlarmEventList_T AIS alarm and RDI alarm

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

This interface is applicable only to the transport equipment.

**Parent topic:** [MaintenanceMgr](#) |

## 9.1.4.4.2 setServiceAlarmReportingOff

---

This interface is used to disable the AIS or RDI alarm reporting function of PW, tunnel and Ethernet services.

## Definition

```
void setServiceAlarmReportingOff(
```

```

in globaldefs::NamingAttributes_T serviceName,
in AlarmEventList_T alarmEventList)
raises(globaldefs::ProcessingFailureException);

```

## Function

Disable the AIS or RDI alarm reporting function of PW, tunnel and Ethernet services.

## Parameters

Parameter	Input/Output	Description	Value
serviceName	Input	Indicates the name of the service for which alarm reporting function is to be disabled.	globaldefs::NamingAttributes_T
alarmEventList	Input	Indicates the alarm events to be suppressed.	AlarmEventList_T AIS alarm and RDI alarm

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

This interface is applicable only to transport equipment.

**Parent topic:** [MaintenanceMgr\\_I](#)

## 9.1.5 Information Model

---

This topic describes information models supported by the CORBA NBI, including TMF 814 recommendation-based models and customized models.

- [emsMgr](#)

This topic describes the data models of alarms on the element management system (EMS).

**Parent topic:** [CORBA NBI Developer Guide \(Alarm\)](#)

## 9.1.5.1 emsMgr

---

This topic describes the data models of alarms on the element management system (EMS).

- [AlarmStaticInfo\\_T](#)

This topic describes static alarm data.

- [RedefineAlarmData\\_T](#)

This topic describes the data information of redefined alarm severities.

- [RedefineAlarmData\\_T::redefineInfo](#)

This topic describes the additional information (in name-value pair format) of redefined alarm severities.

- [QueryRedefineAlarmData\\_T](#)

This topic describes the conditions for querying alarm redefinition information.

**Parent topic:** [Information Model](#)

## 9.1.5.1.1 AlarmStaticInfo\_T

---

This topic describes static alarm data.

Name	Type	Description
groupID	long	Indicates the alarm group ID.
alarmID	long	Indicates the alarm ID.
nativeProbableCause	string	Indicates the alarm cause.

Name	Type	Description
additionalInfo	globaldefs::NVSLIST_T	Indicates the additional information. Currently, it is blank.

**Parent topic:** [emsMgr](#)

## 9.1.5.1.2 RedefineAlarmData\_T

---

This topic describes the data information of redefined alarm severities.

Name	Type	Description
ruleID	long	Indicates the rule ID. It is used to uniquely identify the rule of redefined alarm severities. The options are as follows:> 0: valid<= 0: invalid
groupID	long	Indicates the alarm group ID.
alarmID	long	Indicates the alarm ID.
redefinedSeverity	notifications::PerceivedSeverity_T	Indicates the alarm severity. The options are as follows:PS_INDETERMINATE, PS_CRITICAL,PS_MAJOR,PS_MINOR,PS_WARNING,PS_Critical,PS_Major,PS_Minor,PS_Warning,PS_Ineterminate. This parameter is mandatory when you add or modify an alarm severity.
objectList	globaldefs::NamingAttributesList_T	Indicates the effective scope. The options are as follows: Blank: networkwide Non-blank: for a specified object
redefineInfo	globaldefs::NVSLIST_T	Indicates the additional information of the redefinition (in name-value pair format). The field name can be: TIMECOND (effective period), OLDSEVERITY (original alarm severity), or REMARK (remark). Adding an alarm severity: Only the REMARK field is processed. Deleting an alarm severity: This parameter is not processed. Modifying an alarm severity: Only the REMARK field is processed. Querying alarm severities: The values of the TIMECOND, OLDSEVERITY, and REMARK fields are returned. For details about field definitions, see RedefineAlarmData_T::redefineInfo.

**Parent topic:** [emsMgr](#)

## 9.1.5.1.3 RedefineAlarmData\_T::redefineInfo

---

This topic describes the additional information (in name-value pair format) of redefined alarm severities.

Name	Type	Description
TIMECOND	NameAndStringValue_T	Indicates the time conditions. The format is week,week,...week,;time time ...  and the value contains week information and time information that are separated by a comma (,). The value of the week information ranges from 1 to 7. The value 7 indicates Sunday, the value 1 indicates Monday, and the rest can be deduced by analogy. The time information can be blank. A maximum of three sections of information (separated by  ) is contained. Each time information must consist of eight characters (including the start time and end time). The value 00100020 indicates that the start time is 00:10 and the end time is 00:20. The time information is represented by a closed interval. Example: 7,3,;00000100 02000400 22002300  This field is blank if the alarm type or severity has not been redefined.
OLDSEVERITY	NameAndStringValue_T	Indicates the original alarm severity. The options are as follows: PS_INDETERMINATE PS_CRITICAL PS_MAJOR PS_MINOR PS_WARNING PS_CLEARED
REMARK	NameAndStringValue_T	Indicates the remarks.

**Parent topic:** [emsMgr](#)

## 9.1.5.1.4 QueryRedefineAlarmData\_T

---

This topic describes the conditions for querying alarm redefinition information.

Name	Type	Description
ruleID	long	Indicates the rule ID. It is used to uniquely identify the rule of redefining alarm severities. The options are as follows:> 0: valid<= 0: invalid
groupID	long	Indicates the alarm group ID.
alarmID	long	Indicates the alarm ID.

**Parent topic:** [emsMgr](#)

## 9.1.6 Format of Notification Events

---

In the additionalInfoUsage.pdf and AVC\_SC\_Notifications.pdf among the supporting documentation of the TMF 814 recommendation, the structure of each notification event of the CORBA interface is described. This chapter presents the detailed definitions of the structure of the notification events.

---

### NOTE:

By default, the CORBA NBI does not send notifications for access device resource changes. If the OSS needs to know about these changes, set the configuration item BMS\_NOTIFY\_ENABLE\_NBI\_SWITCH for the access subsystem by referring to the "Guidelines for Configuring Configuration Items Using the GUI-based Tool".

---

- [\*\*NT\\_ALARM Event Format\*\*](#)

This topic describes the alarm/event format.

- [\*\*NT\\_TCA Event Format\*\*](#)

This topic describes the format of threshold-crossing alert (TCA) event format.

- [\*\*NT\\_ALARM UPDATED Event Format\*\*](#)

This topic describes the format of alarm update events.

**Parent topic:** [CORBA NBI Developer Guide \(Alarm\)](#)

## 9.1.6.1 NT\_ALARM Event Format

---

This topic describes the alarm/event format.

- [Header Format of the NT\\_ALARM Event](#)

This topic describes the header format of a alarm notification event (NT\_ALARM). The type of the NT\_ALARM event can be obtained from its header format.

- [Format of the NT\\_ALARM Event \(filterable\\_data\)](#)

This topic describes the format of the filterable\_data of a alarm notification event. The alarm/event objects, causes, types, time, and other information of the NT\_ALARM event can be obtained from the format of its filterable\_data.

- [Format of the NT\\_ALARM Event \(remainder\\_of\\_body\)](#)

This topic describes the format of the remainder\_of\_body of a alarm notification event. Detailed object information of the NT\_ALARM event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

### 9.1.6.1.1 Header Format of the NT\_ALARM Event

---

This topic describes the header format of a alarm notification event (NT\_ALARM). The type of the NT\_ALARM event can be obtained from its header format.

**Table 1 Header format of the NT\_TCA event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.

**Table 1 Header format of the NT\_TCA event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
		type_name	string	Type of a notification event. The value is fixed as NT_ALARM.
		event_name	string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event. (It is blank by default.)

Parent topic: [NT\\_ALARM Event Format](#)

## 9.1.6.1.2 Format of the NT\_ALARM Event (filterable\_data)

---

This topic describes the format of the filterable\_data of a alarm notification event. The alarm/event objects, causes, types, time, and other information of the NT\_ALARM event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_ALARM event**

Parameter	Type	Description
notificationId	String	Indicates the unique ID of an alarm/event notification. ( It is blank by default.)
objectName	globaldefs::NamingAttributes_T	Indicates the name of the object that reports an alarm/event.

**Table 1 Format of filterable\_data in structure of the NT\_ALARM event**

Parameter	Type	Description
nativeEMName	String	Indicates information about the object that generates an alarm/event.
nativeProbableCause	String	Indicates causes of the alarm shown in the EMS GUI.
objectType	notifications::ObjectType_T	Indicates the type of the object that reports an alarm/event.
emsTime	globaldefs::Time_T	Indicates the time (UTC) at which the EMS receives the notification. It is UTC time by default.
neTime	globaldefs::Time_T	Indicates the time (UTC) at which the NE reports the notification . It is UTC time by default. This parameter is left blank if the NE does not report the time.
isClearable	Boolean	Specifies whether the alarm can be cleared.
layerRate	transmissionParameters::LayerRate_T	Indicates the layer rate of the object that generates an alarm. For trail alarms, it is the layer rate of the alarm source object.
probableCause	String	Indicates the possible cause of the alarm defined by the TMF.
probableCauseQualifier	String	Used with the <b>EqType</b> and <b>AeID</b> parameters (equipment type and ID of an alarm event) to uniquely identify the alarm/event type.
perceivedSeverity	notifications::PerceivedSeverity_T	Indicates the severity of the alarm. Options are as follows: <ul style="list-style-type: none"> <li>• PS_CRITICAL</li> <li>• PS_MAJOR</li> <li>• PS_MINOR</li> <li>• PS_WARNING</li> </ul> The severity of a cleared alarm is <b>PS_CLEARED</b> .

**Table 1 Format of filterable\_data in structure of the NT\_ALARM event**

Parameter	Type	Description
serviceAffecting	notifications::ServiceAffecting_T	Specifies whether the alarm affects the services. Options are as follows: <ul style="list-style-type: none"> <li>• SA_UNKNOWN</li> <li>• SA_SERVICE_AFFECTING</li> <li>• SA_NON_SERVICE_AFFECTING</li> </ul>
affectedTPList	globaldefs::NamingAttributesList_T	Indicates the list of the affected TPs. This field is not supported.
additionalText	String	Indicates the details of the object that generates an alarm.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. For details, see "NT_ALARM" in "AdditionalInfo Description".
X.733::EventType	String	Indicates the alarm type. Alarms are classified into the following six basic types according to the ITU-T X.733: <ul style="list-style-type: none"> <li>• communicationsAlarm</li> <li>• qualityofServiceAlarm</li> <li>• equipmentAlarm</li> <li>• processingErrorAlarm</li> <li>• securityAlarm</li> <li>• environmentalAlarm</li> </ul>
objectTypeQualifier	String	Indicates the type of the object that reports an alarm/event. This parameter applies only to the added objects in TMF 3.0.
rcaiIndicator	Boolean	Specifies whether an alarm is a root alarm. Options are as follows: <ul style="list-style-type: none"> <li>• true: root alarms</li> <li>• false: common alarms (that are not root or correlative alarms)</li> </ul> For correlative alarms, this parameter is unavailable.
X.733::CorrelatedNotifications	notifications::CorrelatedNotificationList_T	Indicates the ID list of root alarms that cause correlative alarms.

**Table 1 Format of filterable\_data in structure of the NT\_ALARM event**

Parameter	Type	Description
		source: This parameter is always left blank. notifIDs: For correlative alarms, the value of this parameter is the root alarm ID. For other alarms, this parameter is left blank. For example, if alarm B is generated because of the fault that causes alarm A, and alarm C is generated because of the fault that causes alarm B, the value of this parameter is the IDs of alarms A and B.
X.733::ProposedRepairActions	String	Indicates the troubleshooting suggestions.

---

 **NOTE:**

If you set **RTNAlarmForTI** to **1**, the **nativeEMSname** will include the **Remark** of NE attributes in the GUI. The OptiX RTN 620 supports this function. The default value of **RTNAlarmForTI** is **0**.

The configuration item is in the file **bundle.cfg**.

By default, the path of **bundle.cfg** is as follows:

- On the Windows OS: %IMAP\_ROOT%\etc\oss\_cfg\nbi\corba\conf\ii\_corbaagent\_bundle
- On the Solaris or Linux OS: \$IMAP\_ROOT/etc/oss\_cfg/nbi/corba/conf/ii\_corbaagent\_bundle

For example:

In the GUI, the OptiX RTN 620 attribute settings are as follows:

- Name: ROMAITAH-PRHU-100\_ROMABBCC-PRHU-200
- Remarks: (A1-B1-2-4)\_(X1-X2-X3-X4)\_(Y1-Y2-Y3-Y4)\_(Z1-Z2-Z3-Z4)\_(Q1-Q2-Q3-Q4)

In the alarm, **nativeEMSName** is **Huawei/U2000;ROMAITAH-PRHU-100\_ROMABBCC-PRHU-200;/rack=1/shelf=(A1-B1-2-4)\_(X1-X2-X3-X4)/slot=15**.

---

**Parent topic:** [NT\\_ALARM Event Format](#)

## **9.1.6.1.3 Format of the NT\_ALARM Event (remainder\_of\_body)**

---

This topic describes the format of the remainder\_of\_body of a alarm notification event. Detailed object information of the NT\_ALARM event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_ALARM event is always null.

**Parent topic:** [NT\\_ALARM Event Format](#)

## 9.1.6.2 NT\_TCA Event Format

---

This topic describes the format of threshold-crossing alert (TCA) event format.

- [Header Format of the NT\\_TCA Event](#)

This topic describes the header format of a threshold-crossing alert (TCA) notification event (NT\_TCA). The type of the NT\_TCA event can be obtained from its header format.

- [Format of the NT\\_TCA Event \(filterable\\_data\)](#)

This topic describes the format of the filterable\_data of a threshold-crossing alert (TCA) notification event. alarm/event objects, causes, types, time, and other information of the NT\_TCA event can be obtained from the format of its filterable\_data.

- [Format of the NT\\_TCA Event \(remainder\\_of\\_body\)](#)

This topic describes the format of the remainder\_of\_body of a threshold-crossing alert (TCA) notification event. Detailed object information of the NT\_TCA event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

### 9.1.6.2.1 Header Format of the NT\_TCA Event

---

This topic describes the header format of a threshold-crossing alert (TCA) notification event (NT\_TCA). The type of the NT\_TCA event can be obtained from its header format.

**Table 1 Header format of the NT\_TCA event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_ALARM.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [NT\\_TCA Event Format](#)

## **9.1.6.2.2 Format of the NT\_TCA Event (filterable\_data)**

---

This topic describes the format of the filterable\_data of a threshold-crossing alert (TCA) notification event. alarm/event objects, causes, types, time, and other information of the NT\_TCA event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_TCA event**

Name	Type	Description
notificationId	string	Indicates the unique ID of a notification event.

**Table 1 Format of filterable\_data in structure of the NT\_TCA event**

Name	Type	Description
objectName	globaldefs::NamingAttributes_T	Indicates the name of the object that reports the alarm.
nativeEMSName	string	Indicates the information about the objects that generates the TCA event. The format of this field is the same as the format of the nativeEMSName field in the NT_ALARM structure.
objectType	notifications::ObjectType_T	Indicates the type of the object that reports the alarm.
emsTime	globaldefs::Time_T	Indicates the time (UTC) at which the EMS receives the notification.
neTime	globaldefs::Time_T	Indicates the time (UTC) at which the NE reports the notification. This parameter is blank if the NE does not report the time.
isClearable	boolean	Specifies whether the alarm can be cleared.
perceivedSeverity	notifications::PerceivedSeverity_T	Indicates that the severity of the TCA event. The value is PS_INDETERMINATE.
layerRate	transmissionParameters::LayerRate_T	Indicates the layer rate of the object where performance threshold-crossing occurs.
granularity	Granularity_T	Indicates the period of the threshold crossing event. The period is 15 minutes or 24 hours.
pmParameterName	PMParameterName_T	Indicates the name of the performance parameter.
pmLocation	PMLocation_T	Indicates the location of the TP where the performance parameter measurement point

**Table 1 Format of filterable\_data in structure of the NT\_TCA event**

Name	Type	Description
		<p>is located. The values are as follows:</p> <p>PML_NEAR-END_Rx: The local end is the receive end.</p> <p>PML_FAR-END_Rx: The remote end is the receive end.</p> <p>PML_NEAR-END_Tx: The local end is the transmit end.</p> <p>PML_FAR-END_Tx: The remote end is the transmit end.</p> <p>PML_BIDIRECTIONAL: bi-directional.</p>
thresholdType	PMThresholdType_T	<p>Indicates the threshold type of the TCA event. The modes in which Huawei transport equipment processes the performance threshold crossing are as follows:</p> <ul style="list-style-type: none"><li>• In the case of the single threshold, the performance threshold crossing starts when the value exceeds the threshold; the performance threshold crossing ends when the value is less than the threshold.</li><li>• In the case of the double thresholds, the performance threshold crossing starts when the value exceeds the higher threshold; performance threshold crossing ends when the value is less than the lower threshold.</li></ul> <p>Hence, Huawei equipment supports only one type of the performance threshold crossing, that is, TWM_HIGH.</p>

**Table 1 Format of filterable\_data in structure of the NT\_TCA event**

Name	Type	Description
value	float	Indicates the value of the performance parameter when the TCA event is generated.
unit	string	Unit.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. For details, see "NT_TCA" in "AdditionalInfo Description".

**Parent topic:** [NT\\_TCA Event Format](#)

### **9.1.6.2.3 Format of the NT\_TCA Event (remainder\_of\_body)**

---

This topic describes the format of the remainder\_of\_body of a threshold-crossing alert (TCA) notification event. Detailed object information of the NT\_TCA event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_TCA event is always null.

**Parent topic:** [NT\\_TCA Event Format](#)

### **9.1.6.3 NT\_ALARM\_UPDATED Event Format**

---

This topic describes the format of alarm update events.

- [\*\*Header Format of the NT\\_ALARM\\_UPDATED Event\*\*](#)

This topic describes the header format of a alarm update notification event (NT\_ALARM\_UPDATED). The type of the NT\_ALARM\_UPDATED event can be obtained from its header format.

- [Format of the NT\\_ALARM\\_UPDATED Event \(filterable\\_data\)](#)

This topic describes the format of the filterable\_data of a alarm update notification event. The notification ID and additional information of the NT\_ALARM\_UPDATED event can be obtained from the format of its filterable\_data.

- [Format of the NT\\_ALARM\\_UPDATED Event \(remainder\\_of\\_body\)](#)

This topic describes the format of the remainder\_of\_body of a alarm update notification event. Detailed object information of the NT\_ALARM\_UPDATED event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

## 9.1.6.3.1 Header Format of the NT\_ALARM\_UPDATED Event

---

This topic describes the header format of a alarm update notification event (NT\_ALARM\_UPDATED). The type of the NT\_ALARM\_UPDATED event can be obtained from its header format.

**Table 1 Header format of the NT\_ALARM\_UPDATED event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_ALARM_UPDATED.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [NT\\_ALARM\\_UPDATED Event Format](#)

## **9.1.6.3.2 Format of the NT\_ALARM\_UPDATED Event (filterable\_data)**

---

This topic describes the format of the filterable\_data of a alarm update notification event. The notification ID and additional information of the NT\_ALARM\_UPDATED event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_ALARM\_UPDATED event**

Name	Type	Description
notificationId	string	Indicates the unique ID of a notification event.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. For details, see "NT_ALARM_UPDATED" in "AdditionalInfo Description".

---

### **⚠ NOTICE:**

The **NT\_ALARM\_UPDATED** notification will be reported only when **IsBzOI** is set to **1**. The default value of **IsBzOI** is **0**. You can change the default value of **IsBzOI** in the configuration file **bundle.cfg**.

By default, the path of **bundle.cfg** is as follows:

- On the Windows OS:  
**%IMAP\_ROOT%\etc\oss\_cfg\nbi\corba\conf\ii\_corbaagent\_bundle**
  - On the Solaris or Linux OS:  
**\$IMAP\_ROOT/etc/oss\_cfg/nbi/corba/conf/ii\_corbaagent\_bundle**
- 

**Parent topic:** [NT\\_ALARM\\_UPDATED Event Format](#)

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## **9.1.6.3.3 Format of the NT\_ALARM\_UPDATED Event (remainder\_of\_body)**

---

This topic describes the format of the remainder\_of\_body of a alarm update notification event. Detailed object information of the NT\_ALARM\_UPDATED event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_ALARM\_UPDATED event is always null.

**Parent topic:** [NT\\_ALARM\\_UPDATED Event Format](#)

## 9.1.7 Notification Event Samples

---

This topic describes samples of notification events that the CORBA NBI supports.

- [NT\\_ALARM Event Sample](#)

This topic describes an alarm event sample.

- [NT\\_TCA Event Sample](#)

This topic describes TCA event sample.

- [NT\\_ALARM\\_UPDATED Event Sample](#)

This topic describes a alarm update event sample.

**Parent topic:** [CORBA NBI Developer Guide \(Alarm\)](#)

### 9.1.7.1 NT\_ALARM Event Sample

---

This topic describes an alarm event sample.

**Table 1** NT\_ALARM event sample

		Sample Contents		R
header	fixed_header	event_type	domain_name: "tmf_mtnm"	N/A
			type_name:"NT_ALARM"	N/A
	event_name	""		N/A
	variable_header	name Timeout value 18000000000		The "Tim para only app noti eve

**Table 1 NT\_ALARM event sample**

Sample Contents		R
filterable_data	notificationId	031515524727
objectName	name EMS value Huawei/U2000 name ManagedElement value 589895 name PTP value /rack=1/shelf=1/slot=4/domain=sdh/port=1	N/A
nativeEMSName	Huawei/U2000;NE71;/rack=1/shelf=1/slot=4/domain=sdh/port=1	N/A
nativeProbableCause	R_LOS	N/A
objectType	OT_PHYSICAL_TERMINATION_POINT	N/A
emsTime	20060315080421.0Z	N/A
neTime	20060315080419.0Z	N/A
isClearable	true	N/A
layerRate	76	N/A
probableCause	LOS	N/A
probableCauseQualifier	1-1	N/A
perceivedSeverity	PS_CRITICAL	N/A
serviceAffecting	SA_SERVICE_AFFECTING	N/A
affectedTPList	""	N/A
additionalText	Huawei/U2000;589895;/rack=1/shelf=1/slot=4/domain=sdh/port=1	N/A

**Table 1 NT\_ALARM event sample**

Sample Contents		R
additionalInfo	name AlarmSerialNo value 10	N/A
	name AlarmReason value RLOS	N/A
	name ProductName value OptiX 2500+	N/A
	name EquipmentName value SL1	N/A
	name AffirmState value FALSE	N/A
	name DetailInfo value ""	N/A
	name Location value NA	N/A
	name Direction value NA	N/A
	name LocationInfo value 8-N1EDQ41-5(SDH-5)-VC4:5-VC12:16[1-6-1]	N/A
	name HandlingSuggestion value There are bit error alarms BIP_EXC and BIP_SD in the line	N/A
X.733::EventType	name MaintenanceStatus value NotInMaintenance	N/A
	communicationsAlarm	N/A
objectTypeQualifier	""	N/A
rcaiIndicator	true	Indicates alarm identifier. The following items: <ul style="list-style-type: none"><li>• true</li><li>• false</li><li>• other</li><li>• alarm</li><li>• critical</li><li>• major</li><li>• minor</li><li>• informational</li><li>• warning</li></ul>

**Table 1 NT\_ALARM event sample**

Sample Contents			Remarks
			This parameter is not for correlation of alarms.
X.733::CorrelatedNotifications	12345		Indicates ID 1 alarm correlated to alarm 12345.

**Parent topic:** [Notification Event Samples](#)

## 9.1.7.2 NT\_TCA Event Sample

---

This topic describes TCA event sample.

**Table 1 NT\_TCA event sample**

Sample Contents			Remarks
header	fixed_header	event_type	Domain_name: "tmf_mtnm" Type_name:"NT_TCA"
		event_name	""
	variable_header	name Timeout value 18000000000	
		The "Timeout"	

**Table 1 NT\_TCA event sample**

Sample Contents		Remarks
		parameter is only applicable to notification events.
filterable_data	notificationId	031515524780
objectName	name EMS value Huawei/U2000	
	name ManagedElement value 589895	
	name PTP value /rack=1/shelf=1/slot=4/domain=sdh/port=1	
nativeEMSName	Huawei/U2000;NE71;/rack=1/shelf=1/slot=4/domain=sdh/port=1	
objectType	OT_PHYSICAL_TERMINATION_POINT	
emsTime	20060315083033.0Z	
neTime	20060315083013.0Z	
isClearable	true	
perceivedSeverity	PS_INDETERMINATE	
layerRate	22	
granularity	15min	
pmParameterName	PMP_BBE	

**Table 1 NT\_TCA event sample**

Sample Contents		Remarks
pmLocation	PML_NEAR_END_Rx	
	TWM_HIGH	
	25	
	""	
	additionalInfo name ProductName value OptiX 2500+ name EquipmentName value N2SL16	

**Parent topic:** [Notification Event Samples](#)

## 9.1.7.3 NT\_ALARM\_UPDATED Event Sample

This topic describes a alarm update event sample.

**Table 1 NT\_ALARM\_UPDATED Event Sample**

Sample Contents				Remarks
header	fixed_header	event_type	Domain_name: "tmf_mtnm"	
			Type_name:"NT_ALARM_UPDATED"	
		event_name	""	
	variable_header	name timeout value 18000000000		
filterable_data	notificationId	031515524727		
	additionalInfo	name AlarmSerialNo value 10		
		name affectedSNCNativeEMSName value NE1032-NE1081-VC4 Server Trail		

**Table 1 NT\_ALARM\_UPDATED Event Sample**

Sample Contents		Remarks
	name affectedTLNativeEMSName value f-1	

**Parent topic:** [Notification Event Samples](#)

## 9.1.8 Object Naming Rules

---

This chapter lists the naming rules for various objects in the U2000 CORBA interface. The naming rules are in accordance with the TMF recommendations.

The objects contain the following:

- **[EMS](#)**  
This topic describes the naming rule for an element management system (EMS), including the managed subnets and the EMS itself.
- **[ManagedElement](#)**  
This topic describes the naming rule for a managed element. A managed element is an NE managed by the EMS.
- **[EquipmentHolder](#)**  
This topic describes the naming rule for the equipment holder. Equipment holder is a resource that can hold other physical components. Currently, equipment holders supported by the CORBA NBI include racks, shelves, slots, and subslots.
- **[Equipment](#)**  
This topic describes the naming rule for a device. A device represents a manageable physical component of an NE, such as a circuit board or a fan.

**Parent topic:** [CORBA NBI Developer Guide \(Alarm\)](#)

### 9.1.8.1 EMS

---

This topic describes the naming rule for an element management system (EMS), including the managed subnets and the EMS itself.

**Table 1 EMS**

Object name	EMS
Naming rule in TMF	name="EMS"; value="CompanyName/EMSname"
Name example in theU2000 CORBA NBI	name="EMS"; value="Huawei/U2000"
Remarks	If it is necessary to manage several iManager U2000s at the same time, modify the U2000 names through the Msuite to ensure that each U2000 name is unique in the NMS management domain. For the details, refer to "Deploying and Configuring the CORBA NBI" in "CORBA NBI User Guide".

**Parent topic:** [Object Naming Rules](#)

## 9.1.8.2 ManagedElement

---

This topic describes the naming rule for a managed element. A managed element is an NE managed by the EMS.

**Table 1 ManagedElement**

Object Name	ManagedElement
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName"
Name example in theU2000 CORBA NBI	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825"
Remarks	N/A

**Parent topic:** [Object Naming Rules](#)

## 9.1.8.3 EquipmentHolder

---

This topic describes the naming rule for the equipment holder. Equipment holder is a resource that can hold other physical components. Currently, equipment holders supported by the CORBA NBI include racks, shelves, slots, and subslots.

**Table 1 EquipmentHolder**

Object Name	EquipmentHolder	
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="EquipmentHolder"; value="EquipmentHolderName"	
Name example in theU2000 CORBA NBI	SDH NE	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="EquipmentHolder"; value="/rack=1/shelf=1/slot=5"
	WDM NE	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="33554433" 3. name="EquipmentHolder"; value="/rack=1/shelf=590225/slot=1"
Remarks	Currently, the U2000 CORBA interface supports four types of EquipmentHolder objects: rack, shelf, slot, and subslot.	

**Parent topic:** [Object Naming Rules](#)

## 9.1.8.4 Equipment

---

This topic describes the naming rule for a device. A device represents a manageable physical component of an NE, such as a circuit board or a fan.

**Table 1 Equipment**

Object name	Equipment
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="EquipmentHolder"; value="EquipmentHolderName" 4. name="Equipment"; value="EquipmentName"

**Table 1 Equipment**

Object name	Equipment
Name example in theU2000 CORBA NBI	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="EquipmentHolder"; value="/rack=1/shelf=1/slot=5" 4. name="Equipment"; value="1"
Remarks	N/A

**Parent topic:** [Object Naming Rules](#)

## 9.1.9 AdditionalInfo Description

---

This chapter describes the usage of additional fields in each functional module of the CORBA NBI. The additional fields, consisting of additionalInfo and additionalCreationInfo.

- [NT\\_ALARM](#)  
This topic provides information about the additional fields for an alarm event.
- [NT\\_TCA](#)  
This topic provides information about the additional fields for a threshold crossing event.
- [NT\\_ALARM\\_UPDATED](#)  
This topic provides information about the additional fields for an alarm update event.

**Parent topic:** [CORBA NBI Developer Guide \(Alarm\)](#)

### 9.1.9.1 NT\_ALARM

---

This topic provides information about the additional fields for an alarm event.

Field Name	Value	Meaning	Remarks
AlarmSerialNo	FREE STRING For example, 10.	Indicates the serial number of the U2000	N/A

Field Name	Value	Meaning	Remarks
		where an alarm is generated.	
AlarmReason	FREE STRING For example, LOS (loss of signal) at the receiving line side.	Indicates the reason for an alarm.	N/A
ProductName	FREE STRING For example, OptiX 2500+.	Indicates the type of the equipment where an alarm is generated.	N/A
EquipmentName	FREE STRING For example, SL4.	Indicates the name of the equipment where an alarm is generated.	N/A
AffirmState	FREE STRING For example, FALSE.	Indicates the alarm acknowledgment status.	N/A
DetailInfo	FREE STRING For example, port ID: 1, path ID: 1.  If the field is blank, no additional alarm information is included.	Indicates the alarm parameter information.	N/A
SlaveShelf	FREE STRING For example, 72CXP.	Indicates the name of the slaveCaretshelf where an alarm is generated.	N/A
Direction	FIXED STRING Value range: NEAR-END FAR-END NA	Indicates the direction where an alarm is generated.	N/A
Location	FIXED STRING Value range: Rx Tx NA	Indicates the position where an alarm is generated.	N/A

Field Name	Value	Meaning	Remarks
HandlingSuggestion	FREE STRING	Indicates the handling suggestion of an alarm.	N/A
LocationInfo	FREE STRING	Indicates the alarm identification information.	The value of LocationInfo is in free format and cannot be parsed.
MaintenanceStatus	InMaintenance NotInMaintenance	Indicates the maintenance status.	
affectedSNCNativeEMSName	FREE STRING	Indicates the trails affected by the alarm object name.	This field is unavailable if the value of IsBzOI is 1.
TrailName	FREE STRING	Indicates the trails affected by the alarm object name.	This field is unavailable if the value of IsBzOI is 0.
affectedASONObjectName	FREE STRING	Indicates the name of the ASON object affected by the alarm.	This field is unavailable if the value of IsBzOI is 1.
DeviceIP	FREE STRING For example, 129.0.0.10	Indicates the IP address of the device where alarms are reported.	
ROUTE_CAUSE	FIXED STRING 0: Common alarm 1: Correlative alarm 2: Root alarm	Indicates the alarm type.	
lResSubType	FREE STRING For example, 2686977	Indicates the resource subtype ID.	
Memo	FREE STRING	Indicates the alarm remarks information.	This field is available only after alarm remarks are configured.

**Parent topic:** [AdditionalInfo Description](#)

## **9.1.9.2 NT\_TCA**

---

This topic provides information about the additional fields for a threshold crossing event.

Field Name	Value	Meaning	Remarks
ProductName	FREE STRING For example, OptiX 2500+.	Indicates the type of equipment that raises TCA.	N/A
EquipmentName	FREE STRING For example, SL4.	Indicates the name of equipment that raises TCA.	N/A

**Parent topic:** [AdditionalInfo Description](#)

## **9.1.9.3 NT\_ALARM\_UPDATED**

---

This topic provides information about the additional fields for an alarm update event.

Field Name	Value	Meaning	Remarks
AlarmSerialNo	FREE STRING For example, 10.	Indicates the NMS SN of an alarm. This field uniquely identifies an alarm.	N/A
affectedSNCNativeEMSName	FREE STRING For example, NE1032-NE1081-VC4 Server Trail.	Indicates the trails affected by the alarm object name.	N/A
affectedTLNativeEMSName	FREE STRING For example, f-1.	Indicates the optical affected by the alarm object name.	N/A
affectedASONObjectName	FREE STRING For example, NE(126-213)-NE(126-211)-WDM-ASON-Trail-0002	Indicates the name of the ASON object affected by the alarm.	This field is unavailable when the IsBzOI configuration item is set to 1.

**Parent topic:** [AdditionalInfo Description](#)

## 9.1.10 Alarm Cause List

---

This topic describes alarm causes supported by the CORBA NBI.

**Table 1 Alarm Cause List**

probableCause	Description
UNIDENTIFIED	For alarms that do not match any other string below
AIS	Alarm indication signal
AU-AIS	AU alarm indication signal
BER_SD	Signal degradation
BER_SF	Signal failure (includes receiving failure and excessive bit error)
DCC_FAILURE	Data communication channel failure
ENV	Environment abnormal
EQPT	Equipment alarm
FOP_APS	Failure of APS protocol
GNE_CONNECT_FAIL	GNE connection failure
K1K2M	K1K2 mismatch
K2M	K2 mismatch
LCD	Loss of cell delineation
LICENCE_INVALID	Licence invalid
LOF	Loss of frame
LOM	Loss of multiframe
LOP	Loss of pointer

**Table 1 Alarm Cause List**

probableCause	Description
LOS	Loss of signal
MS-AIS	alarm indication signal for multiplex sections (MSs)
NE_COMMU_BREAK	NE communication break
OOF	Out of frame
PLM	Payload label mismatch
RAI	Remote alarm indication
SECURITY_VIOLATION	Security alarm
TCM-AIS	Tandem connection sink-incoming alarm indication signal
TIM	Trace identifier mismatch
TU-AIS	TU alarm indication signal
TX_DEGRADE	Transmitter degrade, including laser degrade
TX_FAIL	Transmitter failure, including laser failure
UAT	Unavailable time
UNEQ	Payload unequipped
VC-AIS	Alarm indication signal of virtual channels
VC-RDI	Remote defect indication of virtual channels
VP-AIS	Alarm indication signal of virtual paths
VP-RDI	Remote defect indication of virtual path

For detailed description of alarm events, refer to the document "CORBA NBI Alarm List".

---

**NOTE:**

The version document "CORBA NBI Alarm List" is available on the Huawei technical support website. To obtain this document, contact the local technical support engineers.

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**Parent topic:** [CORBA NBI Developer Guide \(Alarm\)](#)

## 9.1.11 IDL Description

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This topic describes the IDL defined in the CORBA NBI.

Refer to the version document *iManager U2000 V200R015C60 CORBA NBI IDL File.zip*.

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 **NOTE:**

The version document *iManager U2000 V200R015C60 CORBA NBI IDL File.zip* is in the package file *NBI Documents* and it is available on the Huawei technical support website. To obtain this document, contact the local technical support engineers.

Access <http://support.huawei.com/> and choose **Support > Software > Fixed Network > SingleOSS-FBB > SingleOSS-FBB > U2000 Common > iManager U2000**. Then select the software version and download the package *NBI Documents*.

Select the corresponding base version if the patch version does not contain the preceding documents.

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**Parent topic:** [CORBA NBI Developer Guide \(Alarm\)](#)

## 9.1.12 Description of Unimplemented and Customized Interfaces

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**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
EquipmentInventoryMgr_I	getAlarmSeverityList	Queries alarm severities.	This interface is customized. The detailed developer guide is provided with a special document.
	setAlarmSeverityList	Set alarm severities.	This interface is customized. The detailed developer guide is provided with a special document.

**Parent topic:** [CORBA NBI Developer Guide \(Alarm\)](#)

## 9.1.13 Layer Rate Description

---

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
1	LR_Not_Applicable	Irrelevant layer
2	LR_T1_and_DS1_1_5M	1.5 Mbit/s async/PDH signal
3	LR_T2_and_DS2_6M	6 Mbit/s async/PDH signal
4	LR_T3_and_DS3_45M	45 Mbit/s async/PDH signal
5	LR_E1_2M	2 Mbit/s PDH signal
6	LR_E2_8M	8 Mbit/s PDH signal
7	LR_E3_34M	34 Mbit/s PDH signal
8	LR_E4_140M	140 Mbit/s PDH signal
9	LR_E5_565M	565 Mbit/s PDH signal
10	LR_VT1_5_and_TU11_VC11	VC11 SONET/SDH path signal
11	LR_VT2_and_TU12_VC12	VC12 SONET/SDH path signal
12	LR_VT6_and_TU2_VC2	VC2 SONET/SDH path signal
13	LR_Low_Order_TU3_VC3	VC3 SONET/SDH path signal
14	LR_STS1_and_AU3_High_Order_VC3	AU3 SONET/SDH path signal

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
15	LR_STS3c_and_AU4_VC4	VC4 SONET/SDH path signal
16	LR_STS12c_and_VC4_4c	12xSTS-1/4xVC4 contiguous concatenation
17	LR_STS48c_and_VC4_16c	48xSTS-1/16xVC4 contiguous concatenation
18	LR_STS192c_and_VC4_64c	192xSTS-1/64xVC4 contiguous concatenation
19	LR_Section_OC1_STS1_and_RS_STM0	STM-0 regenerator section
20	LR_Section_OC3_STS3_and_RS_STM1	STM-1 regenerator section
21	LR_Section_OC12_STS12_and_RS_STM4	STM-4 regenerator section
22	LR_Section_OC48_STS48_and_RS_STM16	STM-16 regenerator section
23	LR_Section_OC192_STS192_and_RS_STM64	STM-64 regenerator section
24	LR_Line_OC1_STS1_and_MS_STM0	STM-0 multiplex section
25	LR_Line_OC3_STS3_and_MS_STM1	STM-1 multiplex section
26	LR_Line_OC12_STS12_and_MS_STM4	STM-4 multiplex section
27	LR_Line_OC48_STS48_and_MS_STM16	STM-16 multiplex section
28	LR_Line_OC192_STS192_and_MS_STM64	STM-64 multiplex section
40	LR_Optical_Channel	For WDM wavelength
41	LR_Optical_Multiplex_Section	For WDM wavelength bands

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
42	LR_Optical_Transmission_Section	For WDM entire optical signal, that is, used for OTS and OMS layers of OTM-n.m (n>=1)
43	LR_ATM_NI	For ATM network interfaces (UNI and NNI)
44	LR_ATM_VP	For ATM virtual paths
45	LR_ATM_VC	For ATM virtual channels
46	LR_PHYSICAL_ELECTRICAL	Analog signal on electrical physical media
47	LR_PHYSICAL_OPTICAL	Analog signal on optical physical media
48	LR_PHYSICAL_MEDIALESS	Physical media for technologies, such as radio
49	LR_OPTICAL_SECTION	Wavelength termination for a non DWDM system, that is, used for all kinds of single-lambda ports
50	LR_DIGITAL_SIGNAL_RATE	Raw binary electrical signal of unspecified rate
58	LR_D1_Video	Video capable port
59	LR_ESCON	IBM protocol for mainframes
61	LR_Fast_Ethernet	Not supported by the TMF
62	LR_FC_12_133M	133 Mbit/s Fibre Channel protocol
63	LR_FC_25_266M	266 Mbit/s Fibre Channel protocol

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
64	LR_FC_50_531M	531 Mbit/s Fibre Channel protocol
65	LR_FC_100_1063M	1063 Mbit/s Fibre Channel protocol
66	LR_FDDI	N/A
67	LR_FICON	IBM protocol for mainframes
68	LR_Gigabit_Ethernet	Not supported by the TMF
72	LR_DSR_OC1_STM0	STM-0 digital signal rate
73	LR_DSR_OC3_STM1	STM-1 digital signal rate
74	LR_DSR_OC12_STM4	STM-4 digital signal rate
75	LR_DSR_OC24_STM8	STM-8 digital signal rate
76	LR_DSR_OC48_and_STM16	STM-16 digital signal rate
77	LR_DSR_OC192_and_STM64	STM-64 digital signal rate
78	LR_DSR_OC768_and_STM256	STM-256 digital signal rate
110	LR_DSR_OTU1	DSR of optical channel transport unit 1
111	LR_DSR_OTU2	DSR of optical channel transport unit 2
79	LR_DSR_1_5M	1.5 Mbit/s digital signal rate
80	LR_DSR_2M	2 Mbit/s digital signal rate
81	LR_DSR_6M	4 Mbit/s digital signal rate

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
82	LR_DSR_8M	8 Mbit/s digital signal rate
83	LR_DSR_34M	34 Mbit/s digital signal rate
84	LR_DSR_45M	45 Mbit/s digital signal rate
85	LR_DSR_140M	140 Mbit/s digital signal rate
86	LR_DSR_565M	565 Mbit/s digital signal rate
87	LR_DSR_Gigabit_Ethernet	Gigabit_Ethernet digital signal rate
88	LR_Section_OC24_STS24_and_RS_STM8	STM-8 regenerator section
89	LR_Line_OC24_STS24_and_MS_STM8	STM-8 multiplex section
90	LR_Section_OC768_STS768_and_RS_STM256	STM-256 regenerator section
91	LR_Line_OC768_STS768_and_MS_STM256	STM-256 multiplex section
93	LR_DSR_2xSTM1	2 x STM-1 radio multiplexing
96	LR_Ethernet	All Ethernet rates
97	LR_DSR_Fast_Ethernet	10/100 Mbit/s Ethernet
98	LR_Encapsulation	For Ethernet, the following encapsulation protocols can be applied: HDLC/PPP, HDLC/LAPS, ML/PPP, and GFP Transparent or Frame Mapped types

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
99	LR_Fragment	Used for inverse multiplexing modeling (virtual concatenation for SONET/SDH and IMA)
100	LR_STS6c_and_VC4_2c	6xSTS-1/2xVC4 contiguous concatenation
101	LR_STS9c_and_VC4_3c	9xSTS-1/3xVC4 contiguous concatenation
103	LR_STS24c_and_VC4_8c	24xSTS-1/8xVC4 Contiguous concatenation
113	LR_DSR_10Gigabit_Ethernet	10 Gbit/s Ethernet
115	LR_DSR_40Gigabit_Ethernet	Extended by HUAWEI
8001	LR_Section_and_RS	Extended by HUAWEI
8002	LR_Line_and_MS	Extended by HUAWEI
8003	LR_ATM	ATM layer rate (extended by HUAWEI)
8004	LR_Optical_Supervision_Channel	Rate of optical monitor layer (extended by HUAWEI)
8005	LR_FC_200_2125M	2125 Mbit/s Fibre Channel protocol (extended by HUAWEI)
104	LR_OCH_Data_Unit_1	Trail and tandem connection monitoring/termination
105	LR_OCH_Data_Unit_2	Trail and tandem connection monitoring/termination
106	LR_OCH_Data_Unit_3	Trail and tandem connection monitoring/termination

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
8041	LR_OCH_Data_Unit_4	Trail and tandem connection monitoring/termination
107	LR_OCH_Transport_Unit_1	Optical channel transport unit 1 (trail termination)
108	LR_OCH_Transport_Unit_2	Optical channel transport unit 2 (trail termination)
109	LR_OCH_Transport_Unit_3	Optical channel transport unit 3 (trail termination)
8042	LR_OCH_Transport_Unit_4	Optical channel transport unit 4 (trail termination)
8006	LR_OCH_Data_Unit_5G	Trail and tandem connection monitoring/termination
8007	LR_OCH_Transport_Unit_5G	Trail termination
8010	LR_MPLS_Channel	Extended by HUAWEI
303	LR_DVB_ASI	Digital video broadcast (ASI)
8023	LR_DVB_SDH	Digital video broadcast (SDH)
8024	LR_FICON_Express	Extended by HUAWEI
8021	LR_SAN_FC_400	Extended by HUAWEI
8038	LR_SAN_FC_800	Extended by HUAWEI
8022	LR_SAN_FC_1000	Extended by HUAWEI
8037	LR_SAN_FC_1200	Extended by HUAWEI

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
8025	LR_HDTV	Extended by HUAWEI
8031	LR_OCH_Data_Unit_0	Extended by HUAWEI
69	LR_DS0_64K	DS0 CTP layer rate
305	LR_LAG_Fragment	Link aggregation
8008	LR_DSR_10Gigabit_Ethernet_LAN	Extended by HUAWEI
8009	LR_DSR_10Gigabit_Ethernet_WAN	Extended by HUAWEI
8011	LR_MPLS_Path	Extended by HUAWEI
8020	LR_DSR_GFP_T	Extended by HUAWEI
8026	LR_ETR	Extended by HUAWEI
8027	LR_CLO	Extended by HUAWEI
8028	LR_1G_ISC	Extended by HUAWEI
8029	LR_2G_ISC	Extended by HUAWEI
8030	LR_4G_FICON	Extended by HUAWEI
8032	LR_CPRI	Extended by HUAWEI
8033	LR_CPRI_CUT	Extended by HUAWEI
8034	LR_PHY_MEDIA	Extended by HUAWEI
8035	LR_INFINIBAND_2DOT5G	Extended by HUAWEI
8036	LR_INFINIBAND_5G	Extended by HUAWEI
8039	LR_8G_FICON	
8043	LR_DSR_100Gigabit_Ethernet	Extended by HUAWEI
8044	LR_EPON_OLT	
8045	LR_EPON_ONU	
8046	LR_3GSDI	Extended by HUAWEI

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
8047	LR_3GSDIRBR	Extended by HUAWEI
8051	LR_10G_FICON	
8060	LR_IP_Path	Extended by HUAWEI
8069	LR_DS0_64K_NC	
8070	LR_GRE_Path	Extended by HUAWEI
8071	LR_DSR_32xSTM1	Extended by HUAWEI
8072	LR_RS_32xSTM1	Extended by HUAWEI
8073	LR_MS_32xSTM1	Extended by HUAWEI
299	LR_DSL	Digital Subscriber Line
335	LR_OCH_Data_Unit_Flexible	Extended by HUAWEI
8012	LR_MPLS_IP_VPN	Extended by HUAWEI
8081	LR_OCH_Data_Unit_Cn	Extended by HUAWEI
8082	LR_OCH_Transport_Unit_Cn	Extended by HUAWEI
319	LR_DSR_2.5Gigabit_Ethernet	2.5 Gbit/s Ethernet

**Parent topic:** [CORBA NBI Developer Guide \(Alarm\)](#)

## 9.1.14 Glossary

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This appendix lists the glossary used in the guide.

### 1

At the place where the signals are input, the same channel of optical signals are input to two boards or ports of the WDM equipment through two fibers. The two boards or ports are backed up mutually. When a fault occurs in the working path, the input end of the

WDM equipment switches to the protection path. If the working path recovers, the input end of the WDM equipment switch back to the working path.

## **1+1 optical path protection**

### **A**

#### **Access Control List (ACL)**

Access Control List (ACL) is a list of IP address. The addresses listed in the ACL are used for authentication. If the ACL for the user is not null, it indicates that the address where the user logged in is contained in the list.

#### **Adjacent Concatenation**

For SDH, the virtual containers (VC) to carry concatenated services are consecutive in terms of their service in the frame structures, so that they use the same path overhead (POH).

#### **Alarm**

A visible or an audible indication to notify the person concerned that a failure or an emergency has occurred. See also Event.

#### **AIS**

Alarm Indication Signal. A signal sent downstream in a digital network if an upstream failure has been detected and persists for a certain time.

#### **Alarm acknowledgement**

The process during which when an alarm is generated, the operator needs to acknowledge the alarm and take the right step to clear the alarm.

#### **AIS insertion**

If there are excessive errors in a channel, AIS can be inserted in this channel to indicate it is unavailable. For a line board, you can set whether to insert AIS when there are excessive errors in the B1, B2 and B3 bytes. For a tributary board at the E1 or T1 level, you can set whether to insert AIS when there are excessive errors in BIP-2. For a tributary board at the E3 level or higher, you can set whether to insert AIS when there are excessive errors in the B3 byte.

#### **Alarm delay time**

Alarm delay includes start delay and end delay. An alarm is not regarded as being generated until the NE has been detecting it for a period of time, and this period of time is the alarm start delay time. An alarm is not regarded as being cleared until the NE has been detecting the ending of it for a period of time, and this period of time is the alarm end delay time. Setting the delay time can avoid the generation of unnecessary alarms due to misreport or jitter.

#### **Alarm reversion**

For the port that has already been configured but has no service, this function can be used to avoid generating relevant alarm information, preventing alarm interference.

#### **Alarm suppression**

The suppressed alarm of a specific object is not reported. The object here may be the network-wide equipment, a specific NE, a specific board and even a specific function module of a specific board.

## **ALC**

Automatic Level Control. A technique (procedure) to automatically reduce the output power of optical amplifiers to avoid exposure to hazardous levels.

## **All-ONES**

The entire capacity of the adapted or characteristic information is set to logic "1".

## **ALS**

The ALS function of an optical line system automatically switches off the transmitter of a regenerator section in case of cable break in this section.

## **APS**

Automatic Protection Switching. Autonomous switching of a signal between and including two MS\_TT, Sn\_TT, or Sm\_TT functions, from a failed working trail/SNC to a protection trail/SNC and subsequent restoration using control signals carried by the K-bytes in the MSOH, HO POH, or LO POH.

## **Auto-negotiation**

The rate/work mode of the communication party set as self-negotiation is specified through negotiation according to the transmission rate of the opposite party.

## **Attribute**

Property of an object.

## **B**

### **Bidirectional (protection) switching**

For a unidirectional fault, both directions (of the trail, subnetwork connection, and so on), including the affected and unaffected direction, are switched.

## **Bit error**

An inconsistency between bits embedded within a signal and bits extracted at the receiver.

## **Bit error alarm threshold**

When the bit error reaches a specific limit, the equipment will report an alarm. This limit is the bit error alarm threshold. The threshold can be divided into crossing threshold and defect threshold.

## **Broadcast service**

The unidirectional services from one service source to multiple service sinks are called the broadcast service.

## **C**

## **CI**

**Characteristic Information.** The information passing across a CP or TCP. It is a signal with a specific format, which is transferred on "network connections". The specific formats will be defined in the technology-specific recommendations.

## **Client**

A terminal (PC or workstation) connected to a network that can send instructions to a server and get results through a user interface. See also server.

## **Client trail**

There is an inclusion relationship between the trails of different levels. For example, a trail of a certain level contains multiple trails of lower levels. In such a structure, the lower-level trail is called the client trail.

## **Collision trails**

The data of a trail at the NE layer is changed. After the trail is re-searched, the original trail becomes a collision trail.

## **Concatenation**

When the standard virtual containers (including VC4/VC3/VC12/VC11) are incapable of carrying the volume of an SDH signal, the containers can be concatenated to function as a larger container.

## **CoS**

**Class of Service.** CoS keeps the priority mapping rules. It works in internal ports, especially when there is congestion, CoS is even more important. The services at different levels are processed according to the corresponding priorities. The service with higher priority is processed first and the service with lower priority is discarded when the bandwidth is insufficient.

## **Cross-Connection**

Network services are realized through the cross-connections of NEs. The cross-connection is the connection of channels between the tributary board and the line board, or between line boards inside the NE.

## **Current alarms**

Alarms that do not clear, or has cleared but is not acknowledged.

## **Current performance data**

The performance data stored in the current register is called current performance data. The current 15-minute or 24-hour register (only one for each) is applied to collect the performance data in the current monitoring period. It changed within the monitor period.

## **Custom view**

The user-defined view is a subset on the Main Topology. Included network entities can be NE, network management system, link and subnetwork. Generally, the network management personnel need to customize some views and select the network entity under their management from the Main Topology.

## **Clock View**

The Clock View provides a visible platform to implement the clock management function.

## **D**

### **Data interface service**

The service that uses the F1 byte in an SDH frame or some undefined bytes to transmit information such as call charge, network management system information and power supply monitoring.

### **DCC**

Data Communications Channel. The data channel that uses the D1-D12 bytes in the overhead of an STM-N signal to transmit information on operation, management, maintenance and provision (OAM&P) between NEs. The DCC channels that are composed of bytes D1-D3 is referred to as the 192 kbit/s DCC-R channel. The other DCC channel that are composed of bytes D4-D12 is referred to as the 576 kbit/s DCC-M channel.

### **Discrete service**

The cross-connection that exists on an NE but cannot form trails on the network management system.

### **DNI**

Dual node interconnection is an architecture between two rings where two nodes in each ring are interconnected. The two interconnections between the two rings can be arranged to provide protection of the traffic crossing from one ring to the other.

## **E**

### **Extra traffic**

During fault-free conditions, it is possible to use the protection channels to carry additional traffic. This additional traffic, which is referred to as extra traffic, has lower priority than the normal traffic on the working channels and has no means for protection.

### **Equipment set**

An aggregate of multiple managed equipment. Equipment set facilitates the user authority management on equipment in the management domain of the network management system. If some operation authorities over one equipment set are assigned to a user (user group), these operation authorities over all equipment of the equipment set are assigned to the user (user group).

### **ECC**

Embedded Control Channel. An ECC provides a logical operations channel between SDH NEs, utilizing a data communications channel (DCC) as its physical layer.

### **EMU**

Environment Monitoring Unit. A type of power and environment monitoring unit that is used to monitor the environment variables, such as the power supply and temperature.

With external signal input through the relay, fire alarm, smoke alarm, burglary alarm, and so on can be monitored as well.

### **Exercise switching**

This command tests whether a switching protocol can work normally without completing the actual switching operation.

### **Exerciser - Ring**

This command exercises ring protection switching of the requested channel without completing the actual bridge and switch. The command is issued and the responses are checked, but no working traffic is affected.

### **Exerciser - Span**

This command exercises span protection of the requested channel without completing the actual bridge and switch. The command is issued and the responses are checked, but no working traffic is affected.

### **Extended ID of NE**

The serial number of a subnetwork where an NE resides, which is usually used to distinguish different network segments. An extended ID and an ID form the physical ID of an NE.

### **Extended protection subnet**

An unprotected chain like ADM-ADM-TM or ADM-ADM-ADM. The end-point NEs of a link are of the ADM type. As this type of protection subnetwork can be extended, we name it extended protection subnetwork.

## **F**

### **Failure**

The fault cause persisted long enough to consider the ability of an item to perform a required function to be terminated. The item may be considered as failed; a fault has now been detected.

### **Fault**

A fault is the inability of a function to perform a required action. This does not include an inability due to preventive maintenance, lack of external resources, or planned actions.

### **F1 byte**

The user path byte, which is reserved for the user but usually it is special for network providers. The F1 byte is mainly used to provide the temporary data or voice path for special maintenance objectives. It belongs to the regenerator section overhead byte.

### **F2, F3 bytes**

The user channel bytes. These two bytes provide the user with the communication between path units related to payload. They belong to the higher order path overhead byte.

### **fiber/cable**

The general name of optical fiber and cable. The physical entity that connects transport equipment in a transport network, bears the transmitted object (user information, network management information) and implements the transport function.

## **Flow**

A collection of packets that have the same characteristics. On the NMS or NE software, a flow is a group of classification rules. On boards, it is a group of packets that have the same quality of service (QoS). At present, two flows are supported: port flow and port+VLAN flow. A port flow is based on port ID, while a port+VLAN flow is based on port ID and VLAN ID. The two flows cannot coexist on the same port.

## **Forced switching**

This command performs the ring switch from working channels or boards to the protection channels or boards. This switch occurs regardless of the state of the protection channels or boards, unless the protection channels or boards are satisfying a higher priority bridge request.

## **Full duplex**

The system that can transmit information in both directions on a communication link.

## **Full filtering trail**

In this search mode, the network management system first deletes all the trail data on the network management system and reserves the service configuration data of respective NEs, and then re-searches for the service configuration data of respective NEs on the network management system to form the new trail information.

## **Full search**

In the full search mode, all the trail information on the network management system will be deleted first (Only the trail information at the network layer on the network management system is deleted, while the service configuration information of NE in NE layer on the network management system and on the NE remain). Then the service configuration information of respective NEs in the NE layer on the network management system is re-searched to form the trail information in the network layer on the network management system.

## **G**

### **Gateway**

The equipment that is used to connect two independent networks that use different communication protocols.

### **Gateway IP**

IP address is used for TCP/IP communication between an NE and the network management system, which is effective only when it is used for TCP/IP communication. That is, only the gateway NE needs the IP address. IP address cannot be used to identify an NE uniquely. NEs in different TCP/IP networks may have the same IP address. And one NE may have several IP addresses (for example: an IP address of a dial-up network, an IP address of the Ethernet port and so on).

## **Gateway NE**

The NE that communicates with the NMS and other NEs through a data communication network.

## **H**

### **Host name**

Name of the computer that functions as a main controlling point in a network and provides special service to the users.

### **High Availability**

The ability of a system to continuously perform its functions during a long period, which may exceed the suggested working time of the independent components. You can obtain the high availability (HA) by using the error tolerance method. Based on learning cases one by one, you must also clearly understand the limitations of the system that requires an HA ability and the degree to which the ability can reach.

### **History alarms**

Alarms that have cleared and been acknowledged.

### **History performance data**

The performance data stored in the history register and the auto-report performance data stored on the network management system are called history performance data in a unified way.

## **I**

### **In-Service Trail Modifying**

A way of trail modification that allows you to configure new routes for a trail and enables the system to automatically delete the original trail after you apply the settings to the NE.

### **Incremental filtering trail**

In this search mode, the network management system first reserves the trail data of the current client and then re-searches the service configuration data of respective NEs on the network management system according to the newly given search condition to form the new trail data and combine it with the original trail data to get the result.

### **Incremental search**

The increment search mode compares the trail information in network layer on the network management system with the service configuration information of respective NEs on the network management system. If they are inconsistent, the trail information will be fed back into the list as an "Inconsistent Trail". When the user has deleted the inconsistent trail information, the system will re-search for the service configuration information that has not formed the trail in the NE layer on the network management system.

### **Inloop**

An output signal is returned back to the corresponding input port.

### **Inter-board wavelength protection**

This function is implemented by the wavelength conversion boards that are capable of dual fed and selective receiving. The dual fed is implemented by adding a passive optical splitter to the tributary. The signal selection is implemented by the SCC turning off the laser at the tributary side with poorer signal quality according to the signal quality of the lines of two wavelength conversion boards, and letting the channel of light with higher quality pass through the coupler. The coupler is also a passive device and only one channel of light can pass through it. If there are two channels of light passing through the coupler, they interfere each other that would cause bit error to the service. Hence, it is necessary to ensure that only the channel of light with higher quality passes through the coupler at the same time.

### **Intermediate office**

A concept in the telecommunications area. A site that manages fiber/cable or grooms services.

### **Intra-Board wavelength protection**

The intra-board wavelength protection is mainly implemented by the wavelength conversion board with dual fed and signal selection function. The dual fed is implemented by the optical divider inside the board, while the signal selection is implemented by the board turning off the laser of one of the receiving optical interfaces. Hence, this protection mode is also called optical wavelength intra-board path protection. The switching in this protection mode can be completed within a short time, but the services must be interrupted during the maintenance of the damaged board or equipment. Hence, this protection mode has a relatively lower reliability.

### **IP address**

Internet Protocol Address. A 32-bit address that uniquely identifies a node in an IP Internet network. An IP address consists of a network ID and a unique host ID. An IP address consists of the decimal values of its eight bytes, separated with periods; for example, 192.168.7.27.

### **Isolated node**

A type of special NE or an optical port on an NE. Logically, an isolated node does not comprise an SDH NE of any types, which are TM, ADM, REG and DXC

## **L**

### **Layer**

A concept used to allow the transport network functionality to be described hierarchically as successive levels; each layer being solely concerned with the generation and transfer of its characteristic information.

### **License**

A permission provided by a vendor to authorize the use of specific functions of a product. Usually the license consists of encrypted codes, and the operation authority varies with different level of license.

### **Lock status**

Services are not switched to the protection board or channel when a fault occurs, if currently no switching takes place. If currently the switching takes place, after the working board or channel recovers to normal, the services are not switched back to the working board or channel.

### **Lockout of Switching**

When the switching condition is satisfied, this function disables the service from being switched from the working channel to the protection channel. When the service has been switched, the function enables the service to be restored from the protection channel to the working channel.

### **Login mode**

The client login mode includes single-user and multi-users login modes. The multi-users mode is the default mode.

## **M**

### **Management flag**

A check box helps you to determine whether the trail is a managed object of the trail management function at the network layer. By default, trails are managed objects. If choosing not to manage it through the trail management function, you can manage the cross-connections of an individual NE through the service configuration function performed at a node.

### **Management information**

The information that is used for network management in a transport network.

### **Manual switching**

When the protection channel is efficient and there is no higher-level switching request, services are manually switched from the working channel to the protection channel, testing whether the network still has the protection capability.

### **MS node**

The WDM network node that has the spectrum analysis unit in the link for which the ALC function is configured.

### **Multi-trail protection service**

It is a protection mode in which multiple services with different trails but with the same sink protect an important service with the same sink. This protection mode supports protecting important services through non-optical network trails, such as microwave. It presently supports that three protection trails protect one service trail. At the trail sink, it monitors the quality of protection trail signals and protects important services according to the priority and the signal quality.

### **Main Topology**

The default network management system client interface, and all topology management functions are accessed here.

## **N**

## **NE**

Network Element. NE includes the hardware unit and the software running on it. Usually, one NE has at least an SCC (system control and communication) board which responsible for the management and monitoring of the NE. The NE software runs on the SCC board.

### **NE side**

The NE configuration data saved on the SCC board of the equipment, which can be uploaded to the network management system and then stored in databases on the network management system NE side.

### **Network layer**

The logical layer of the network management system that saves the network data. The configuration data related to a network is saved in databases.

## **NNI**

Network Node Interface. The interface at a network node which is used to interconnect with another network node. See also SDH NNI.

### **Non-revertive**

In non-revertive switching, there is a working and protection line, board and so on. Services remain on the protection line or board if the switch requests are terminated; that is, when the fault that caused them to switch to the protection line or board is cleared.

### **NE database**

The databases that are saved in an NE. Usually, the databases are saved in the SCC board of an NE.

## **NE ID**

In a network, each NE corresponds to a unique identifier, that is, the NE ID. In the OptiX transmission equipment, it is specified that the NE ID is a 24-bit binary digit, that is, three bytes. The DIP switch on the SCC board of the NE constitutes the lower 16 bits of the NE ID. The higher eight bits of the NE ID are the extended ID (default value: 9), which is also called the subnetwork number. The extended ID is usually used to identify different subnetworks.

## **NM**

Network Management.

### **Non-protection subnet**

A subnet that has no protection.

### **Network segment**

The range of IP addresses in which the gateway NE functions.

### **NE Explorer**

The main operation interface, of the NETWORK MANAGEMENT SYSTEM, which is used to manage the OptiX equipment. In the NE Explorer, the user can configure, manage and maintain the NE, boards, and ports on a per-NE basis.

## **NE Panel**

A graphical user interface, of the network management system, which displays subracks, boards, and ports on an NE. In the NE Panel, the user can complete most of the configuration, management and maintenance functions for an NE.

## **O**

### **Outloop**

An input signal is directly returned back to the corresponding output port.

## **OWSP**

Optical Wavelength Shared Protection. OWSP is a bidirectional ring, where each node is equipped with an OWSP. There are two channels ( $\lambda 1$  and  $\lambda 2$ ) in the main optical path on the internal and external rings in each span on a ring. The fiber and the OWSP on the main optical path are connected to the optical ports inputting  $\lambda 1$  and  $\lambda 2$  on the mux/demux board (unnecessary to be connected to the OTU), and  $\lambda 1$  and  $\lambda 2$  can be added and dropped at every node.

## **P**

### **Path**

A trail in a path layer.

### **Path protection**

The working principle of path protection: When the system works in path protection mode, the PDH path uses the dual fed and signal selection mode. Through the tributary unit and cross-connect unit, the tributary signal is sent simultaneously to the east and west lines. Meanwhile, the cross-connect unit sends the dual fed signals from the opposite end to the tributary unit, and the tributary unit selectively receive the signal from the two signals.

### **Performance register**

The memory space that is used to store performance events.

### **Performance threshold**

A threshold mechanism can be used to generate an autonomous event report when the performance of a transport entity falls below a predetermined level.

## **PMU**

The unit that is used to monitor power supply in the equipment.

### **Protection policy**

In case the service route provides multiple service protections, different protection strategies can be selected as required. Protection strategy refers to the protection mode given the priority in use for the trail: protection, no protection, and extra traffic. Of the

above, the protection preference is divided into trail protection and subnetwork connection protection.

### **Protection subnet**

A network concept in the network management system. A protection subnet is not an MSP ring or a path protection ring. A protection subnet consists of NEs and fiber connections.

### **Protocol controller status**

The status of the protocol controller of the protection subnet of the MSP or SNCP type. The statuses are not started, started, starting, partially started.

### **Pane**

A major separate area of a window or dialog box, usually used for display rather than data entry.

## **R**

### **Remote Network Monitoring (RMON)**

A manage information base (MIB) defined by the Internet Engineering Task Force (IETF). RMON is mainly used to monitor the data flow of one network segment or the entire network.

### **Revertive switching**

In revertive operation, the traffic signal (service) always returns to (or remains on) the working SNC/trail if the switch requests are terminated; that is, when the working SNC/trail has recovered from the defect or the external request is cleared.

### **Resource sharing**

Resource sharing means that a physical link resource may belong to multiple protection subnetworks.

### **Route**

The path that a trail passes through.

### **Route constraint**

The constraint conditions for calculating a route. When creating a trail, the user can specify the explicit route and the NEs that the trail cannot pass. The explicit route and the NEs are the constraints for calculating the route.

### **ROADM**

Reconfiguration Optical Add/Drop Multiplexing. ROADM helps you to terminate or pass through any one wavelength at every node without affecting the existing services. At the same time, ROADM can change wavelengths through the network management system remotely, to adjust wavelengths added or dropped in a quick and convenient manner. In addition, ROADM enables power equalization at path level through a built-in power equalization function, and adjusts power for pass-through paths in a better way than a band-based dynamic gain equalizer (DGE) does.

## S

### Section

A trail in a section layer.

### S1 byte

To implement protection switching of clocks in the whole network, the NE must learn about the clock quality information of the clock reference source it traces. Therefore, ITU-T defines S1 byte to transmit the network synchronization status information.

### Safe control switch

The IPA safe switch is set in consideration of the long-span networking requirement, which cannot allow too low output optical power. If the safe control switch is turned off, IPA restarting optical power is the specified output power of the OAU. Otherwise, the IPA restarting optical power is restricted to less than 10 dBm.

### Script file

It is the text file describing the physical information and configuration information of the entire network, including the network-wide configuration file, NE port naming file, NE configuration file, NE list file, NM computer information file, service actualization script, network layer information file, network modeling and design information file and ASON information file.

### SD trigger condition

SD refers to signal degradation. The multiplex section protocol defaults to start switching in case of signal loss. In practice, signal degradation severely affects some services, so protection switching is needed. Or, you can turn off this trigger condition through the switch to avoid MS switching when the signal degrades.

### SD

Signal Degrade. A signal indicating the associated data has degraded in the sense that a degraded defect (dDEG) condition is active.

### SDH-ASON Trail

A trail that spans both the SDH and ASON domains.

### SF

Signal Fail. A signal indicating the associated data has failed in the sense that a near-end defect condition (not being the degraded defect) is active.

### SDH NNI

SDH Network Node Interface. It is applied to build communications connection with the equipment beyond the management area of the network management system. Usually, the NM creates an SDH NNI by creating a logical system on the port of an idle line board, and the NE must be a TM without protection and fiber connection.

### Search domain

The range of searching for NEs.

## **Server trail**

There is an inclusion relationship between the trails of different levels. For example, a trail of a certain level contains multiple trails of lower levels. In such a structure, the bearer trail that bears another trail of lower level is called the server trail.

## **Secondary filter trail**

In this search mode, the NM re-searches the trail data displayed by the current client according to the given search conditions, helping the customer find the trail data which interests him the most.

## **Shortcut menu**

A menu that is displayed when right-clicking an object's name or icon. Also called a context menu.

## **Serial port extended ECC**

The ECC channel realized by means of serial port.

## **Service clock working route**

The route of a service clock from the source to the sink in a WDM system. The working route can be in the form of point-to-point or broadcast (That is, an input clock source corresponds to multiple output clock sources).

## **Service configuration policy**

When pass-through services are configured on the newly added nodes, the high-order mode or low-order mode can be selected to pass through. When the VC12 service over a VC4 exceeds a preset threshold, higher order cross-connect is selected, otherwise lower order cross-connect is selected. When the services are not VC12 ones, they are converted into VC12 equivalents. For example: if there are two VC3 and four VC12 services on a VC4, there should be  $21 \times 2 + 4 = 46$  VC12 services.

## **Service loading indication**

To indicate the status of loading services in an SDH frame by using the C2 or V5 byte in the SDH path overhead.

## **SLA (Service Level Agreement)**

An agreement signed between the network carrier and the client, concerning the treatments that the client can receive when services are transferred in the network. The agreement contains the information on technology and commerce. Usually, SLA refers to a specific QoS.

## **SLIP**

Serial Line Interface Protocol, defines the framing mode over the serial line to implement transmission of messages over the serial line and provide the remote host interconnection function with a known IP address.

## **Subnet**

The network that consists of a group of interconnected or correlated NEs, according to different functions. For example, protection subnet, clock subnet and so on.

### **Subnet connection protection**

Subnetwork connection protection uses the 1+1 mode. SNCP is of 1+1 protection mode. Payloads are transmitted simultaneously on both the working and the protection sub-network connections. When the working sub-network connection fails, or when its performance deteriorates to a certain level, at the receiving end of the sub-network connection, the signal from the protection sub-network connection is selected according to the preference rule. Switching usually takes the single-end switching mode, no protocol is needed.

### **Subnet mask**

Also referred to as the network mask off code, it is used to define network segments, so that only the computers in the same network segment can communicate with one another, suppressing broadcast storm between different network segments.

### **Subnet number**

Subnetwork number is used to differentiate the different network sections in the sub-network conference. Actually it is the first several digits (one or two) of the user phone number. An orderwire phone number is composed of the sub-network number and the user number.

### **SNCP node**

The SNCP node of a ring subnet that can support the ability to dually feed and selectively receive trails. In this way, subnet connection protection is realized. Usually, the node of the path protection type is set as an SNCP node.

### **Spread type**

The spread type of ATM service includes point-to-point (p2p) and point-to-multipoint (including p2mpRoot and p2mpLeaf).

### **Switching priority**

There may be the case that several protected boards need to be switched; the tributary board switching priority should be set. If the switching priority of each board is set the same, the tributary board that fails later cannot be switched. The board with higher priority can preempt the switching of that with lower priority.

### **Synchronize Alarm**

When synchronizing the alarms, the network management system checks the alarms in the network management system database and the alarms in the NE. If they are inconsistent, the alarms in the NE are uploaded to the network management system database and overwrite the old ones.

### **Synchronize Fiber Service**

To re-upload all services carried on the physical fiber links.

### **Synchronize NE time**

To apply the system time of the network management system server to NEs to keep the time of all NEs consistent.

## T

### Tag/Untag

The Ethernet port that can identify and transmit the packets with an 802.1q tag header is referred to as a Tag port; otherwise it is referred to as an Untag port.

### Terminal NE

A source NE or a sink trail.

### Topology

The network management system topology is a basic component of the man-machine interactive interface. The topology clearly shows the structure of the network, the alarms of different NEs, subnetworks in the network, the communication status, and the basic network operating status.

### Traffic frame discard flag

It is the traffic frame discard control. Two options are provided: enable and disable. It indicates the means by which the NE discards cells when the network is congested. When the frame discard mark is closed, the cells will be discarded at the cell level; when it is opened, they will be discarded at the frame level. Here, "frame" refers to the AAL protocol data unit.

### Trail

A "transport entity" which consists of an associated pair of "unidirectional trails" capable of simultaneously transferring information in opposite directions between their respective inputs and outputs.

### Trail consistency check

Check whether the circuit route and the activation status of the NM side and NE side are the same, clear the superfluous MOs and combine some of the circuits. During network expansion, such an operation as adding fibers to the SDH NNI or configuring/deleting services through the configuration layer will result in circuit inconsistency.

### Trail management function

A network level management function of the network management system. Through trail management, you can configure end-to-end services, view graphic interface and visual routes of a trail, query detailed information of a trail, filter, search and locate a trail quickly, manage and maintain trails in a centralized manner, manage alarms and performance data by trail, and print a trail report.

### Trail View

The user interface of the network management system, that is used to manage trails based on topologies. The Trail View helps the user to quickly configure and maintain trails. See also Protection View, Clock View.

### Transmission media layer route

The route that consists of the physical media (such as fibers and NEs) that a trail passes through.

### **Trunk link**

A route that bears Ethernet services in the network management system.

### **TPS protection**

The equipment level protection that uses one standby tributary board to protect N tributary boards. When a fault occurs on the working board, the SCC issues the switching command, and the payload of the working board can be automatically switched over to the specified protection board and the protection board takes over the job of the working board. After the fault is cleared, the service is automatically switched to the original board.

## **U**

### **Upper threshold**

The value that can generate a performance threshold crossing if exceeded.

### **UAT**

Unavailable Time. A UAT event is reported when the monitored object generates 10 consecutive severely errored seconds (SES) and the SESs begin to be included in the unavailable time. The event will end when the bit error ratio per second is better than  $10^{-3}$  within 10 consecutive seconds.

### **Unidirectional (protection) switching**

Unidirectional (protection) switching. For a unidirectional fault (that is, a fault affecting only one direction of transmission), only the affected direction (of the trail, subnetwork connection) is switched.

### **UNI**

User Network Interface. The interface between the user and a network node.

### **Unprotected**

Services transmitted through an ordinary way. Once a failure or interruption occurs, the data cannot be restored for lack of protection mechanism.

### **Unterminated Service**

The service that is not terminated within the management domain of the network management system.

### **UPC/NPC**

Usage Parameter Control/Network Parameter Control. During the communication, the UPC is implemented to monitor the actual traffic on each virtual circuit that is input to the network. Once the specified parameter is exceeded, measures will be taken to control. NPC is similar to the UPC in function. The difference is that the incoming traffic monitoring function is divided into UPC and NPC according to their positions. The UPC locates at the user/network interface, while the NPC at the network interface.

## **Upload**

To query all or some of the configuration data of the NE to the network management system and overwrite the configuration data saved at the NE layer of the network management system.

## **User**

The user of the network management system client or NE user. The user and password define the corresponding authority of operation and management.

## **User group**

User set refers to the set of NMS users with the same management authorities. The default user group includes: system administrator, system maintenance engineer, system operator and system supervisor. The attributes of user set include name and detailed description.

## **V**

### **Virtual fiber**

The fiber that is created between different equipment. A virtual fiber is used to represent the optical path that bears SDH services in a WDM system.

### **VC12, VC3 trail**

The channels (that is trail group) provided for trail-layer network nodes (such as a switch) in a path-layer network, and act as the basic unit of transport capacity of paths between trail-layer network nodes.

### **VC4 server trail**

The path rate of the VC4 server trail is 150.336 Mbit/s. The VC4 server trail provides transparent channels (that is, circuit group) for circuit-layer network nodes (for example, a switch) in a path-layer network, and acts as the basic unit of inter-office communication path. When the VC4 server trail is configured, only the higher order cross-connection of VC4 is generated in the intermediate NE, but no cross-connection is generated at the two ends; that is, no service is added/dropped. Therefore, the VC4 server trail is not a traditional service. It is only the basis for VC3 and VC12 trail creation.

## **VCC**

Virtual Channel Connection. The VC logical trail that carries data between two end points in an ATM network.

## **VCI**

Virtual Channel Identifier. The identifier in the ATM (Asynchronous Transfer Mode) cell header that identifies to which virtual channel the cell belongs.

## **VPI**

The field in the ATM (Asynchronous Transfer Mode) cell header that identifies to which VP (Virtual Path) the cell belongs.

## **Virtual concatenation**

For SDH, the virtual containers (VC) to carry concatenated services are independent in terms of their location in the frame structures, so that they can be located flexibly.

## **Virtual NE**

Like a normal NE, a virtual NE is also displayed with an icon on a window, but it is only an NE simulated according to the practical situation, which does not represent an actual NE. Therefore, the actual status of this NE cannot be queried and its alarm status cannot be displayed with colors. A virtual NE is used to represent an NE or subnet that is not managed by Huawei's NMS for end-to-end service configuration and trail management.

## **W**

### **Wave band**

A board like the MB2 divides the wavelength resources into such fixed wavelength groups as 1-4, 5-8 and 9-12, and so on. A wavelength group is called a wave band, and a wave band carrying services to be added or dropped is called add/drop wave band.

## **WTR**

Wait to Restore. This command is issued when working channels meet the restore threshold after an SD or SF condition. It is used to maintain the state during the WTR period unless it is preempted by a higher priority bridge request.

### **WTR time**

A period of time that must elapse before a trail/connection that is recovered from a fault can be used again to transport the normal traffic signal and to select the normal traffic signal.

### **Wavelength path protection ring**

The wavelength path protection ring comprises the working ring and the protection ring. Service signals are transmitted in the two rings in opposite directions. In the wavelength path protection ring, service signals from one node (such as node A) to another node (such as node C) are transmitted via the working ring and the protection ring at one time. Node C receives the signals from the two rings at the same time and selects the signal with higher quality.

### **Wavelength protection group**

The important data that is used to describe the wavelength protection structure. The wavelength path protection can only work with the correct configuration of the wavelength protection group.

### **Wavelength protection subnet**

The ring-chain structure that is used to describe wavelength protection. The wavelength protection subnet is the basic network-level information and the basic network-level data oriented to user. The user can create or delete a protection subnet, set parameters for the protection subnet as required. In this way, the management at the network layer is realized.

### **Working path**

A specific path that is part of a protection group and is labeled working.

## **WXCP service**

Wavelength Cross-Connection Protection. The services that have path protection on a ring network. Services are dually fed and selectively received. The working service and the protection services are switched by using the cross-connection function.

**Parent topic:** [CORBA NBI Developer Guide \(Alarm\)](#)

## **9.1.15 Acronyms and Abbreviations**

---

This topic lists acronyms and abbreviations that are used in this guide.

### **A**

#### **ACE**

Adaptive Communication Environment

#### **AIS**

Alarm Indication Signal

#### **AMI**

Alternate Mark Inversion code

#### **APS**

Automatic Protection Switching

#### **ASON**

Automatically Switched Optical Network

#### **ASN.1**

Abstract Syntax Notation One

#### **ATM**

Asynchronous Transfer Mode

### **B**

#### **BLML**

Business Management Layer

#### **BMS**

Business Management System

### **C**

#### **CAR**

Committed Access Rate

**CC**

Cross Connection

**CORBA**

Common Object Request Broker Architecture

**COS**

Class Of Service

**CTP**

Connection Termination Point

**CPU**

Central Processing Unit

**D****DCC**

Data Communication Channels

**DCN**

Data Communication Network

**DNI**

Dual Node Interconnection

**DWDM**

Dense Wavelength Division Multiplexing

**E****ECC**

Embedded Control Channel

**ELL**

Encapsulation Layer Link

**EML**

Element Management Level

**EMS**

Element Management System

**EPG**

Equipment Protection Group

**EPL**

Ethernet Private Line

**EPLan**

**Ethernet Private LAN**

**EVPL**

Ethernet Virtual Private Line

**EVPLan**

Ethernet Virtual Private LAN

**F**

**FD**

Flow Domain

**FDFr**

Flow Domain Fragment

**FEC**

Forward Error Correction

**FIFO**

First In First Out

**FTP**

File Transfer Protocol

**FTP**

Floating Termination Point

**G**

**GCT**

GUI Cut-Through

**GE**

Gigabit Ethernet

**GNE**

Gate Network Element

**GUI**

Graphic User Interface

**H**

**HA**

High-Availability

**I**

**ID**

Identity

**IDL**

**Interface Definition Language**

**IGMP**

Internet Group Management Protocol

**IIOP**

Internet Inter-ORB Protocol

**IMAP**

Integrated Management Application Platform

**ITU-T**

International Telecommunication Union- Telecommunication Standardization Sector

**IP**

Internet Protocol

**L**

**LAG**

Link Aggregation Group

**LAN**

Local Area Network

**LCAS**

Link Capacity Adjustment Scheme

**LCT**

Local Craft Terminal

**M**

**MAC**

Media Access Control

**MDP**

Message Dispatch Process

**ME**

Managed Element

**MFDFr**

Matrix Flow Domain Fragment

**MIB**

Management Information Base

**MIP**

Maintenance Association Intermediate Point

**MIT**

Managed Object Instance Tree

**MO**

Managed Object

**MODEM**

Modulator-Demodulator

**MPLS**

Multi-Protocol Label Switching

**MS**

Multiplex Section

**MSP**

Multiplex Section Protection

**MSTP**

Multi-Service Transmission Platform

**MTNM**

Multi-Technology Network Management

**N****NBI**

Northbound Interface

**NE**

Network Element

**NEL**

Network Element Level

**NML**

Network Management Level

**NMS**

Network Management System

**NNI**

Network-to-Network Interface

**NPC**

Network Parameter Control

**O****OADM**

**OADM** Optical Add/Drop Multiplexer

**OAM**

Operation Administration Maintenance

**OCh**

Optical Channel

**OMG**

Object Management Group

**ORB**

Object Request Broker

**OSF**

Operation System Function

**OSS**

Operation Support System

**OSN**

Optical Switch Node

**OSI**

Open Systems Interconnection

**OTS**

Optical Transmission Section

**OTM**

Optical Terminal Multiplexer

**OTU**

Optical Transponder Unit

**P**

**PC**

Personal Computer

**PDH**

Plesiochronous Digital Hierarchy

**PE**

Provider Edge

**PG**

Protection Group

**PM**

**P** Performance Monitor

**PP**

Path Protection

**PRBS**

Pseudo Random Binary Sequence

**PSTN**

Public Switched Telephone Network

**PTP**

Physical Termination Point

**PVP**

Permanent Virtual Path

**Q**

**QoS**

Quality of Service

**R**

**RDI**

Remote Defect Indication

**RMEP**

Remote Maintenance Association End Point

**RMON**

Remote Monitoring

**RPR**

Resilient Packet Ring

**S**

**SCSI**

Small Computer Systems Interface

**SD**

Signal Degradation

**SDH**

Synchronous Digital Hierarchy

**SML**

Service Management Layer

**SMS**

**Service Management System**

**SNML**

Sub-Network Management Layer

**SNMS**

Subnetwork Management System

**SMTP**

Simple Mail Transfer Protocol

**SNC**

Subnetwork Connection

**SNCP**

Sub-Network Connection Protection

**SONET**

Synchronous Optical Network

**SSL**

Security Socket Layer

**SSM**

Synchronization Status Message

**T**

**TAO**

The ACE ORB

**TCA**

Threshold Crossing Alarm

**TCM**

Tandem Connection Monitoring

**TCP**

Transmission Control Protocol

**TD**

Traffic Descriptor

**TMF**

Telecommunication Management Forum

**TMN**

Telecommunication Management Network

**TP**

**T** Termination Point

**U**  
**UNI**

User-to-Network Interface

**UPC**

Usage Parameter Control

**UTC**

Universal Time Coordinated

**V**

**VB**

Virtual Bridge

**VC**

Virtual Connection

**VC**

Virtual Circuit

**VC**

Virtual Container

**VC**

Virtual Channel

**VCI**

Virtual Channel Identifier

**VLAN**

Virtual LAN

**VPI**

Virtual Path Identifier

**VP**

Virtual Path

**W**

**WAN**

Wide Area Network

**WDM**

Wavelength Division Multiplexing

**WTR**

## 9.2 CORBA NBI Developer Guide (Configuration)

---

Focusing on the configuration management of the CORBA NBI, this document describes the secondary development of the NBI from the aspects as follows: basic information, interface function, information model, and interface model.

- **[Guideline](#)**  
The *NBI Developer Guide* is an important document for users to know NBI specifications. This topic describes how to read this document.
- **[Overview](#)**  
Unless otherwise specified, the CORBA NBI described in this document refers to the standardized NBI that complies with the TMF MTNM standards.
- **[Interface Model](#)**  
This topic provides models of interfaces (such as customized interfaces and TMF 814 recommendation interfaces) applied to the CORBA NBI.
- **[Information Model](#)**  
This topic describes information models supported by the CORBA NBI, including TMF 814 recommendation-based models and customized models.
- **[Supported Notification](#)**  
This section lists the notifications that are supported by CORBA NBI.
- **[Format of Notification Events](#)**  
In the additionalInfoUsage.pdf and AVC\_SC\_Notifications.pdf among the supporting documentation of the TMF 814 recommendation, the structure of each notification event of the CORBA interface is described. This chapter presents the detailed definitions of the structure of the notification events.
- **[Notification Event Samples](#)**  
This topic describes samples of notification events that the CORBA NBI supports.
- **[Object Naming Rules](#)**  
This chapter lists the naming rules for various objects in the U2000 CORBA interface. The naming rules are in accordance with the TMF recommendations.

- [AdditionalInfo Description](#)  
This chapter describes the usage of additional fields in each functional module of the CORBA NBI. The additional fields, consisting of additionalInfo and additionalCreateInfo.
- [IDL Description](#)  
This topic describes the IDL defined in the CORBA NBI.
- [Description of Unimplemented and Customized Interfaces](#)
- [Layer Rate Description](#)
- [Glossary](#)  
This appendix lists the glossary used in the guide.
- [Acronyms and Abbreviations](#)  
This topic lists acronyms and abbreviations that are used in this guide.

**Parent topic:** [CORBA NBI Developer Guide](#)

## 9.2.1 About This Document

---

### Related Versions

The following table lists the product versions related to this document.

Product Name	Version
iManager U2000	V200R015C60

### Intended Audience

Focusing on the configuration management of the CORBA NBI (northbound interface), this document describes the secondary development of the NBI from the aspects as follows: basic information, interface function, interface model, information model, and format of notification events.

This document provides the reference information about the configuration management of the CORBA NBI.

This document is intended for:

- Application Developer
- Data Configuration Engineer

## Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 <b>DANGER</b>	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 <b>CAUTION</b>	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
 <b>NOTICE</b>	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
 <b>NOTE</b>	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

## Command Conventions

The command conventions that may be found in this document are defined as follows.

Convention	Description
<b>Boldface</b>	The keywords of a command line are in <b>boldface</b> .
<i>Italic</i>	Command arguments are in <i>italics</i> .
[ ]	Items (keywords or arguments) in brackets [ ] are optional.
{ x   y   ... }	Optional items are grouped in braces and separated by vertical bars. One item is selected.

Convention	Description
[ x   y   ... ]	Optional items are grouped in brackets and separated by vertical bars. One item is selected or no item is selected.
{ x   y   ... }*	Optional items are grouped in braces and separated by vertical bars. A minimum of one item or a maximum of all items can be selected.
[ x   y   ... ]*	Optional items are grouped in brackets and separated by vertical bars. Several items or no item can be selected.

## GUI Conventions

The GUI conventions that may be found in this document are defined as follows.

Convention	Description
<b>Boldface</b>	Buttons, menus, parameters, tabs, window, and dialog titles are in <b>boldface</b> . For example, click <b>OK</b> .
>	Multi-level menus are in <b>boldface</b> and separated by the ">" signs. For example, choose <b>File &gt; Create &gt; Folder</b> .

## Change History

Updates between document issues are cumulative. Therefore, the latest document issue contains all updates made in previous issues.

### Changes in Issue 06 (2017-06-29) Based on Product Version V200R015C60

Sixth release.

### Changes in Issue 05 (2017-03-20) Based on Product Version V200R015C60

Fifth release.

### Changes in Issue 04 (2016-09-12) Based on Product Version V200R015C60

Fourth release.

### Changes in Issue 03 (2016-06-20) Based on Product Version V200R015C60

Third release.

### Changes in Issue 02 (2016-03-31) Based on Product Version V200R015C60

Second release.

## Changes in Issue 01 (2016-01-15) Based on Product Version V200R015C60

Initial release.

**Parent topic:** [CORBA NBI Developer Guide \(Configuration\)](#)

## 9.2.2 Guideline

---

The *NBI Developer Guide* is an important document for users to know NBI specifications. This topic describes how to read this document.

- **[What Is Northbound Model](#)**

Considering networks from the perspective of the OSS, to prevent the OSS from understanding diversified devices and services, you need to convert the objects managed by the EMS or NMS to objects that can be understood by the OSS. This is the northbound model.

- **[What Is NBI](#)**

Data interactions between the OSS and U2000 are implemented through NBIs. For ease of understanding, NBI names adopt a verb-object structure, that is, each NBI is a combination of an "Action" and "Object".

- **[Getting Started](#)**

This topic provides suggestions on reading of interface manuals.

- **[Example](#)**

The following uses the query of a fiber as an example to describe how to query information in the NBI Developer Guide.

**Parent topic:** [CORBA NBI Developer Guide \(Configuration\)](#)

## 9.2.2.1 What Is Northbound Model

---

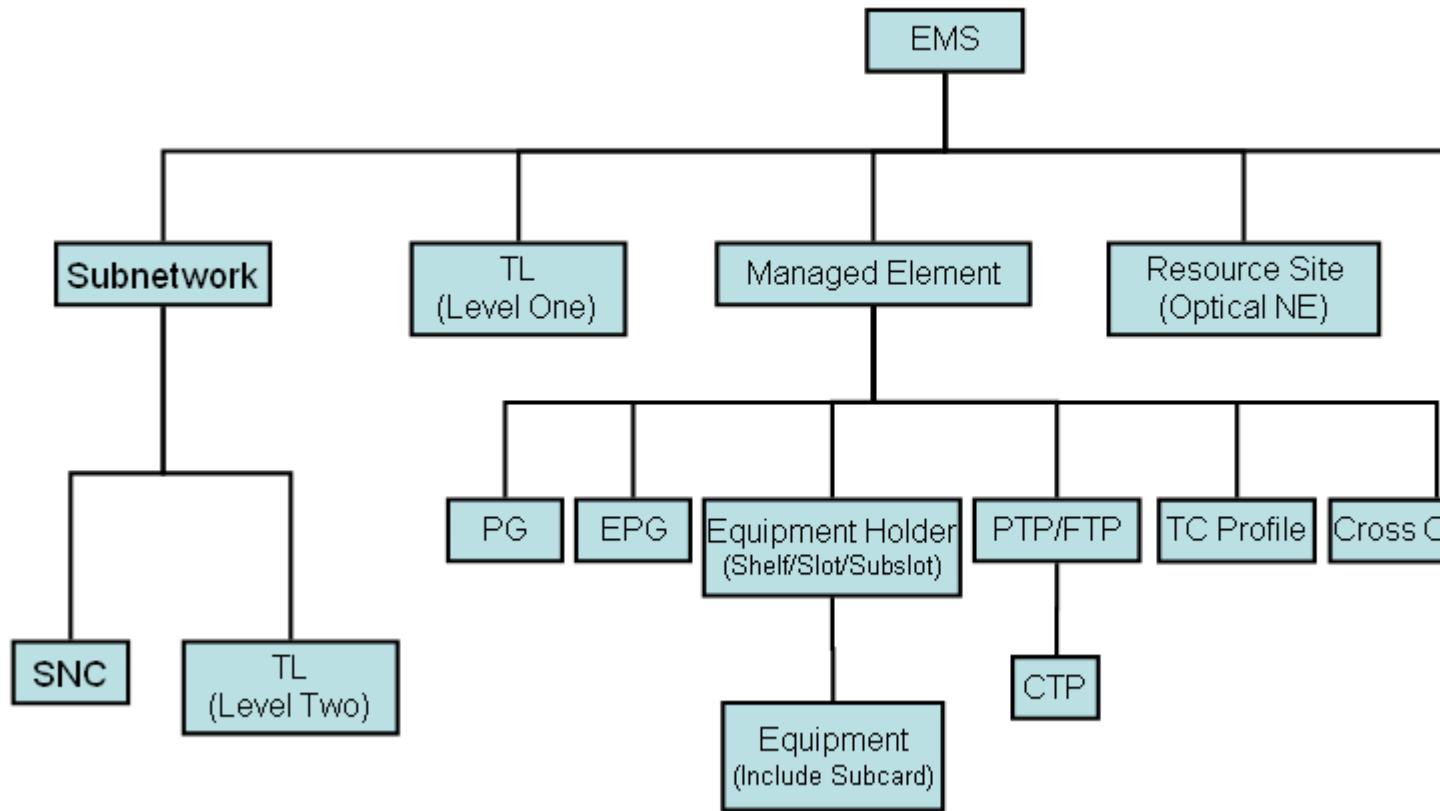
Considering networks from the perspective of the OSS, to prevent the OSS from understanding diversified devices and services, you need to convert the objects managed by the EMS or NMS to objects that can be understood by the OSS. This is the northbound model.

Use NEs, subracks, boards, ports, and fibers/cables as an example. They are abstracted as ME, EquipmentHold, Equipment, TerminationPoint, and TopologicalLink. Getting familiar with the northbound model is the prerequisite for understanding northbound interface (NBI) functions.

NE	Subrack	Board	Port	Fiber/cable
ME	EquipmentHold	Equipment	PhysicalTerminationPoint	TopologicalLink

[Figure 2](#) shows the northbound models of all objects managed by the EMS or NMS.

**Figure 2** Managed object model



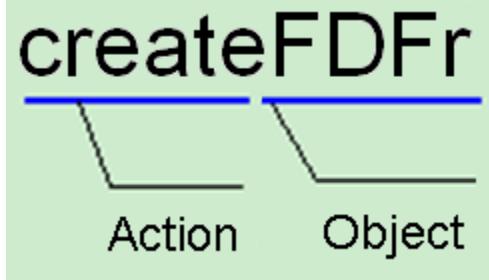
**Parent topic:** [Guideline](#)

## 9.2.2.2 What Is NBI

Data interactions between the OSS and U2000 are implemented through NBIs. For ease of understanding, NBI names adopt a verb-object structure, that is, each NBI is a combination of an "Action" and "Object".

Based on the structure, you can learn the NBI function through its name. The following figure shows an example.

**Figure 1** Schematic diagram of the northbound model



### Action

"Action" can be understood as all operations initiated by the OSS.

**Table 1 Description of NBI operations**

Operation	Description
Get	Indicates the query operation.
Set	Indicates the setting operation.
Create	Indicates the creation operation.
Delete	Indicates the deletion operation.
Activate/Deactivate	Indicates the activation or deactivation operation.
Modify	Indicates the modification operation.

### "Intended Object" of "Action"

To a certain extent, you can understand "Object" as the "Intended Object" of NBI operations. Use common inventory management and service configuration operations as an example. The "Intended Objects" are northbound models such as NEs, boards, and ports.

**Table 2 Mapping between NM objects and northbound objects**

Object in U2000 System	Object in CORBA NBI
NMS or EMS	EMS
NE	ME
Subrack	Shelf
Slot	Slot
Subslot	Sub_Slot
Board	Equipment
Subboard	Equipment
Physical port	PTP
Logical port	FTP
Service protection group	PG
Equipment protection group	EPG
Trail management	SNC
PWE3 service	MFDFr
VSI service	MFDFr
PW	FTP
VLAN management object	FTP
PW switch	IPCrossConnection
MPLS static tunnel	IPCrossConnection
IP tunnel	TrafficTrunk
MPLS dynamic tunnel	TrafficTrunk
Maintenance domain of OAM management	MD
Maintenance association of OAM management	MA
Remote maintenance point	RMEP

**Table 2 Mapping between NM objects and northbound objects**

Object in U2000 System	Object in CORBA NBI
Intermediate maintenance point	MIP

Parent topic: [Guideline](#)

### 9.2.2.3 Getting Started

---

This topic provides suggestions on reading of interface manuals.

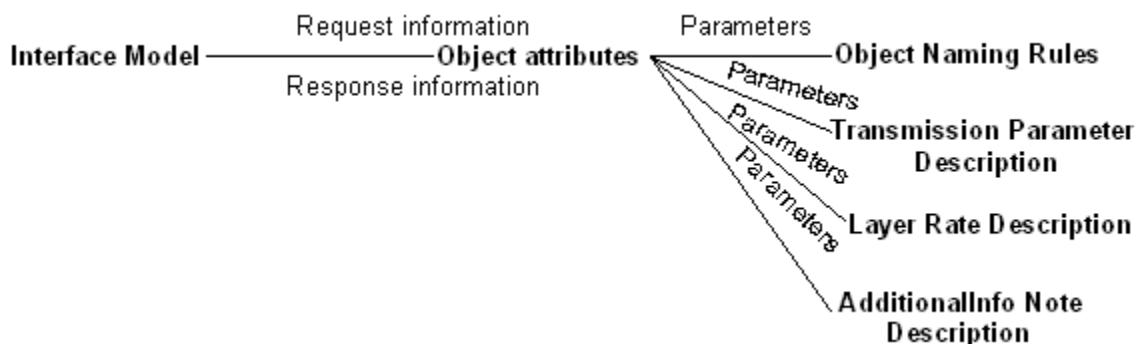
#### Volume Description

The U2000 corresponds to the two service processes of telecom carriers: Fulfillment and Assurance, the U2000 classifies NBIs into four fields by function: inventory management, service provisioning, alarm management, and performance management. These four fields respectively correspond to the four volumes of the *NBI Developer Guide*.

#### Reading Sequence

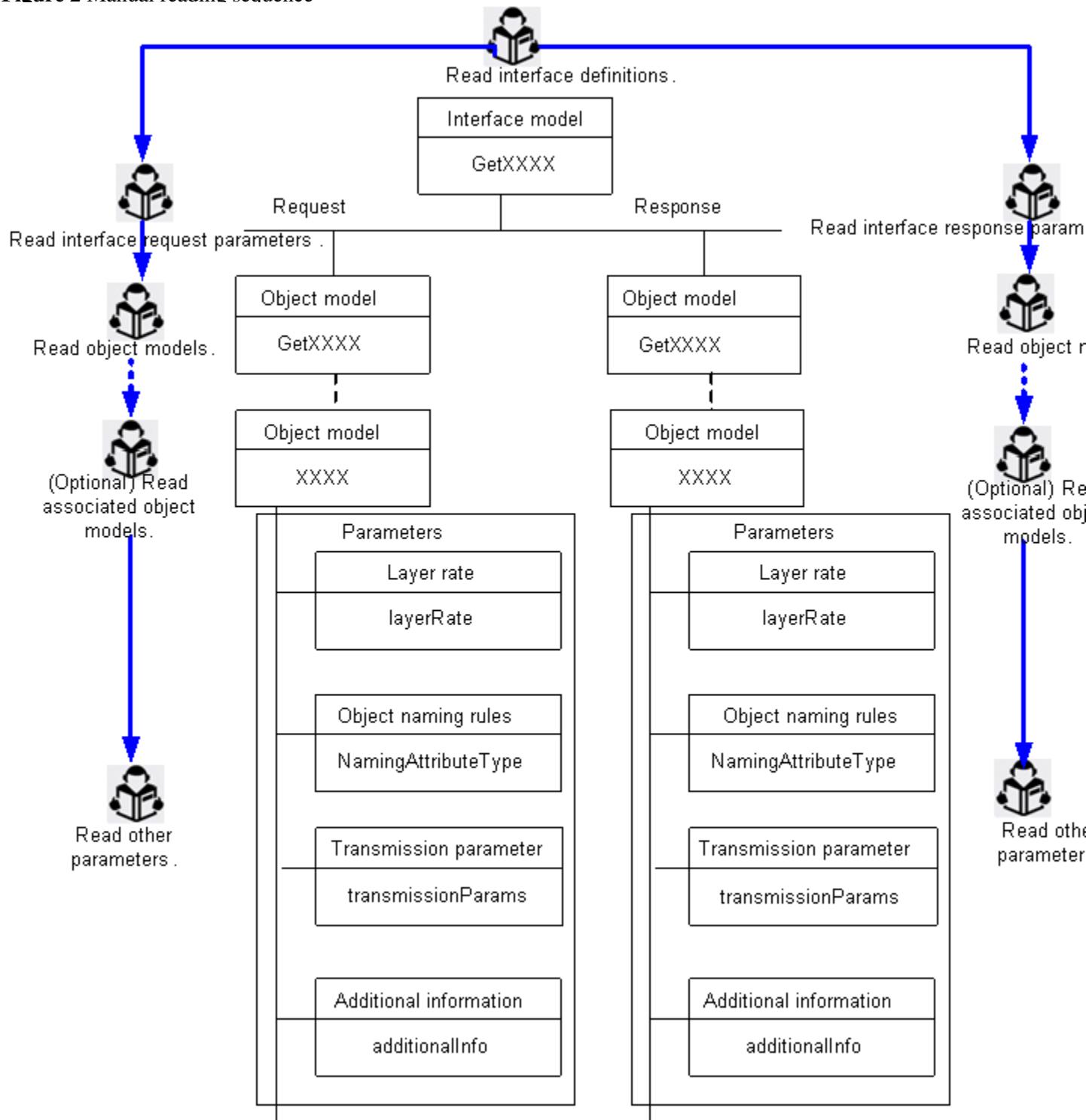
The core of the manual is to describe the request and response information of each interface. The **Interface Model** chapter describes the definition of an interface in detail, and the **Object Attributes** chapter describes the request and response information of the interface. The parameters that are not described in detail in the **Object Attributes** chapter are described in the **Object Naming Rules**, **Transmission Parameter Description**, **Layer Rate Description**, and **AdditionalInfo Usage Note** chapters.

**Figure 1** Structure of chapters in the manual



[Figure 2](#) shows the recommended reading sequence.

**Figure 2** Manual reading sequence



Parent topic: [Guideline](#)

## 9.2.2.4 Example

---

The following uses the query of a fiber as an example to describe how to query information in the NBI Developer Guide.

### Querying Interface Models

First, query NBI models based on service scenarios.

1. The fiber northbound model is **TopologicalLink**. Find the **MultiLayerSubnetworkMgr\_I** module in the **Interface Model** chapter. The action corresponding to the query operation is **get**. Based on the model and action, you can find that the desired NBI is

`getTopologicalLink` in the **Interface Model** chapter.

## getTopologicalLink

This interface is used to query information about a topological link by its name.

### Definition

```
void getTopologicalLink(  
    in globaldefs::NamingAttributes_T topoLinkName,  
    out topologicalLink::TopologicalLink_T topoLink)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about a topological link by its name.

### Parameters

Parameter	Input/Output	Description
topoLinkName	Input	Indicates the name of the topological link.
topoLink	Output	Indicates the topological link.

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input value.
EXCPT_ENTITY_NOT_FOUND	Indicates that the entity was not found.
EXCPT_INTERNAL_ERROR	Indicates an internal error occurred.

### Restrictions

There is no restriction.

2. Through the guide, you can learn the parameter details of the interface, including the parameters you need to set for the interface and the returned values of the interface.

## Building Request Information

Query input parameters of the interface model to further know corresponding object models and correctly construct request models of interfaces.

1. In the request information of the `getTopologicalLink` interface, the included parameter is `topoLinkName` and the type is `NamingAttributes_T`. Learn the detailed naming rules in

the **TopologicalLink** section of the **Object Naming Rules** chapter.

## TopologicalLink

This topic describes the naming rule for a topological link. A topological link can be a physical connection between two

**Table 1** TopologicalLink

Object name	TopologicalLink
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="TopologicalLink"; value="TopologicalLinkName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="TopologicalLink"; value="2008-10-17 19:02:47 -"
Remarks	More description for the value of TopologicalLinkName: If a topological link is created on the U2000 earlier than V2, the value of TopologicalLinkName adopts a format similar to "1399800000000000000".

2. Build complete request information based on the queried information.

## Querying Response Information

After a request message is sent correctly, response information is returned. You can query the meaning of the response information in the guide.

1. In the response information of the **getTopologicalLink** interface, the included parameter is **topoLink** and the type is **TopologicalLink\_T**. Learn the details about **topologicalLink** in

the **Object Model** chapter.

## TopologicalLink\_T

This topic describes the data structure of topological links.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of topological links.
userLabel	string	User label. This field is blank by default.
nativeEMSName	string	Local name.
owner	string	Name of the owner of the object. This field is blank by default.
direction	"globaldefs ::ConnectionDirection_T"	Direction. The value are: CD_UP, CD_DOWN, CD_BIDIR.
rate	transmissionParameters::LayerRate_T	Layer rate.
aEndTP	globaldefs::NamingAttributes_T	Source.
zEndTP	globaldefs::NamingAttributes_T	Sink.
additionalInfo	globaldefs::NVSList_T	Additional information. For details see the <a href="#">additionalInfo::TopologicalLink_T</a> section.

## Viewing Additional Information

Northbound models are highly abstracted from the logic of different services. For example, **TopologicalLink** can represent fibers, layer 2 links, or IP links. You can distinguish them based on fields such as **rate** and **additionalInfo**.

1. The **TopologicalLinkType** information model contains the **rate** parameter. View the meaning of the layer rate in the response information in the **Rate Layer Description** chapter.
2. The **TopologicalLinkType** information model contains the **additionalInfo** parameter. View the parameter in the **TopologicalLink\_T** section of the **AdditionalInfo Description** chapter.

**Parent topic:** [Guideline](#)

## 9.2.3 Overview

---

Unless otherwise specified, the CORBA NBI described in this document refers to the standardized NBI that complies with the TMF MTNM standards.

- [Introduction](#)
- [Configuration Management](#)

**Parent topic:** [CORBA NBI Developer Guide \(Configuration\)](#)

## 9.2.3.1 Introduction

---

Huawei CORBA interface provides extensive functions of network resource configuration for the operation support system (OSS). With these interfaces, a user can maintain a network, configure equipment resources, deliver end-to-end services, and deliver the services of individual NEs. In this way, the network resources are managed flexibly.

**Parent topic:** [Overview](#)

## 9.2.3.2 Configuration Management

---

The U2000 CORBA NBI provides the configuration management functions listed in [Table 1](#).



### NOTE:

Unless otherwise specified, the NA equipment does not support the following functions.

---

**Table 1 Configuration management**

Function	Function Description	Description
Network maintenance	The user can set loopback (LB) and alarm insertion and perform pseudo-random binary sequence (PRBS) tests.	Only transport equipment is supported. PTN equipment is not supported.
Test and diagnosis	The user can perform operations, administration and maintenance (OAM) of Ethernet services, such as performing LB, LT, and	Only PTN NEs and RTN 900 series equipment support this function.

**Table 1 Configuration management**

Function	Function Description	Description
	CC tests, and setting diagnosis parameters.	
Equipment configuration	The user can install and delete boards.	Only transport equipment is supported. PTN equipment is not supported.
Port configuration	Users can set parameters for Ethernet ports, and RTN IF ports; set port attributes for logical ports such as LAG, IMA, VE, MP, and series ports; set loopback status for SDH and WDM ports.	Only transport equipment is supported.
Protection configuration	The user can perform multiplex section protection (MSP) switching, SNCP protection, wavelength division multiplexing (WDM) protection switching, and tunnel protection switching. The user can also create link aggregation protection groups.	Only transport equipment is supported.
Delivery of end-to-end SDH services	The user can perform the following operations: <ul style="list-style-type: none"><li>• Create, delete, activate, deactivate, and modify SDH trails.</li><li>• Perform switching of pre-configured SDH trails.</li></ul>	N/A
Delivery of end-to-end OTN services	The user can create, delete, activate, and deactivate OTN trails. The user can also modify the source and sink of OTN trails.	WDM and OTN equipment supports this function.
Delivery of end-to-end SDH ASON services	The user can perform the following operations: <ul style="list-style-type: none"><li>• Create, delete, activate, and deactivate SDH ASON trails.</li></ul>	N/A

**Table 1 Configuration management**

Function	Function Description	Description
	<ul style="list-style-type: none"><li>• Set association of SDH ASON trails.</li><li>• Set shared risk link groups of SDH ASON.</li></ul>	
Delivery of end-to-end OTN ASON services	<p>The user can perform the following operations:</p> <ul style="list-style-type: none"><li>• Create, delete, activate, and deactivate OTN ASON trails.</li><li>• Set association of OTN ASON trails.</li><li>• Set shared risk link groups of OTN ASON.</li></ul>	WDM and OTN equipment supports this function.
Delivery of end-to-end Ethernet services	<p>The user can perform the following operations:</p> <ul style="list-style-type: none"><li>• Create, delete, activate and deactivate a FDFr.</li><li>• Create, delete, activate, and deactivate an ELL.</li><li>• Adjust the bandwidth bound to an ELL.</li></ul>	N/A
Delivery of end-to-end RTN services	The user can create and delete SDH or PDH radio links.	N/A
Delivery of SDH services of individual NEs	<p>The user can perform the following operations:</p> <ul style="list-style-type: none"><li>• Create, delete, activate, deactivate SDH cross-connections.</li><li>• Modify, perform SDH protection group.</li></ul>	N/A
Delivery of MSTP services of individual NEs	<p>The user can perform the following operations:</p> <ul style="list-style-type: none"><li>• Create and delete the Ethernet services of individual NEs.</li><li>• Create an Ethernet virtual bridge.</li><li>• Create an L2 forwarding table for Ethernet.</li></ul>	N/A

**Table 1 Configuration management**

Function	Function Description	Description
	<ul style="list-style-type: none"><li>• Create, activate, deactivate, and delete the ATM services of individual NEs.</li><li>• Create, delete, activate, and deactivate an ATM traffic descriptor.</li></ul>	
Delivery of PTN services of individual NEs	<p>The user can perform the following operations:</p> <ul style="list-style-type: none"><li>• Create, activate, deactivate, delete MPLS static tunnel.</li><li>• Create, activate, deactivate, delete MPLS dynamic tunnel.</li><li>• Create, activate, deactivate, delete IP tunnel.</li><li>• Create, activate, deactivate, delete PW switch.</li><li>• Create, activate, deactivate, delete AES service.</li><li>• Create, activate, deactivate, delete CES service.</li><li>• Create, activate, deactivate, delete EPL service.</li><li>• Create, activate, deactivate, delete EPLan service.</li></ul>	N/A
Delivery of services on Hybrid MSTP individual NEs	<p>Users can perform the following operations:</p> <p>Create, activate, deactivate, and delete MPLS static tunnels, PW switching services, TDM simulation service, E-Line services, and E-LAN services.</p>	N/A
Delivery of services on RTN individual NEs	<p>Users can perform the following operations:</p> <p>Create, activate, deactivate, and delete MPLS static tunnels, MPLS dynamic tunnels, IP tunnels, PW switching services, ATM simulation services, TMM</p>	<p>This function is supported only by RTN 900 series equipment.</p> <p>RTN equipment (V100R002 and V100R003) supports only E-Line services and E-LAN services.</p>

**Table 1 Configuration management**

Function	Function Description	Description
	simulation services, E-Line services, and E-LAN services.	
Delivery of OTN services of individual NEs	Users can perform the following operations: <ul style="list-style-type: none"><li>• Create, delete, activate, deactivate WDM cross-connections.</li><li>• Modify, perform OTN protection group.</li></ul>	N/A
Provisioning of WDM E2E services	Users can create, delete, activate, and deactivate E2E E-Line and E-LAN services.	WDM and OTN NEs supports this function.

**Parent topic:** [Overview](#)

## 9.2.4 Interface Model

---

This topic provides models of interfaces (such as customized interfaces and TMF 814 recommendation interfaces) applied to the CORBA NBI.

- [Common\\_I](#)  
This interface consists of a set of interfaces that other managers can also use.
- [EquipmentInventoryMgr\\_I](#)  
This interface is used to manage resources, such as equipment, boards, and ports on boards.
- [ManagedElementMgr\\_I](#)  
This interface is used to manage NEs and termination points (TPs), including NEs, ports, and cross-connections on NEs.
- [MultiLayerSubnetworkMgr\\_I](#)  
This interface is used to manage subnets.
- [ProtectionMgr\\_I](#)  
This interface is used to manage protection groups.

- [HW\\_MSTPInventoryMgr\\_I](#)  
This interface is used to manage MSTP inventories.
- [HW\\_MSTPProtectionMgr\\_I](#)  
This interface is used to manage the MSTP protection.
- [HW\\_MSTPServicesMgr\\_I](#)  
This interface is used to manage MSTP services.
- [TrafficDescriptorMgr\\_I](#)  
This interface is used to manage traffic descriptors and supported in only the MSTP equipment.
- [HW\\_controlPlaneMgr\\_I](#)  
This interface is used to manage the route control plane, including querying route names, route node names, and SNNP links.
- [EncapsulationLayerLinkMgr\\_I](#)  
This interface is used to query information about encapsulation layer links (ELLs).
- [FlowDomainMgr\\_I](#)  
This interface is used to query information about flow domain fragments and matrix flow domain fragments. The MSTP equipment is supported only.
- [MaintenanceMgr\\_I](#)  
This interface is used to manage maintenance functions.
- [TCProfileMgr\\_I](#)  
This interface is used to manage traffic policy profiles. Traffic policy profiles include port, Ethernet V-UNI ingress or egress, PW, ATM, ATM COS mapping and DS domain mapping policy profiles. PTN equipment is supported.
- [Session\\_I](#)  
This interface is used to query NMS managers and check the network communication.
- [HW\\_securityMgr\\_I](#)  
This interface is used to control security. Currently, only the modifyPassword interface is available.
- [HW\\_VPNMgr\\_I](#)  
This interface is used to manage services, such as, PWE3 (ATM, CES, and EES services), VPLS, NativeEth and tunnel services. The supported equipment is as follows: PTN, Hybrid MSTP, and RTN900 series equipment. NativeEth services are applicableonly to RTN equipment of V100R002 version.
- [TrailNtwProtMgr\\_I](#)  
This interface provides protection for network trails, including tunnels.

**Parent topic:** [CORBA NBI Developer Guide \(Configuration\)](#)

## 9.2.4.1 Common\_I

---

This interface consists of a set of interfaces that other managers can also use.

- **setLabel**

This interface is used to set the user label of a specified object.

- **setNativeEMSNName**

This interface is used to set the nativeEMSNName identifier of a specified object.

- **setOwner**

This interface is used to set the owner identifier of a specified object.

- **setAdditionalInfo**

This interface is used to set additional information for a specified object.

**Parent topic:** [Interface Model](#)

### 9.2.4.1.1 setLabel

---

This interface is used to set the user label of a specified object.

#### Definition

```
void setLabel(  
    in globaldefs::NamingAttributes_T objectName,  
    in string userLabel,  
    in boolean enforceUniqueness)  
raises(globaldefs::ProcessingFailureException);
```

#### Function

Set the user label of the specified object.

#### Parameters

Parameter	Input/Output	Description	Value
objectName	Input	The identifier of the object that you want to set the user label for.	globaldefs::NamingAttributes_T

Parameter	Input/Output	Description	Value
userLabel	Input	The user label that you want to set.	string
enforceUniqueness	Input	Whether the user label is required to be unique.	boolean

## Abnormal Values

Abnormal Value	Description
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INVALID_INPUT	The input is invalid.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

On the U2000, the compulsory uniqueness of the UserLabel name of the object is not supported. Currently, you can set the UserLabel attributes for the following objects: EMS, Equipment, PTP, SNC, TopologicalLink, PGP, ME, MultiLayerSubnetwork, OCH CTP, PTN equipment protection group, Tunnel, Tunnel APS protection group, Ethernet EPL service.

The input UserLabel character string should be less than 254 characters. The format of the input character string complies with the naming rules of objects on the U2000 client.

After the user label is set, you can query it by querying the details of the object.

**Parent topic:** [Common\\_](#)

## 9.2.4.1.2 setNativeEMSName

---

This interface is used to set the nativeEMSName identifier of a specified object.

### Definition

```
void setNativeEMSName(
in globaldefs::NamingAttributes_T objectName,
```

```

in string nativeEMSName)
raises(globaldefs::ProcessingFailureException);

```

## Function

Set the nativeEMSName of the object.

## Parameters

Parameter	Input/Output	Description	Value
objectName	Input	The identifier of the object that you want to set nativeEMSName for.	globaldefs::NamingAttributes_T
nativeEMSName	Input	The nativeEMSName identifier that you want to set.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	The input is invalid
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

Currently, you can set the nativeEMSName attributes for the following objects: ME, SNC, TopologicalLink, physical subnet, and OCh CTP, E2E Tunnel, snppLink.

The input nativeEMSName character string should be less than 254 characters. The format of the input character string complies with the naming rules of objects on the U2000 client.

**Parent topic:** [Common\\_1](#)

## 9.2.4.1.3 setOwner

---

This interface is used to set the owner identifier of a specified object.

## Definition

```
void setOwner(  
    in globaldefs::NamingAttributes_T objectName,  
    in string owner)  
raises(globaldefs::ProcessingFailureException);
```

## Function

Set the Owner identifier of the specified object.

## Parameters

Parameter	Input/Output	Description	Value
objectName	Input	Indicates the object for which the owner identifier is set.	globaldefs::NamingAttributes_T
owner	Input	Indicates the owner identifier to be set.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_ENTITY_NOT_FOUND	The input is invalid.
EXCPT_INVALID_INPUT	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

Currently, you can set the Owner attributes for the following objects: EMS, Equipment, PTP, SNC, TopologicalLink, PGP, ME, and MultiLayer Subnetwork.

The input Owner character string should be less than 254 characters. The format of the input character string complies with the naming rules of objects on the U2000 client.

**Parent topic:** [Common\\_1](#)

## 9.2.4.1.4 setAdditionalInfo

---

This interface is used to set additional information for a specified object.

### Definition

```
void setAdditionalInfo(  
    in globaldefs::NamingAttributes_T objectName,  
    inout globaldefs::NVSList_T additionalInfo)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Set additional information for a specified object.

### Parameters

Parameter	Input/Output	Description	Value
objectName	Input	Indicates the name of the object for which the additional information is set.	globaldefs::NamingAttributes_T
additionalInfo	Input	Indicates the additional information to be set.	globaldefs::NVSList_T

### Abnormal Values

Abnormal Value	Description
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

### Restrictions

Currently, the following additional information can be set:

customization cost for OTN ASON TE links, rerouting priority for OTN ASON trails, enabling status of optical parameter constraints, and maintenance status of TE links.

**Parent topic:** [Common\\_I](#)

## 9.2.4.2 EquipmentInventoryMgr\_I

---

This interface is used to manage resources, such as equipment, boards, and ports on boards.

**Instruction:**

You can query and manage information of computer room configuration through NBIs and maintain the configuration information based on needs. During the application and maintenance of computer room configuration information, personal data will be used. Therefore, you must comply with the laws of the applicable countries or Huawei user privacy policies and take necessary measures to fully protect personal data against leakage.

- [\*\*provisionEquipment\*\*](#)

This interface is used to install equipment of a specified type.

- [\*\*unprovisionEquipment\*\*](#)

This interface is used to delete specified equipment.

**Parent topic:** [Interface Model](#)

### 9.2.4.2.1 provisionEquipment

---

This interface is used to install equipment of a specified type.

#### Definition

```
void provisionEquipment(  
    in EQTCreateData_T equipmentCreateData,  
    out Equipment_T createdEquipment)  
raises(globaldefs::ProcessingFailureException);
```

#### Function

Install equipment. If the slot does not support the type of the equipment that you want to install, an exception notification of the port is sent.

#### Parameters

Parameter	Input/Output	Description	Value
equipmentCreateData	Input	The information about the equipment to be installed.	EQTCreateData_T
createdEquipment	Output	The information about the equipment that has been successfully installed.	Equipment_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

The setting of a unique userLabel is not supported. That is, in equipmentCreateData, forceUniqueness cannot be set to true.

**Parent topic:** [EquipmentInventoryMgr\\_I](#)

## 9.2.4.2.2 unprovisionEquipment

---

This interface is used to delete specified equipment.

### Definition

```
void unprovisionEquipment(
    in globaldefs::NamingAttributes_T equipmentName)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Delete equipment.

## Parameters

Parameter	Input/Output	Description	Value
equipmentName	Input	The name of the equipment to be deleted.	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [EquipmentInventoryMgr\\_I](#)

## 9.2.4.3 ManagedElementMgr\_I

This interface is used to manage NEs and termination points (TPs), including NEs, ports, and cross-connections on NEs.

- [\*\*setTPData\*\*](#)  
This interface is used to set attributes for a specified TP.
- [\*\*createCrossConnections\*\*](#)  
This interface is used to create cross-connections.
- [\*\*deleteCrossConnections\*\*](#)  
This interface is used to delete specified cross-connections.
- [\*\*activateCrossConnections\*\*](#)  
This interface is used to activate specified cross-connections.

- [deactivateCrossConnections](#)  
This interface is used to deactivate specified cross-connections.
- [createFTP](#)  
This interface is used to create a file transfer protocol(FTP).
- [deleteFTP](#)  
This interface is used to delete an FTP by its name.
- [modifyFTPMembers](#)  
This interface is used to modify FTP member ports by FTP name, modification type and FTP data to be modified.
- [modifyCrossConnection](#)  
This interface is used to modify a specified cross-connection.

**Parent topic:** [Interface Model](#)

## 9.2.4.3.1 setTPData

---

This interface is used to set attributes for a specified TP.

### Definition

```
void setTPData(
    in subnetworkConnection::TPData_T tpInfo,
    out terminationPoint::TerminationPoint_T modifiedTP)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Set attributes for the specified TP.

### Parameters

Parameter	Input/Output	Description	Value
tpInfo	Input	The information about the TP to be set.	subnetworkConnection::TPData_T
modifiedTP	Output	Modified TP information	terminationPoint::TerminationPoint_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	The input is invalid.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The following attributes can be set:

1. Frequency.
2. Alarm suppression status of some or all function modules. The input object can be PTP, FTP or CTP.
3. TTI overheads of WDM ports. For details, see TPData\_T.
4. Transmission parameters for physical Ethernet ports. For details, see Transmission Parameters of Physical Ethernet Ports in Developer Guide(Resource).
5. Transmission parameters for logical FTP ports. For details, see Transmission Parameters of TPs in Developer Guide(Resource).
6. Indicates PDH port transmission parameters. For details, see the PDH port transmission parameter description in the iManager U2000 CORBA NBI Developer Guide (Resource).

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.2.4.3.2 createCrossConnections

---

This interface is used to create cross-connections.

### Definition

```
void createCrossConnections(
    in subnetworkConnection::CrossConnectList_T ccList,
    out subnetworkConnection::CrossConnectList_T successedCCList,
    out subnetworkConnection::CrossConnectList_T failedCCList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create cross-connections.

## Parameters

Parameter	Input/Output	Description	Value
ccList	Input	List of cross-connections to be created. For the element model, see CrossConnect_T.	subnetworkConnection::CrossConnectList_T
successedCCList	Output	List of cross-connections that are successfully created.	subnetworkConnection::CrossConnectList_T For the element model, see CrossConnect_T.
failedCCList	Output	List of cross-connections that fail to be created.	subnetworkConnection::CrossConnectList_T For the element model, see CrossConnect_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The creation of SDH and WDM cross-connections are supported.

The type of the cross-connection to be created can be SIMPLE, ADD\_DROP\_A, or ADD\_DROP\_Z.

During the creation of SDH cross-connections, the value of active in cclist is not considered. The created cross-connection is inactive and the user needs to activate the cross-connection through the activateCrossConnections interface.

During the creation of WDM cross-connections, if the value of active in the cclist is True, the created cross-connection is active. If the value of the active is False, the created cross-connection is inactive.

During the creation of WDM cross-connections, the value of direction in cclist is not considered. The created cross-connection is unidirectional.

This interface is in the best-effort mode.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.2.4.3.3 deleteCrossConnections

---

This interface is used to delete specified cross-connections.

### Definition

```
void deleteCrossConnections(  
    in subnetworkConnection::CrossConnectList_T ccList,  
    out subnetworkConnection::CrossConnectList_T successedCCList,  
    out subnetworkConnection::CrossConnectList_T failedCCList)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Delete cross-connections.

### Parameters

Parameter	Input/Output	Description	Value
ccList	Input	List of cross-connections to be deleted. For the element model, see CrossConnect_T.	subnetworkConnection::CrossConnectList_T
successedCCList	Output	List of cross-connections that are successfully deleted.	subnetworkConnection::CrossConnectList_T For the element model, see CrossConnect_T.
failedCCList	Output	List of cross-connections that fail to be deleted.	subnetworkConnection::CrossConnectList_T For the element model, see CrossConnect_T.

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.

### Restrictions

The deletion of SDH and WDM cross-connections is supported.

The SIMPLE, ADD\_DROP\_A, and ADD\_DROP\_Z cross-connections are supported.

This interface is in the best-effort mode.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.2.4.3.4 activateCrossConnections

---

This interface is used to activate specified cross-connections.

### Definition

```
void activateCrossConnections(
    in subnetworkConnection::CrossConnectList_T ccList,
    out subnetworkConnection::CrossConnectList_T successedCCList,
    out subnetworkConnection::CrossConnectList_T failedCCList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Activate cross-connections.

### Parameters

Parameter	Input/Output	Description	Value
ccList	Input	List of cross-connections to be activated.	subnetworkConnection::CrossConnectList_T For the element model, see CrossConnect_T.
successedCCList	Output	List of cross-connections that are successfully activated.	subnetworkConnection::CrossConnectList_T For the element model, see CrossConnect_T.
failedCCList	Output	List of cross-connections that fail to be activated.	subnetworkConnection::CrossConnectList_T For the element model, see CrossConnect_T.

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The activation of SDH and WDM cross-connections is supported.

The SIMPLE, ADD\_DROP\_A, and ADD\_DROP\_Z cross-connections are supported.

This interface is in the best-effort mode.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.2.4.3.5 deactivateCrossConnections

---

This interface is used to deactivate specified cross-connections.

### Definition

```
void deactivateCrossConnections(
    in subnetworkConnection::CrossConnectList_T ccList,
    out subnetworkConnection::CrossConnectList_T successedCCList,
    out subnetworkConnection::CrossConnectList_T failedCCList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Deactivate cross-connections.

### Parameters

Parameter	Input/Output	Description	Value
ccList	Input	List of cross-connections to be deactivated.	subnetworkConnection::CrossConnectList_T For the element model, see CrossConnect_T.
successedCCList	Output	List of cross-connections that are successfully deactivated.	subnetworkConnection::CrossConnectList_T For the element model, see CrossConnect_T.

Parameter	Input/Output	Description	Value
failedCCList	Output	List of cross-connections that fail to be deactivated.	subnetworkConnection::CrossConnectList_T For the element model, see CrossConnect_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The deactivation of SDH and WDM cross-connections is supported.

The SIMPLE, ADD\_DROP\_A, and ADD\_DROP\_Z cross-connections are supported.

This interface is in best-effort mode.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.2.4.3.6 createFTP

---

This interface is used to create a file transfer protocol(FTP).

### Definition

```
void createFTP(
    in flowDomain::FTPCreateData_T createData,
    inout subnetworkConnection::TPDataList_T tpsToModify,
    out terminationPoint::TerminationPoint_T theFTP)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create an FTP.

### Parameters

Parameter	Input/Output	Description	Value
createData	Input	The data of the FTP to be created.	flowDomain::FTPCreateData_T
tpsToModify	Input/Output	Indicates the associated member termination point in the process of creating an FTP.	subnetworkConnection::TPData_T
theFTP	Output	Data of the FTP that is successfully created.	terminationPoint::TerminationPoint_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The ports of the following types can be created:

LAG

MP group

Logical serial port

VE

The supported equipment is as follows: PTN, Hybrid MSTP, and RTN900 series equipment.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.2.4.3.7 deleteFTP

---

This interface is used to delete an FTP by its name.

## Definition

```
void deleteFTP(  
    in globaldefs::NamingAttributes_T ftpName)  
raises(globaldefs::ProcessingFailureException);
```

## Function

Delete an FTP.

## Parameters

Parameter	Input/Output	Description	Value
ftpName	Input	Name of the FTP to be deleted.	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

Ports of the following types can be deleted:

LAG

MP group

Logical serial port

VE

The supported equipment is as follows: PTN, Hybrid MSTP, and RTN900 series equipment.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.2.4.3.8 modifyFTPMembers

---

This interface is used to modify FTP member ports by FTP name, modification type and FTP data to be modified.

### Definition

```
void modifyFTPMembers(
    in globaldefs::NamingAttributes_T ftpName,
    in string modifyType,
    in subnetworkConnection::TPDataList_T tpList,
    out subnetworkConnection::TPDataList_T successedTPList,
    out subnetworkConnection::TPDataList_T failedTPList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Modify FTP member ports.

### Parameters

Parameter	Input/Output	Description	Value
ftpName	Input	Name of the FTP to be modified.	globaldefs::NamingAttributes_T
modifyType	Input	Modification type (add, modify, and delete).	string
tpList	Input	Data of the FTP to be modified.	subnetworkConnection::TPDataList_T For the element model, see TPData_T.
successedTPList	Output	Data of the FTP that is successfully modified.	subnetworkConnection::TPDataList_T For the element model, see TPData_T.
failedTPList	Output	Data of the FTP that fails to be modified.	subnetworkConnection::TPDataList_T For the element model, see TPData_T.

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The supported equipment is as follows: PTN, Hybrid MSTP, and RTN900 series equipment.

The ports of the following types can be modified:

LAG

MP group

Logical serial port

IMA

The modification functions are as follows:

Adding member ports

Deleting member ports

Modifying the attributes of member ports

This interface is in the best-effort mode.

**Parent topic:** [ManagedElementMgr](#)

## 9.2.4.3.9 modifyCrossConnection

---

This interface is used to modify a specified cross-connection.

### Definition

```
void modifyCrossConnection(
    in subnetworkConnection::CrossConnect_T ccToModify,
    in subnetworkConnection::CrossConnect_T newCc,
    out subnetworkConnection::CrossConnect_T modifiedCc)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Modify cross-connections.

## Parameters

Parameter	Input/Output	Description	Value
ccToModify	Input	Indicates the cross-connection to be modified.	subnetworkConnection::CrossConnect_T
newCc	Input	Indicates a new cross-connection.	subnetworkConnection::CrossConnect_T
modifiedCc	Output	Indicates the cross-connection after modification.	subnetworkConnection::CrossConnect_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.

## Restrictions

This interface is applicable only to unidirectional SDH cross-connections.

You cannot use this interface to modify the activation status, direction, and source and sink of a cross-connection.

This interface can be used to:

1. Change a unidirectional simple SDH cross-connection to an add\_drop\_A or add\_drop\_z cross-connection.
2. Change a unidirectional add\_drop\_A or add\_drop\_z SDH cross-connection to a simple cross-connection.
3. Change the Label attribute of a unidirectional simple, add\_drop\_A, or add\_drop\_z SDH cross-connection.

**Parent topic:** [ManagedElementMgr\\_I](#)

## **9.2.4.4 MultiLayerSubnetworkMgr\_I**

---

This interface is used to manage subnets.

Instruction:

You can query and manage customer information of trails through NBIs and maintain the customer information based on needs. During the application and maintenance of trail customer information, personal data will be used. Therefore, you must comply with the laws of the applicable countries or Huawei user privacy policies and take necessary measures to fully protect personal data against leakage.

- **createSNC**

This interface is used to create a subnet connection (SNC).

- **modifySNC**

This interface is used to modify an SNC by its name and SNC data to be modified.

- **activateSNC**

This interface is used to activate an SNC by its name.

- **createAndActivateSNC**

This interface is used to create and activate an SNC.

- **deactivateSNC**

This interface is used to deactivate an SNC by its name.

- **deleteSNC**

This interface is used to delete a specified SNC.

- **deactivateAndDeleteSNC**

This interface is used to deactivate and delete an SNC by its name.

- **checkValidSNC**

This interface is used to check whether the data of an SNC to be created is valid.

- **setConjunctionSNC**

This interface is used to set or cancel association for two ASON SNCs after their names are specified.

- **swapSNC**

This interface is used to switch trails.

- **switchRoute**

This interface is used to switch OTN ASON routes manually.

- **createPresetRoute**

This interface is used to create preset restoration trails for the ASON SNC.

- [deletePresetRoute](#)  
This interface is used to delete preset restoration trails for the ASON SNC.
- [setConjunctionSNCEx](#)  
This interface is used to configure or cancel associated OTN ASON trails.
- [createSharedRoute](#)  
This interface is used to create the shared restoration trail of ASON SNCs.
- [deleteSharedRoute](#)  
This interface is used to delete the shared restoration trail of ASON SNCs.

**Parent topic:** [Interface Model](#)

## 9.2.4.4.1 createSNC

---

This interface is used to create a subnet connection (SNC).

### Definition

```
void createSNC(
    in subnetworkConnection::SNCCreateData_T createData,
    in subnetworkConnection::GradesOfImpact_T tolerableImpact,
    in EMSFreedomLevel_T emsFreedomLevel,
    out subnetworkConnection::SubnetworkConnection_T theSNC,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create an SNC.

### Parameters

Parameter	Input/Output	Description	Value
createData	Input	Data for creating an SNC.	subnetworkConnection::SNCCreateData_T
tolerableImpact	Input	The tolerable impact level. This parameter is not supported and	subnetworkConnection::GradesOfImpact_T

Parameter	Input/Output	Description	Value
		the validity of its value is not verified.	
emsFreedomLevel	Input	The EMS freedom level indication. This parameter is not supported and the validity of its value is not verified.	multiLayerSubnetWork::EMSFreedomLevel_T
theSNC	Output	Information about the SNC that is successfully created	subnetworkConnection::SubnetworkConnection_T
errorReason	Output	The cause of the creation failure.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	The input is invalid.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

In the case of ASON trails, the creation of bidirectional LSP is supported.

If userLabel is empty in creating an SDH, SDH-ASON, WDM, or OTN-ASON trail, the reported userLabel of the created trail is the same as the value of nativeEMSName, and this userLabel value is also the same as the path of the U2000 client; if userLabel is not empty, the reported userLabel of the created trail is the same as the value of nativeEMSName, and this userLabel value is the same as the entered userLabel value.

In createData, specifying the uniqueness of userLabel is not supported.

The tolerableImpact and emsFreedomLevel parameters are not supported.

In the case of ASON and WDM trails, the creation of the ST\_SIMPLE type is supported.

In non-full route situation, in the case of the SDH, the creation of the ST\_SIMPLE type is supported.

The following table defines some error codes.

1092091958: The scenario that the forceUniqueness parameter is set to true is not supported.

1092091968: During the trail creation, protectionEffort can be EFFORT\_WHATEVER only.

1092092142: In non-full route situation, when an SNC is created, sncType can be ST\_SIMPLE only.

1092092004: When a service is created, the delivered parameters sncType and aEnd/zEnd do not match.

1092092024: The service of the specified layerRate cannot be created.

1092092184: Incorrect ccInclusion is input.

1092092185: Incorrect neTPIclusion is input.

1092092186: Incorrect neTPSNCExclusions is input.

1092092187: Incorrect AEND is input.

1092092188: The AEND cross-connection rate level is incorrect.

1092092189: Incorrect ZEND is input.

1092092190: The ZEND cross-connection rate level of is incorrect.

**Parent topic:** [MultiLayerSubnetworkMgr](#) |

## 9.2.4.4.2 modifySNC

---

This interface is used to modify an SNC by its name and SNC data to be modified.

### Definition

```
void modifySNC(
    in globaldefs::NamingAttributes_T sncName,
    in string routeId,
    in subnetworkConnection::SNCModifyData_T SNCModifyData,
    in subnetworkConnection::GradesOfImpact_T tolerableImpact,
    in subnetworkConnection::ProtectionEffort_T tolerableImpactEffort,
    in EMSFreedomLevel_T emsFreedomLevel,
    inout subnetworkConnection::TPDataList_T tpsToModify,
    out subnetworkConnection::SubnetworkConnection_T newSNC,
    out string errorReason)
```

```
raises(globaldefs::ProcessingFailureException);
```

## Function

Modify a specified SNC.

## Parameters

Parameter	Input/Output	Description	Value
sncName	Input	Name of the SNC.	globaldefs::NamingAttributes_T
routeId	Input	The route identifier. This parameter is not supported and the validity of its value is not verified.	string
SNCModifyData	Input	Modified SNC data.	subnetworkConnection::SNCModifyData_T
tolerableImpact	Input	The tolerable impact level. This parameter is not supported and the validity of its value is not verified.	subnetworkConnection::GradesOfImpact_T
tolerableImpactEffort	Input	The indication of tries. This parameter is not supported and the validity of its value is not verified.	subnetworkConnection::ProtectionEffort_T

Parameter	Input/Output	Description	Value
emsFreedomLevel	Input	The EMS freedom level indication. This parameter is valid when the modification of the SNC is complete and the modified SNC is active. At this time, the meaning of this parameter is consistent with the meaning of the parameter for the activateSNC interface.	multiLayerSubnetWork::EMSFreedomLevel_T
tpsToModify	Input/Output	TP data that needs to be updated. This parameter is not supported and the validity of its value is not verified.	subnetworkConnection::TPDataList_T For the element model, see TPData_T.
newSNC	Output	SNC data after modification.	subnetworkConnection::SubnetworkConnection_T
errorReason	Output	Failure cause.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	The input is invalid.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

Downgrading an SDH ASON trail to an SDH trail is not supported.

Upgrading an SDH trail to an SDH ASON trail is not supported.

Set route constraints for an ASON trail.

Modify the source and sink of a WDM trail.

Add or delete the protection route for the SDH trail.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.2.4.4.3 activateSNC

---

This interface is used to activate an SNC by its name.

### Definition

```
void activateSNC(
    in globaldefs::NamingAttributes_T sncName,
    in subnetworkConnection::GradesOfImpact_T tolerableImpact,
    in EMSFreedomLevel_T emsFreedomLevel,
    inout subnetworkConnection::TPDataList_T tpsToModify,
    out subnetworkConnection::SubnetworkConnection_T theSNC,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Activate a specified SNC.

### Parameters

Parameter	Input/Output	Description	Value
sncName	Input	SNC name.	globaldefs::NamingAttributes_T
tolerableImpact	Input	The tolerable impact level. This parameter is not supported and the validity of its value is not verified.	subnetworkConnection::GradesOfImpact_T
emsFreedomLevel	Input	The EMS freedom level indication.	multiLayerSubnetWork::EMSFreedomLevel_T
tpsToModify	Input/Output	TP data that needs to be updated.	subnetworkConnection::TPDataList_T For the element model, see TPData_T.
theSNC	Output	SNC data after the activation.	subnetworkConnection::SubnetworkConnection_T
errorReason	Output	Failure cause.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	The input is invalid.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

If an SDH server trail is entered, both the server trail and its client trails are activated after the interface is invoked. If an SDH client trail is entered, both the client trail and its server trail are activated after the interface is invoked. In both situation, the value of the emsFreedomLevel parameter is greater than that of the EMSFL\_HIGHER\_ORDER\_SNCS parameter.

CAUTION:

It is recommended that the OSS only apply the EMSFL\_CC\_AT\_SNC\_LAYER value to the emsFreedomLevel parameter. If other values need to be applied, contact Huawei engineers.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.2.4.4.4 createAndActivateSNC

---

This interface is used to create and activate an SNC.

### Definition

```
void createAndActivateSNC(
    in subnetworkConnection::SNCCreateData_T createData,
    in subnetworkConnection::GradesOfImpact_T tolerableImpact,
    in EMSFreedomLevel_T emsFreedomLevel,
    inout subnetworkConnection::TPDataList_T tpsToModify,
    out subnetworkConnection::SubnetworkConnection_T theSNC,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create and activate an SNC.

### Parameters

Parameter	Input/Output	Description	Value
createData	Input	Data of the SNC to be created.	subnetworkConnection::SNCCreateData_T
tolerableImpact	Input	The tolerable impact level. This parameter is not supported and the validity of its value is not verified.	subnetworkConnection::GradesOfImpact_T

Parameter	Input/Output	Description	Value
emsFreedomLevel	Input	The EMS freedom level indication.	multiLayerSubnetWork::EMSFreedomLevel_T
theSNC	Output	The data of SNC.	subnetworkConnection::SubnetworkConnection_T
sncList	Output	The list of SNC.	subnetworkConnection::SubnetworkConnectionList_T For the element model, see subnetworkConnection::SubnetworkConnection_T.
errorReaso	Output	Failure cause.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	The input is invalid.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

When the SNC is successfully created, no error message is returned. When the SNC fails to be activated, the failure cause is recorded in errorReason.

If the entered userLabel is empty in creating an SDH, SDH-ASON, WDM, OTN-ASON trail, the userLabel of the reported trail is the same as the value of nativeEMSName, and this userLabel value is also the same as the path of the U2000 client; if the userLabel is not empty, the userLabel of the reported trail is the same as the value of nativeEMSName, and this userLabel value is also the same as the entered userLabel value.

The following table defines some error codes.

1092091958: The scenario that the forceUniqueness parameter is set to true is not supported.

1092091968: During the trail creation, protectionEffort can be EFFORT\_WHATEVER only.

1092092142: In non-full route situation, when an SNC is created, sncType can be ST\_SIMPLE only.

1092092004: When a service is created, the delivered parameters sncType and aEnd/zEnd do not match.

1092092024: The service of the specified layerRate cannot be created.

1092092184: Incorrect ccInclusion is input.

1092092185: Incorrect neTPInclusion is input.

1092092186: Incorrect neTPSNCExclusions is input.

1092092187: Incorrect AEND is input.

1092092188: The AEND cross-connection rate level is incorrect.

1092092189: Incorrect ZEND is input.

1092092190: The ZEND cross-connection rate level is incorrect.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.2.4.4.5 deactivateSNC

---

This interface is used to deactivate an SNC by its name.

### Definition

```
void deactivateSNC(
    in globaldefs::NamingAttributes_T sncName,
    in subnetworkConnection::GradesOfImpact_T tolerableImpact,
    in EMSFreedomLevel_T emsFreedomLevel,
    inout subnetworkConnection::TPDataList_T tpsToModify,
    out subnetworkConnection::SubnetworkConnection_T theSNC,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Deactivate a specified SNC.

### Parameters

Parameter	Input/Output	Description	Value
sncName	Input	SNC name.	globaldefs::NamingAttributes_T
tolerableImpact	Input	The tolerable impact level.	subnetworkConnection::GradesOfImpact_T

Parameter	Input/Output	Description	Value
		This parameter is not supported and the validity of its value is not verified.	
emsFreedomLevel	Input	The EMS freedom level indication.	multiLayerSubnetWork::EMSFreedomLevel_T
tpsToModify	Input/Output	TP data that needs to be updated.	subnetworkConnection::TPDataList_T For the element model, see TPData_T.
theSNC	Output	SNC data after deactivation.	subnetworkConnection::SubnetworkConnection_T
errorReason	Output	Failure cause.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	The input is invalid.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

If a server trail is entered, the server trail can be deactivated only when all client trails on it are deactivated.

If a client trail is entered, deactivating the client trail does not affect its server trail.

### CAUTION:

The emsFreedomLevel is the risky parameter. It is suggest only use EMSFL\_CC\_AT\_SNC\_LAYER or EMSFL\_TERMINATE\_AND\_MAP as the input for this parameter.

The EMS will process the request as EMSFL\_CC\_AT\_SNC\_LAYER level, when this parameter is EMSFL\_CC\_AT\_SNC\_LAYER or EMSFL\_TERMINATE\_AND\_MAP.

EMSFL\_HIGHER\_ORDER\_SNCS and EMSFL\_RECONFIGURATION should not be used without prior discussion with Huawei.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.2.4.4.6 deleteSNC

---

This interface is used to delete a specified SNC.

### Definition

```
void deleteSNC(  
    in globaldefs::NamingAttributes_T sncName,  
    in EMSFreedomLevel_T emsFreedomLevel)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Delete a specified SNC.

### Parameters

Parameter	Input/Output	Description	Value
sncName	Input	SNC name.	globaldefs::NamingAttributes_T
emsFreedomLevel	Input	The EMS freedom level indication.	multiLayerSubnetWork::EMSFreedomLevel_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	The input is invalid.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

When you input a server trail, if a client trail exists on this server trail, the server trail cannot be deleted. If no client trail exists on the server trail, the server trail is deleted. When you input a client trail, only the client trail is deleted and the server trail is not deleted.

**Parent topic:** [MultiLayerSubnetworkMgr](#) |

## 9.2.4.4.7 deactivateAndDeleteSNC

---

This interface is used to deactivate and delete an SNC by its name.

### Definition

```
void deactivateAndDeleteSNC(
    in globaldefs::NamingAttributes_T sncName,
    in subnetworkConnection::GradesOfImpact_T tolerableImpact,
    in EMSFreedomLevel_T emsFreedomLevel,
    inout subnetworkConnection::TPDataList_T tpsToModify,
    out subnetworkConnection::SubnetworkConnection_T theSNC,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Deactivate and delete a specified SNC.

### Parameters

Parameter	Input/Output	Description	Value
sncName	Input	SNC name.	globaldefs::NamingAttributes_T
tolerableImpact	Input	The tolerable impact level. This parameter is not supported and the validity of its value is not verified.	subnetworkConnection::GradesOfImpact_T
emsFreedomLevel	Input	The EMS freedom level indication.	multiLayerSubnetWork::EMSFreedomLevel_T

Parameter	Input/Output	Description	Value
tpsToModify	Input/Output	TP data that needs to be updated.	subnetworkConnection::TPDataList_T For the element model, see TPData_T.
theSNC	Output	SNC data.	subnetworkConnection::SubnetworkConnection_T
errorReason	Output	Failure cause.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	The input is invalid.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.2.4.4.8 checkValidSNC

---

This interface is used to check whether the data of an SNC to be created is valid.

### Definition

```
void checkValidSNC(
  in subnetworkConnection::SNCCreateData_T createData,
  in subnetworkConnection::TPDataList_T tpsToModify,
  in boolean considerResources,
  out boolean valid)
  raises(globaldefs::ProcessingFailureException);
```

### Function

Check whether the data of an SNC to be created is valid.

## Parameters

Parameter	Input/Output	Description	Value
createData	Input	Data of the SNC to be created.	subnetworkConnection::SNCCreateData_T
tpsToModify	Input	TP data that you want to set. This parameter is not supported and the validity of its value is not verified.	subnetworkConnection::TPDataList_T For the element model, see TPData_T.
considerResources	Input	Whether to consider the resource allocation. The value can only be true, and false is not supported.	boolean
valid	Output	Check result. true indicates that the SNC is valid and false indicates that the SNC is invalid.	boolean

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	The input is invalid.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.
CORBA_ERR_NOT_IMPLEMENTED_CONSIDERRESOURCE	The specified considerResources value is not supported

## Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.2.4.4.9 setConjunctionSNC

---

This interface is used to set or cancel association for two ASON SNCs after their names are specified.

### Definition

```
void setConjunctionSNC(  
    in globaldefs::NamingAttributes_T sncName1,  
    in globaldefs::NamingAttributes_T sncName2,  
    in boolean operate)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Set or cancel association for ASON SNCs.

### Parameters

Parameter	Input/Output	Description	Value
sncName1	Input	SNC name	globaldefs::NamingAttributes_T
sncName2	Input	SNC name	globaldefs::NamingAttributes_T
operate	Input	Whether to set the association.	boolean true indicates setting the association and false indicates canceling the association.

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	The input is invalid.

Abnormal Value	Description
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr](#) [I](#)

## 9.2.4.4.10 swapSNC

---

This interface is used to switch trails.

### Definition

```
void swapSNC(
    in globaldefs::NamingAttributes_T nameOfSNCtoBeDeactivated,
    in globaldefs::NamingAttributes_T nameOfSNCtoBeActivated,
    in EMSFreedomLevel_T emsFreedomLevel,
    in subnetworkConnection::GradesOfImpact_T tolerableImpact,
    inout subnetworkConnection::TPDataList_T tpsToModify,
    out subnetworkConnection::SNCstate_T stateOfActivatedSNC,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Switch trails. Deactivate the working trail, activate the protection trail.

### Parameters

Parameter	Input/Output	Description	Value
nameOfSNCtoBeDeactivated	Input	The name of the SNC that you want to deactivate.	globaldefs::NamingAttributes_T
nameOfSNCtoBeActivated	Input	The name of the SNC that you want to activate.	globaldefs::NamingAttributes_T

Parameter	Input/Output	Description	Value
tolerableImpact	Input	The tolerable impact level. This parameter is not supported and the validity of its value is not verified.	subnetworkConnection::GradesOfImpact_T
emsFreedomLevel	Input	The EMS freedom level indication. This parameter is not supported and the validity of its value is not verified.	multiLayerSubnetWork::EMSFreedomLevel_
tpsToModify	Input/Output	TP data to be modified. This parameter is not supported and the validity of its value is not verified.	subnetworkConnection::TPDataList_T For the element model, see TPData_T.
stateOfActivatedSNC	Output	State of the SNC of nameOfSNCtoBeActivated after the operation is performed.	subnetworkConnection::SNCState_T
errorReason	Output	Failure cause.	Currently, this parameter is not handled.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	The input is invalid.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr](#) |

## 9.2.4.4.11 switchRoute

---

This interface is used to switch OTN ASON routes manually.

## Definition

```
void switchRoute(
in globaldefs::NamingAttributes_T sncName,
in string routeId,
in subnetworkConnection::GradesOfImpact_T tolerableImpact,
in EMSFreedomLevel_T emsFreedomLevel,
inout subnetworkConnection::TPDataList_T tpsToModify,
inout globaldefs::NVSLList_T additionalInfo,
out subnetworkConnection::SNCState_T sncState,
out string errorReason)
raises(globaldefs::ProcessingFailureException);
```

## Function

Switch OTN ASON routes manually.

## Parameters

Parameter	Input/Output	Description	Value
sncName	Input	Indicates the name of an ASON trail to be switched.	globaldefs::NamingAttributes_T
routeId	Input	This parameter is not required.	string
tolerableImpact	Input	This parameter is not required.	subnetworkConnection::GradesOfImpact_T
emsFreedomLevel	Input	This parameter is not required.	EMSFreedomLevel_T
tpsToModify	Input/Output	This parameter is not required.	subnetworkConnection::TPDataList_T For the element model, see TPData_T.
additionalInfo	Input/Output	This parameter is not required.	globaldefs::NVSLList_T
sncState	Output	There is no returned value for this parameter.	subnetworkConnection::SNCState_T

Parameter	Input/Output	Description	Value
errorReason	Output	Indicates failure causes of the manual switchover.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

This interface is applicable only to ASON trails such as diamond trails.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.2.4.4.12 createPresetRoute

---

This interface is used to create preset restoration trails for the ASON SNC.

### Definition

```
void createPresetRoute(
    in subnetworkConnection::CreatePresetRouteData_T & createData,
    out subnetworkConnection::PresetRoute_T route)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Creates preset restoration trails for the ASON SNC.

### Parameters

Parameter	Input/Output	Description	Value
createData	Input	Indicates the data for creating a preset restoration trail for the ASON SNC.	subnetworkConnection::CreatePresetRouteData_T
route	Output	Indicates the route information of a created preset restoration trail for the ASON SNC.	subnetworkConnection::PresetRoute_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

You can use this interface to create trails only in non-fullRoute mode.

Currently, this interface supports only the creation of preset restoration trails for ASON OCh and ODUk trails.

Only working routes are affected by route constraints when creating preset restoration trails for diamond trails because they have the highest protection capability.

The following table defines some error codes.

1092092184: Incorrect ccInclusion input.

1092092185: Incorrect neTPInclusion input.

1092092186: Incorrect neTPSNCExclusions input.

**Parent topic:** [MultiLayerSubnetworkMgr](#) |

## 9.2.4.4.13 deletePresetRoute

---

This interface is used to delete preset restoration trails for the ASON SNC.

### Definition

```
void deletePresetRoute(  
    in globaldefs::NamingAttributes_T sncName,  
    in unsigned long presetRouteID)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Deletes preset restoration trails for the ASON SNC.

### Parameters

Parameter	Input/Output	Description	Value
sncName	Input	Indicates the name of the ASON SNC where preset restoration trails reside.	globaldefs::NamingAttributes_T
presetRouteID	Input	Indicates the ID of a preset restoration trail. Currently, only 1 and 2 are supported.	1, 2

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

### Restrictions

No constraint is provided.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.2.4.4.14 setConjunctionSNCEx

---

This interface is used to configure or cancel associated OTN ASON trails.

### Definition

```
void setConjunctionSNCEx(
    in globaldefs::NamingAttributes_T sncName1,
    in globaldefs::NamingAttributes_T sncName2,
    in globaldefs::NVSLList_T           additionalInfo,
    in boolean operate)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Configure or cancel associated OTN ASON trails.

### Parameters

Parameter	Input/Output	Description	Value
sncName1	Input	Indicates the OTN ASON trail.	globaldefs::NamingAttributes_T
sncName2	Input	Indicates the OTN ASON trail.	globaldefs::NamingAttributes_T
additionalInfo	Input	Indicates the parameter information of the associated trail. Do not enter a value when the association is canceled.	globaldefs::NVSLList_T
operate	Input	true indicates configuring the association. If the association has been configured, the parameter information of the	boolean

Parameter	Input/Output	Description	Value
		associated trail will be modified. false indicates canceling the association.	

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INVALID_INPUT	The input is invalid.

## Restrictions

No constraint is provided.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.2.4.4.15 createSharedRoute

---

This interface is used to create the shared restoration trail of ASON SNCs.

### Definition

```
void createSharedRoute(
    in subnetworkConnection::CreateSharedRouteData_T & createData,
    out subnetworkConnection::SharedRoute_T route)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create the shared restoration trail of ASON SNCs.

### Parameters

Parameter	Input/Output	Description	Value
createData	Input	Indicates the creation data of the shared restoration trail of ASON SNCs.	subnetworkConnection::CreateSharedRouteData_T
route	Output	Indicates the successfully created shared restoration trail of ASON SNCs.	subnetworkConnection::SharedRoute_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

This interface applies only to the SDH ASON domain.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.2.4.4.16 deleteSharedRoute

---

This interface is used to delete the shared restoration trail of ASON SNCs.

### Definition

```
void deleteSharedRoute(
    in globaldefs::NamingAttributes_T sncName,
    in unsigned long sharedRouteID)
```

```
raises(globaldefs::ProcessingFailureException);
```

## Function

Delete the shared restoration trail of ASON SNCs.

## Parameters

Parameter	Input/Output	Description	Value
sharedRouteID	Input	Indicates the shared restoration trail number. The number can only be 1.	unsigned long
sncName	Input	Indicates the name of the ASON SNC where the shared restoration trail resides.	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

This interface applies only to the SDH ASON domain.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.2.4.5 ProtectionMgr\_I

---

This interface is used to manage protection groups.

- [performProtectionCommand](#)  
This interface is used to switch SDH protection groups.
- [performWDMProtectionCommand](#)  
This interface is used to switch WDM protection groups.
- [createProtectionGroup](#)  
This interface is used to create an SDH protection group.
- [setProtectionGroup](#)  
This interface is used to set attributes of an SDH protection group.
- [deleteProtectionGroup](#)  
This interface is used to delete an SDH protection group.
- [modifyProtectionGroup](#)  
This interface is used to modify an SDH protection group.

**Parent topic:** [Interface Model](#)

## 9.2.4.5.1 performProtectionCommand

---

This interface is used to switch SDH protection groups.

### Definition

```
void performProtectionCommand(
    in ProtectionCommand_T protectionCommand,
    in globaldefs::NamingAttributes_T reliableSinkCtpOrGroupName,
    in globaldefs::NamingAttributes_T fromTp,
    in globaldefs::NamingAttributes_T toTp,
    out protection::SwitchData_T switchData)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Switch SDH protection groups.

The types of the SDH protection groups supported are as follows:

Linear protection groups: 1+1 MS protection group and 1:N MS protection group.

Ring protection groups: two-fiber bidirectional MS protection group and four-fiber bidirectional MS protection group.

SNCP: subnetwork connection protection.

### Parameters

Parameter	Input/Output	Description	Value
protectionCommand	Input	Switching command	ProtectionCommand_T
reliableSinkCtpOrGroupName	Input	Name for the protection group or SNCP sink	globaldefs::NamingAttributes_T
fromTp	Input	Source switching TP	globaldefs::NamingAttributes_T
toTp	Input	Sink switching TP	globaldefs::NamingAttributes_T
switchData	Output	Switching data	protection::SwitchData_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_UNABLE_TO_COMPLY	EMS cannot implement this request.

## Restrictions

There is no restriction.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.2.4.5.2 performWDMProtectionCommand

---

This interface is used to switch WDM protection groups.

### Definition

```
void performWDMProtectionCommand(
```

```

in ProtectionCommand_T protectionCommand,
in globaldefs::NamingAttributes_T wpgpName,
in globaldefs::NamingAttributes_T fromTp,
in globaldefs::NamingAttributes_T toTp,
out protection::WDMSwitchData_T wSwitchData)
raises(globaldefs::ProcessingFailureException);

```

## Function

Switch WDM protection groups.

The switching commands supported are as follows: PC\_CLEAR, PC\_LOCKOUT, PC\_FORCED\_SWITCH, and PC\_MANUAL\_SWITCH.

## Parameters

Parameter	Input/Output	Description	Value
protectionCommand	Input	Switching command.	ProtectionCommand_T
wpgpName	Input	Protection group name.	globaldefs::NamingAttributes_T
fromTp	Input	Source switching TP.	globaldefs::NamingAttributes_T
toTp	Input	Sink switching TP.	globaldefs::NamingAttributes_T
wSwitchData	Output	Switching data.	protection::WDMSwitchData_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.2.4.5.3 createProtectionGroup

---

This interface is used to create an SDH protection group.

### Definition

```
void createProtectionGroup(  
    in protection::PGPCreateData_T pgpCreateData,  
    out protection::ProtectionGroup_T thePGP)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Create an SDH protection group.

### Parameters

Parameter	Input/Output	Description	Value
pgpCreateData	Input	Indicates the creation information of the protection group.	protection::PGPCreateData_T
thePGP	Output	Indicates the details about the protection group.	protection::ProtectionGroup_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

### Restrictions

This interface applies only to the creation of linear multiplex section protection group: 1+1 multiplex section protection group and 1:N multiplex section protection group.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.2.4.5.4 setProtectionGroup

---

This interface is used to set attributes of an SDH protection group.

### Definition

```
void setProtectionGroup(  
    in globaldefs::NamingAttributes_T pgName,  
    in globaldefs::NVSList_T paraList,  
    out protection::ProtectionGroup_T protectionGroup)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Set attributes of an SDH protection group.

### Parameters

Parameter	Input/Output	Description	Value
pgName	Input	Indicates the name of a protection group.	globaldefs::NamingAttributes_T
paraList	Input	Indicates the attributes to be set.	globaldefs::NVSList_T
protectionGroup	Output	Indicates information about the protection group that has been set.	protection::ProtectionGroup_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

### Restrictions

Currently, only recovery time can be set.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.2.4.5.5 deleteProtectionGroup

---

This interface is used to delete an SDH protection group.

### Definition

```
void deleteProtectionGroup(  
    in globaldefs::NamingAttributes_T pgpName,  
    in globaldefs::NamingAttributes_T swapTPName,  
    out protection::ProtectionGroup_T deletedPGP)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Delete an SDH protection group.

### Parameters

Parameter	Input/Output	Description	Value
pgpName	Input	Indicates the protection group name.	globaldefs::NamingAttributes_T
swapTPName	Input	Do not enter values.	globaldefs::NamingAttributes_T
deletedPGP	Output	Indicates the details about the protection group.	protection::ProtectionGroup_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

This interface applies only to the deletion of linear multiplex section protection groups.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.2.4.5.6 modifyProtectionGroup

---

This interface is used to modify an SDH protection group.

### Definition

```
void modifyProtectionGroup(
    in globaldefs::NamingAttributes_T pgpName,
    in protection:: PGPMModifyData_T pgpModifyData,
    out protection::ProtectionGroup_T modifiedPGP)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Modify an SDH protection group.

### Parameters

Parameter	Input/Output	Description	Value
pgpName	Input	Indicates the protection group name.	globaldefs::NamingAttributes_T
pgpModifyData	Input	Indicates the parameter information to be modified.	protection::PGPMModifyData_T
modifiedPGP	Output	Indicates the modified protection group information.	protection::ProtectionGroup_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.2.4.6 HW\_MSTPInventoryMgr\_I

---

This interface is used to manage MSTP inventories.

- [\*\*setMstpEndPoint\*\*](#)  
This interface is used to set parameters of an MSTP end point by its name.
- [\*\*createVirtualBridge\*\*](#)  
This interface is used to create a virtual bridge.
- [\*\*deleteVirtualBridge\*\*](#)  
This interface is used to delete a specified virtual bridge.
- [\*\*createVLAN\*\*](#)  
This interface is used to create a VLAN.
- [\*\*deleteVLAN\*\*](#)  
This interface is used to delete a VLAN by its name.
- [\*\*addVLANForwardPort\*\*](#)  
This interface is used to add forwarding ports to a VLAN dynamically.
- [\*\*delVLANForwardPort\*\*](#)  
This interface is used to delete forwarding ports from a VLAN.
- [\*\*setVLANData\*\*](#)  
This interface is used to set VLAN attributes.
- [\*\*addBindingPath\*\*](#)  
This interface is used to bind paths to a VCTRUNK port.

- [delBindingPath](#)  
This interface is used to delete binding paths from a VCTURNK port.
- [setLCASState](#)  
This interface is used to set the enable state of LCAS protocol for a VCTRUNK port.
- [createQosRule](#)  
This interface is used to create a QoS rule.
- [setQosRule](#)  
This interface is used to set parameters for a QoS rule.
- [createFlow](#)  
This interface is used to create a flow on specified equipment.
- [deleteQosRule](#)  
This interface is used to delete a QoS rule by its name.
- [setFlow](#)  
This interface is used to set the binding relationship between a flow and a QoS rule.
- [deleteFlow](#)  
This interface is used to delete a flow by its name.
- [createLinkAggregationGroup](#)  
This interface is used to create a link aggregation group (LAG).
- [modifyLinkAggregationGroup](#)  
This interface is used to modify parameters of a specified link aggregation group (LAG).
- [deleteLinkAggregationGroup](#)  
This interface is used to delete a link aggregation group (LAG) by its name.
- [setMstpEndPointShapingQueue](#)  
This interface is used to set the shaping queue for an MSTP port by MSTP port name.
- [setSTProtocolParam](#)  
This interface is used to set the protocol type for the Ethernet spanning tree, and enable or disable the protocol.
- [setSTBridgeParam](#)  
This interface is used to set bridge parameters for a spanning tree.
- [setSTPortParam](#)  
This interface is used to set port parameters for a specified spanning tree.

**Parent topic:** [Interface Model](#)

## 9.2.4.6.1 setMstpEndPoint

---

This interface is used to set parameters of an MSTP end point by its name.

### Definition

```
void setMstpEndPoint(
    in globaldefs::NamingAttributes_T endPointName,
    in transmissionParameters::LayeredParameterList_T paraList,
    out HW_MSTPEndPoint_T endPoint)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Set parameters of a specified MSTP end point.

Set the Layer-2 port attributes, including the flow control attributes, working mode, maximum data packet length, and encapsulation protocol, on the WDM board.

An endpoint can be a MAC port, VCTRUNK port, PRP port, logical port, ATM port, or ATM trunk port.

### Parameters

Parameter	Input/Output	Description	Value
endPointName	Input	Name of the MSTP termination point to be set.	globaldefs::NamingAttributes_T
paraList	Input	List of parameters to be set.	transmissionParameters::LayeredParameterList_T
endPoint	Output	Set endpoint.	HW_mstpInventory::HW_MSTPEndPoint_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW MSTPInventoryMgr I](#)

## 9.2.4.6.2 createVirtualBridge

---

This interface is used to create a virtual bridge.

### Definition

```
void createVirtualBridge(
    in globaldefs::NamingAttributes_T equipmentName,
    in unsigned short vbId,
    in string vbName,
    out HW_VirtualBridge_T vb)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Allow the network management system to create a virtual bridge.

### Parameters

Parameter	Input/Output	Description	Value
equipmentName	Input	Board name.	globaldefs::NamingAttributes_T
vbId	Input	Virtual bridge ID.	unsigned short
vbName	Input	Virtual bridge name.	string
vb	Output	Virtual bridge that has been	HW_mstpInventory::HW_VirtualBridge_T

Parameter	Input/Output	Description	Value
		successfully created.	

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.6.3 deleteVirtualBridge

---

This interface is used to delete a specified virtual bridge.

### Definition

```
void deleteVirtualBridge(
    in globaldefs::NamingAttributes_T vbName)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Delete a specified virtual bridge.

### Parameters

Parameter	Input/Output	Description	Value
vbName	Input	Name of the virtual bridge to be deleted.	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.6.4 createVLAN

---

This interface is used to create a VLAN.

### Definition

```
void createVLAN(
    in globaldefs::NamingAttributes_T vbName,
    in unsigned short vlanId,
    in globaldefs::NamingAttributesList_T forwardTPList,
    out HW_VirtualLAN_T vlan)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create a VLAN.

### Parameters

Parameter	Input/Output	Description	Value
vbName	Input	Virtual bridge name	globaldefs::NamingAttributes_T
vlanId	Input	VLAN ID	unsigned short
forwardTPLList	Input	List of names for forward ports	globaldefs::NamingAttributesList_T
vlan	Output	The VLAN that has been successfully created	HW_mstpInventory::HW_VirtualLAN_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.6.5 deleteVLAN

---

This interface is used to delete a VLAN by its name.

### Definition

```
void deleteVLAN(
    in globaldefs::NamingAttributes_T vlanName)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Delete a specified VLAN.

## Parameters

Parameter	Input/Output	Description	Value
vlanName	Input	Name of the VLAN to be deleted.	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.6.6 addVLANForwardPort

---

This interface is used to add forwarding ports to a VLAN dynamically.

### Definition

```
void addVLANForwardPort(
    in globaldefs::NamingAttributes_T vlanName,
    in globaldefs::NamingAttributesList_T forwardTPList,
    out HW_VirtualLAN_T vlan)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Add forwarding ports to a VLAN dynamically.

## Parameters

Parameter	Input/Output	Description	Value
vlanName	Input	VLAN name	globaldefs::NamingAttributes_T
forwardTPLList	Input	List of the forwarding ports to be added	globaldefs::NamingAttributesList_T
vlan	Output	VLAN that has been successfully modified.	HW_mstpInventory::HW_VirtualLAN_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.6.7 delVLANForwardPort

---

This interface is used to delete forwarding ports from a VLAN.

### Definition

```
void delVLANForwardPort(  
    in globaldefs::NamingAttributes_T vlanName,  
    in globaldefs::NamingAttributesList_T forwardTPLList,
```

```

out HW_VirtualLAN_T vlan)
raises(globaldefs::ProcessingFailureException);

```

## Function

Delete forwarding ports from a VLAN.

## Parameters

Parameter	Input/Output	Description	Value
vlanName	Input	VLAN name	globaldefs::NamingAttributes_T
forwardTPLList	Input	List of the forward ports to be deleted	globaldefs::NamingAttributesList_T
vlan	Output	The VLAN that is successfully modified.	HW_mstpInventory::HW_VirtualLAN_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.6.8 setVLANData

---

This interface is used to set VLAN attributes.

## Definition

```
void setVLANData(
    in globaldefs::NamingAttributes_T vlanName,
    in globaldefs::NVSList_T paraList,
    out HW_VirtualLAN_T vlan)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Set VLAN attributes. Currently, no attribute can be set, but the interface remains.

## Parameters

Parameter	Input/Output	Description	Value
vlanName	Input	VLAN name	globaldefs::NamingAttributes_T
paraList	Input	List of attributes to be set	globaldefs::NVSList_T
vlan	Output	Returned VLAN information	HW_mstpInventory::HW_VirtualLAN_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.6.9 addBindingPath

---

This interface is used to bind paths to a VCTRUNK port.

## Definition

```
void addBindingPath(  
    in globaldefs::NamingAttributes_T endPointName,  
    in terminationPoint::Directionality_T bindingDirect,  
    in globaldefs::NamingAttributesList_T pathList,  
    out HW_MSTPBindingPathList_T bindingPathList)  
raises(globaldefs::ProcessingFailureException);
```

## Function

Bind paths to a VCTRUNK port.

## Parameters

Parameter	Input/Output	Description	Value
endPointName	Input	Endpoint name	globaldefs::NamingAttributes_T
bindingDirect	Input	MSTP endpoint direction	terminationPoint::Directionality_T
pathList	Input	List of binding paths to be added	globaldefs::NamingAttributesList_T
bindingPathList	Output	List of trails after the binding	HW_mstpInventory::HW_MSTPBindingPathList_T For the element model, see HW_MSTPBindingPath_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The input endPointName parameter supports the VCTRUNK port only.

You can bind the paths on the same port only. In the case of the tributary timeslot, you can bind the paths on the same board only.

Paths of different ports cannot be specified at the same time. In addition, the rate levels should be consistent.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.6.10 delBindingPath

---

This interface is used to delete binding paths from a VCTURNK port.

### Definition

```
void delBindingPath(
    in globaldefs::NamingAttributes_T endPointName,
    in terminationPoint::Directionality_T bindingDirect,
    in globaldefs::NamingAttributesList_T pathList,
    out HW_MSTPBindingPathList_T bindingPathList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Delete binding paths from a VCTRUNK port.

### Parameters

Parameter	Input/Output	Description	Value
endPointName	Input	Endpoint name	globaldefs::NamingAttributes_T
bindingDirect	Input	MSTP endpoint direction	terminationPoint::Directionality_T
pathList	Input	List of binding paths to be deleted	globaldefs::NamingAttributesList_T
bindingPathList	Output	List of modified paths	HW_mstpInventory::HW_MSTPBindingPathList_T For the element model, see HW_MSTPBindingPath_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The input endPointName parameter supports the VCTRUNK port only.

**Parent topic:** [HW MSTPInventoryMgr I](#)

## 9.2.4.6.11 setLCASState

---

This interface is used to set the enable state of LCAS protocol for a VCTRUNK port.

### Definition

```
void setLCASState(  
    in globaldefs::NamingAttributes_T endPointName,  
    in boolean enableState)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Set the enable state of LCAS protocol for a VCTRUNK port.

### Parameters

Parameter	Input/Output	Description	Value
endPointName	Input	Endpoint name	globaldefs::NamingAttributes_T
enableState	Input	Enable state of the LCAS protocol	boolean

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

Set the enable state of the LCAS protocol at the VCTRUNK port.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.6.12 createQosRule

---

This interface is used to create a QoS rule.

### Definition

```
void createQosRule(
    in globaldefs::NamingAttributes_T equipmentName,
    in HW_QosType_T qosType,
    in globaldefs::NVSLList_T paraList,
    out HW_QosRule_T qosRule)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create a QoS rule.

### Parameters

Parameter	Input/Output	Description	Value
equipmentName	Input	Board name	globaldefs::NamingAttributes_T
qosType	Input	QoS type	HW_mstpInventory::HW_QosType_T
paraList	Input	List of parameters for the specified QoS type	globaldefs::NVSLList_T

Parameter	Input/Output	Description	Value
qosRule	Output	QoS rule created	HW_mstpInventory::HW_QosRule_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The entered object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

Set the paraList parameters for a new CAR, the attributes that can be queried and set are as follows: EnableCar, CIR, DCBS, PIR, and DMBS. In the case of an existing CAR, you can set the CIR parameter only. If you set the other parameters for the existing CAR, the errors that the parameters are not supported are returned.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.6.13 setQosRule

---

This interface is used to set parameters for a QoS rule.

### Definition

```
void setQosRule(
    in globaldefs::NamingAttributes_T qosRuleName,
    in globaldefs::NVSList_T paraList,
    out HW_QosRule_T qosRule)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Set parameters for a QoS rule.

### Parameters

Parameter	Input/Output	Description	Value
qosRuleName	Input	QoS rule name	globaldefs::NamingAttributes_T
paraList	Input	List of parameters to be modified	globaldefs::NVSList_T
qosRule	Output	Modified QoS rules	HW_mstpInventory::HW_QosRule_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

Set the paraList parameters for a new CAR, the attributes that can be queried and set are as follows: EnableCar, CIR, DCBS, PIR, and DMBS. In the case of an existing CAR, you can set the CIR parameter only. If you set the other parameters for the existing CAR, the errors that the parameters are not supported are returned.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.6.14 createFlow

---

This interface is used to create a flow on specified equipment.

### Definition

```
void createFlow(
    in globaldefs::NamingAttributes_T equipmentName,
    in globaldefs::NVSList_T paraList,
    out HW_Flow_T flow)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create a flow.

## Parameters

Parameter	Input/Output	Description	Value
equipmentName	Input	Board name	globaldefs::NamingAttributes_T
paraList	Input	Paramete list	globaldefs::NVSLList_T
flow	Output	Information about the flow that has been created	HW_mstpInventory::HW_Flow_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The parameters supported are as follows: FlowType, PortType, PortID, VlanID, Priority, FlowshapingID, VBID, VBLogicPort, SVlanID, CVlanID, and CVlanIDRange.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.6.15 deleteQosRule

---

This interface is used to delete a QoS rule by its name.

### Definition

```
void deleteQosRule(  
    in globaldefs::NamingAttributes_T qosRuleName)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Delete a QoS rule by its name.

## Parameters

Parameter	Input/Output	Description	Value
qosRuleName	Input	Name of the QoS rule	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.6.16 setFlow

---

This interface is used to set the binding relationship between a flow and a QoS rule.

### Definition

```
void setFlow(
    in globaldefs::NamingAttributes_T flowName,
    in globaldefs::NamingAttributesList_T qosRuleNames,
    out HW_Flow_T flow)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Set the binding relationship between a flow and a QoS rule.

## Parameters

Parameter	Input/Output	Description	Value
flowName	Input	Flow name	globaldefs::NamingAttributes_T
qosRuleNames	Input	List of names of the QoS rules	globaldefs::NamingAttributesList_T
flow	Output	Flow after the QoS rule is bound	HW_mstpInventory::HW_Flow_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.6.17 deleteFlow

---

This interface is used to delete a flow by its name.

### Definition

```
void deleteFlow(
in globaldefs::NamingAttributes_T flowName)
raises(globaldefs::ProcessingFailureException);
```

### Function

Delete a specified flow by its name.

### Parameters

Parameter	Input/Output	Description	Value
flowName	Input	Flow name	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW MSTPInventoryMgr](#)

## 9.2.4.6.18 createLinkAggregationGroup

---

This interface is used to create a link aggregation group (LAG).

### Definition

```
void createLinkAggregationGroup(
    in globaldefs::NamingAttributes_T meName,
    in globaldefs::NVSList_T paraList,
    in globaldefs::NamingAttributes_T mainPortName,
    in globaldefs::NamingAttributesList_T branchPortNameList,
    out HW_LinkAggregationGroup_T lag)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create a LAG.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	NE name	globaldefs::NamingAttributes_T
paraList	Input	Parameter list	globaldefs::NVSList_T
mainPortName	Input	Main port name	globaldefs::NamingAttributes_T
branchPortNameList	Input	Standby or branch port name	globaldefs::NamingAttributesList_T
lag	Output	LAG created	HW_mstpInventory::HW_LinkAggregationGroup_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.6.19 modifyLinkAggregationGroup

---

This interface is used to modify parameters of a specified link aggregation group (LAG).

### Definition

```
void modifyLinkAggregationGroup(
in globaldefs::NamingAttributes_T lagName,
```

```

in globaldefs::NVSList_T paraList,
in globaldefs::NamingAttributesList_T addedBranchPortNameList,
in globaldefs::NamingAttributesList_T deletedBranchPortNameList,
out HW_LinkAggregationGroup_T lag)
raises(globaldefs::ProcessingFailureException);

```

## Function

Modify parameters of a specified LAG.

## Parameters

Parameter	Input/Output	Description	Value
lagName	Input	Name of the LAG to be modified	globaldefs::NamingAttributes_T
paraList	Input	Parameter list	globaldefs::NVSList_T
addedBranchPortNameList	Input	List of names of the standby or branch ports to be added	globaldefs::NamingAttributesList_T
deletedBranchPortNameList	Input	List of names of the standby or branch ports to be deleted	globaldefs::NamingAttributesList_T
lag	Output	Modified LAGs	HW_mstpInventory::HW_LinkAggregationGroup_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

You can modify the nativeEMSName parameter, but the type and sharetype parameters cannot be modified.

**Parent topic:** [HW MSTPInventoryMgr I](#)

## 9.2.4.6.20 deleteLinkAggregationGroup

---

This interface is used to delete a link aggregation group (LAG) by its name.

### Definition

```
void deleteLinkAggregationGroup(
    in globaldefs::NamingAttributes_T lagName)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Delete a specified LAG.

### Parameters

Parameter	Input/Output	Description	Value
lagName	Input	Name for the LAG to be deleted	globaldefs::NamingAttributes_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.6.21 setMstpEndPointShapingQueue

---

This interface is used to set the shaping queue for an MSTP port by MSTP port name.

### Definition

```
void setMstpEndPointShapingQueue(
    in globaldefs::NamingAttributes_T endPointName,
    inout ShapingQueueList_T shapingQueueList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Set the shaping queue for a specified MSTP port.

### Parameters

Parameter	Input/Output	Description	Value
endPointName	Input	Endpoint name	globaldefs::NamingAttributes_T
shapingQueueList	Input	Shaping queue	HW_mstpInventory::ShapingQueueList_T For the element model, see ShapingQueue.

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW MSTPInventoryMgr\\_I](#)

## 9.2.4.6.22 setSTProtocolParam

---

This interface is used to set the protocol type for the Ethernet spanning tree, and enable or disable the protocol.

### Definition

```
void setSTProtocolParam(
    in globaldefs::NamingAttributes_T spanningTreeName,
    in globaldefs::NVSList_T paraList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Set the protocol type for the Ethernet spanning tree, and enable or disable the protocol.

### Parameters

Parameter	Input/Output	Description	Value
spanningTreeName	Input	Name of the spanning tree	globaldefs::NamingAttributes_T
paraList	Input	Parameters of the spanning tree	globaldefs::NVSList_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW MSTPInventoryMgr\\_I](#)

## 9.2.4.6.23 setSTBridgeParam

---

This interface is used to set bridge parameters for a spanning tree.

### Definition

```
void setSTBridgeParam(
    in globaldefs::NamingAttributes_T spanningTreeName,
    in globaldefs::NVSLList_T paraList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Set bridge parameters for a spanning tree.

### Parameters

Parameter	Input/Output	Description	Value
spanningTreeName	Input	Name of the spanning tree	globaldefs::NamingAttributes_T
paraList	Input	Parameters of the Ethernet virtual bridge	globaldefs::NVSLList_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW MSTPInventoryMgr\\_I](#)

## 9.2.4.6.24 setSTPortParam

---

This interface is used to set port parameters for a specified spanning tree.

### Definition

```
void setSTPortParam(
    in globaldefs::NamingAttributes_T spanningTreeName,
    in globaldefs::NamingAttributes_T portName,
    in globaldefs::NVSList_T paraList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Set port parameters for a spanning tree.

### Parameters

Parameter	Input/Output	Description	Value
spanningTreeName	Input	Name of the spanning tree	globaldefs::NamingAttributes_T
portName	Input	Name of the port	globaldefs::NamingAttributes_T
paraList	Input	Parameters of the port	globaldefs::NVSList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.2.4.7 HW\_MSTPProtectionMgr\_I

---

This interface is used to manage the MSTP protection.

- [\*\*performRPRProtectionCommand\*\*](#)

This interface is used to perform the external switching command on a specified RPR node.

- [\*\*performAtmPGProtectionCommand\*\*](#)

This interface is used to perform the external switching command on a specified ATM protection group.

- [\*\*modifyRPRLinkPara\*\*](#)

This interface is used to modify link information about a specified resilient packet ring (RPR) node.

- [\*\*modifyAtmProtectGroup\*\*](#)

This interface is used to modify information about a specified ATM protection group.

**Parent topic:** [Interface Model](#)

## 9.2.4.7.1 performRPRProtectionCommand

---

This interface is used to perform the external switching command on a specified RPR node.

## Definition

```
void performRPRProtectionCommand(  
    in globaldefs::NamingAttributes_T nodeName,  
    raises(globaldefs::ProcessingFailureException);
```

## Function

Perform the external switching command on the specified RPR node.

## Parameters

Parameter	Input/Output	Description	Value
nodeName	Input	The specific RPR node	globaldefs::NamingAttributes_T
protectionCommand	Input	The switching command performed	protection::ProtectionCommand_T
switchPosition	Input	Switching position: HW_SP_NA, HW_SP_EAST, HW_SP_WEST	HW_SwitchPosition_T
switchData	Output	Details of the switching	HW_RPRSwitchData_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPProtectionMgr\\_I](#)

## 9.2.4.7.2 performAtmPGProtectionCommand

---

This interface is used to perform the external switching command on a specified ATM protection group.

### Definition

```
void performAtmPGProtectionCommand(
    in globaldefs::NamingAttributes_T atmpgName,
    in protection::ProtectionCommand_T protectionCommand,
    in HW_AtmPGSwitchAction_T switchAction,
    in HW_AtmPGSwitchDirect_T switchDirect,
    out HW_AtmPGSwitchData_T switchData)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Perform the external switching command on a specified ATM protection group.

### Parameters

Parameter	Input/Output	Description	Value
atmpgName	Input	ATM protection group name	globaldefs::NamingAttributes_T
protectionCommand	Input	Perform the external switching command on the specified ATM protection group	protection::ProtectionCommand_T
switchAction	Input	Switching action: HW_ASAT_NA, HW_ASAT_SWITCH, HW_ASAT_RESTORE	HW_AtmPGSwitchAction_T
switchDirect	Input	Switching direction: HW_ASD_NA, HW_ASD_SRC, HW_ASD_SNK, HW_ASD_BI	HW_AtmPGSwitchDirect_T
switchData	Output	Details of the switching	HW_AtmPGSwitchData_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPProtectionMgr\\_I](#)

## 9.2.4.7.3 modifyRPRLinkPara

---

This interface is used to modify link information about a specified resilient packet ring (RPR) node.

### Definition

```
void modifyRPRLinkPara(
    in globaldefs::NamingAttributes_T nodeName,
    in globaldefs::NVSList_T rprLinkParameters,
    out HW_RPRLinkInfo_T linkInfo)
    raises(globaldefs::ProcessingFailureException);
```

### Function

This interface is used to modify link information about a specified resilient packet ring (RPR) node.

### Parameters

Parameter	Input/Output	Description	Value
nodeName	Input	Indicates the name of an RPR link.	globaldefs::NamingAttributes_T
rprLinkParameters	Input	Indicates the RPR link parameters to be modified.	globaldefs::NVSList_T The following fields are supported:

Parameter	Input/Output	Description	Value
			ring0SendLinkWeight: weight of send link for ring 0 ring0AReservedBindWidth: reserved bandwidth of priority A for ring 0 ring0AUUsedBindWidth: used bandwidth of priority A for ring 0 ring0BCirU
linkInfo	Output	Indicates the modified RPR link information.	HW_RPRLinkInfo_T For the element model, see HW_RPRLinkInfo_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

N/A

**Parent topic:** [HW\\_MSTPPProtectionMgr\\_I](#)

## 9.2.4.7.4 modifyAtmProtectGroup

---

This interface is used to modify information about a specified ATM protection group.

### Definition

```
void modifyAtmProtectGroup(
in globaldefs::NamingAttributes_T atmPgName,
in globaldefs::NVSList_T atmPGParameters,
```

```

out HW_AtmpProtectGroup_T atmPG)
raises(globaldefs::ProcessingFailureException);

```

## Function

This interface is used to modify information about a specified ATM protection group.

## Parameters

Parameter	Input/Output	Description	Value
atmPgName	Input	Indicates the name of the ATM protection group.	globaldefs::NamingAttributes_T
atmPGParameters	Input	Indicates the ATM protection group parameters to be modified.	globaldefs::NVSList_T Only the following parameters are supported: srcSwitchType: switching type of the source end. The options are HW_AST_SINGLE_END and HW_AST_BI_END. srcReversionMode: reversion mode of the source end. The options are RM_NON_REVERTIVE
atmPG	Output	Indicates the modified information about the ATM protection group.	HW_AtmpProtectGroup_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

The constraints are the same as those for modifying ATM protection groups on the U2000. Specifically, the parameters issued by the interface are consistent with the switching direction of the protection group.

The following are the detailed constraints.

If Switching Direction of ATM Protection Groups is Source end, the supported attributes includes srcSwitchType, srcReversionMode, srcHoldOffTime, srcWtrTime, or their combination. Restriction: Issuing the unsupported attribute names does not take effect.

If Switching Direction of ATM Protection Groups is Sink end, the supported attributes includes snkSwitchType, snkReversionMode, snkHoldOffTime, snkWtrTime, or their combination. Restriction: Issuing the unsupported attribute names does not take effect.

If Switching Direction of ATM Protection Groups is Source end+sink end, the supported attributes is one of the following pairs or combination of more than one pair: srcSwitchType and snkSwitchType, srcReversionMode and snkReversionMode, srcHoldOffTime and snkHoldOffTime, srcWtrTime and snkWtrTime. Restriction: The values of each pair must be the same. Otherwise, the issued attributes do not take effect.

**Parent topic:** [HW MSTPProtectionMgr\\_I](#)

## 9.2.4.8 HW\_MSTPServicesMgr\_I

---

This interface is used to manage MSTP services.

- [\*\*createEthService\*\*](#)  
This interface is used to create an Ethernet service.
- [\*\*deleteEthService\*\*](#)  
This interface is used to delete an Ethernet service by its name.
- [\*\*createAtmService\*\*](#)  
This interface is used to create an ATM VP/VC cross-connection.
- [\*\*deleteAtmService\*\*](#)  
This interface is used to delete a specified ATM VP/VC cross-connection.
- [\*\*activateAtmService\*\*](#)  
This interface is used to activate an ATM VP/VC cross-connection by its name.
- [\*\*deactivateAtmService\*\*](#)  
This interface is used to deactivate an ATM VP/VC cross-connection by its name.

**Parent topic:** [Interface Model](#)

## 9.2.4.8.1 createEthService

---

This interface is used to create an Ethernet service.

### Definition

```
void createEthService(  
    in HW_EthServiceCreateData_T createData,  
    out HW_EthServiceList_T ethServiceList)  
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create an Ethernet service.

### Parameters

Parameter	Input/Output	Description	Value
createData	Input	Information about the Ethernet service to be created	HW_EthServiceCreateData_T
ethServiceList	Output	List of the Ethernet cross-connections that have been created	HW_EthServiceList_T For the element model, see HW_EthService_T.

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

### Restrictions

The creation of the EPL, EVPL, or EPLan is supported only.

**Parent topic:** [HW\\_MSTPServiceMgr\\_I](#)

## 9.2.4.8.2 deleteEthService

---

This interface is used to delete an Ethernet service by its name.

### Definition

```
void deleteEthService(  
    in globaldefs::NamingAttributes_T serviceName)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Delete a specified Ethernet service.

### Parameters

Parameter	Input/Output	Description	Value
serviceName	Input	Name of the Ethernet service to be deleted	globaldefs::NamingAttributes_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

### Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPServicesMgr\\_I](#)

## 9.2.4.8.3 createAtmService

---

This interface is used to create an ATM VP/VC cross-connection.

## Definition

```
void createAtmService(  
    in HW_AtmServiceCreateData_T createData,  
    out HW_AtmService_T atmService)  
raises(globaldefs::ProcessingFailureException);
```

## Function

Create an ATM VP/VC cross-connection.

## Parameters

Parameter	Input/Output	Description	Value
createData	Input	Information about the ATM service that you want to create	HW_AtmServiceCreateData_T
atmService	Output	List of the ATM services that are created	HW_AtmService_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPServiceMgr\\_I](#)

## 9.2.4.8.4 deleteAtmService

---

This interface is used to delete a specified ATM VP/VC cross-connection.

## Definition

```
void deleteAtmService(  
    in globaldefs::NamingAttributes_T serviceName)  
raises(globaldefs::ProcessingFailureException);
```

## Function

Delete a specified ATM VP/VC cross-connection.

## Parameters

Parameter	Input/Output	Description	Value
serviceName	Input	Name of the ATM service that you want to delete	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW MSTPServiceMgr I](#)

## 9.2.4.8.5 activateAtmService

---

This interface is used to activate an ATM VP/VC cross-connection by its name.

## Definition

```

void activateAtmService(
in globaldefs::NamingAttributes_T serviceName,
out HW_Atmservice_T atmService)
raises(globaldefs::ProcessingFailureException);

```

## Function

Activate a specified ATM VP/VC cross-connection.

## Parameters

Parameter	Input/Output	Description	Value
serviceName	Input	The name of the ATM service that you want to activate	globaldefs::NamingAttributes_T
atmService	Output	Information about the ATM service that has been activated	HW_Atmservice_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW MSTPServiceMgr I](#)

## 9.2.4.8.6 deactivateAtmService

---

This interface is used to deactivate an ATM VP/VC cross-connection by its name.

## Definition

```
void deactivateAtmService(
    in globaldefs::NamingAttributes_T serviceName,
    out HW_Atmservice_T atmService)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Deactivate a specified ATM VP/VC cross-connection.

## Parameters

Parameter	Input/Output	Description	Value
serviceName	Input	Name of the ATM service that you want to deactivate	globaldefs::NamingAttributes_T
atmService	Output	Information about the ATM service that has been deactivate	HW_Atmservice_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPServicesMgr\\_I](#)

## 9.2.4.9 TrafficDescriptorMgr\_I

---

This interface is used to manage traffic descriptors and supported in only the MSTP equipment.

- **activateTrafficDescriptor**

This interface is used to activate an ATM traffic descriptor by its name.

- **deactivateTrafficDescriptor**

This interface is used to deactivate an ATM traffic by its name.

- **HW\_createTrafficDescriptor**

This interface is used to create an ATM traffic descriptor.

- **deleteTrafficDescriptor**

This interface is used to delete an ATM traffic descriptor by its name.

**Parent topic:** [Interface Model](#)

## **9.2.4.9.1 activateTrafficDescriptor**

---

This interface is used to activate an ATM traffic descriptor by its name.

### **Definition**

```
void activateTrafficDescriptor(
    in globaldefs::NamingAttributes_T tdName,
    out TrafficDescriptor_T td)
    raises(globaldefs::ProcessingFailureException);
```

### **Function**

Activate a specified ATM traffic descriptor.

### **Parameters**

Parameter	Input/Output	Description	Value
tdName	Input	The name of the ATM traffic descriptor that you want to activate	globaldefs::NamingAttributes_T
td	Output	The ATM traffic descriptor that has been activated	TrafficDescriptor_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [TrafficDescriptorMgr\\_I](#)

## 9.2.4.9.2 deactivateTrafficDescriptor

---

This interface is used to deactivate an ATM traffic by its name.

### Definition

```
void deactivateTrafficDescriptor(  
    in globaldefs::NamingAttributes_T tdName,  
    out TrafficDescriptor_T td)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Deactivate a specified ATM traffic descriptor.

### Parameters

Parameter	Input/Output	Description	Value
tdName	Input	The name for the ATM traffic descriptor that you want to deactivate	globaldefs::NamingAttributes_T

Parameter	Input/Output	Description	Value
td	Output	The ATM traffic descriptor that has been deactivated	TrafficDescriptor_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [TrafficDescriptorMgr\\_I](#)

## 9.2.4.9.3 HW\_createTrafficDescriptor

---

This interface is used to create an ATM traffic descriptor.

### Definition

```
void HW_createTrafficDescriptor(
    in globaldefs::NamingAttributes_T meName,
    in TDCreateData_T newTDCreateData,
    out TrafficDescriptor_T newTrafficDescriptor)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create an ATM traffic descriptor.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	The NE name.	globaldefs::NamingAttributes_T
newTDCreateData	Input	The data for the ATM traffic descriptor that you want to create	TDCreateData_T
newTrafficDescriptor	Output	Information about the ATM traffic descriptor that has been created	TrafficDescriptor_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [TrafficDescriptorMgr\\_I](#)

## 9.2.4.9.4 deleteTrafficDescriptor

---

This interface is used to delete an ATM traffic descriptor by its name.

### Definition

```
void deleteTrafficDescriptor(
    in globaldefs::NamingAttributes_T descriptorName)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Delete a specified ATM traffic descriptor.

## Parameters

Parameter	Input/Output	Description	Value
descriptorName	Input	The name of the ATM traffic descriptor	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [TrafficDescriptorMgr\\_I](#)

## 9.2.4.10 HW\_controlPlaneMgr\_I

---

This interface is used to manage the route control plane, including querying route names, route node names, and SNNP links.

- [setSRLG](#)

This interface is used to set a shared risk link group (SRLG). Specifically, it is used to add or remove an SNPP link.

**Parent topic:** [Interface Model](#)

## 9.2.4.10.1 setSRLG

---

This interface is used to set a shared risk link group (SRLG). Specifically, it is used to add or remove an SNPP link.

### Definition

```
void setSRLG(  
    in HW_SRLGID_T srlgID,  
    in boolean addOrRemove,  
    inout globaldefs::NamingAttributesList_T snppLinkNameList)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Set an SRLG.

### Parameters

Parameter	Input/Output	Description	Value
srlgID	Input	SRLG ID	The value of the SRLG ID ranges from 0 to 65535. 0 indicates that the object does not belong to any SRLG.
addOrRemove	Input	true indicates adding, and false indicates removing	boolean
snppLinkNameList	Input/Output	list of SNPP link names	globaldefs::NamingAttributesList_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_controlPlaneMgr\\_I](#)

## 9.2.4.11 EncapsulationLayerLinkMgr\_I

---

This interface is used to query information about encapsulation layer links (ELLs).

- [createELLLink](#)

This interface is used to create an encapsulation layer link (ELL).

- [activateELLLink](#)

This interface is used to activate an encapsulation layer link (ELLLink) by its name.

- [deactivateELLLink](#)

This interface is used to deactivate an encapsulation layer link (ELL) by its name.

- [deleteELLLink](#)

This interface is used to delete an encapsulation layer link (ELL) by its name.

- [increaseBandwidthOfELLLink](#)

This interface is used to increase the bandwidth of a specified encapsulation layer link (ELL).

- [decreaseBandwidthOfELLLink](#)

This interface is used to decrease the bandwidth of a specified encapsulation layer link (ELL).

- [setELLLinkLCASState](#)

This interface is used to set the LCAS enable status for an encapsulation layer link (ELL).

**Parent topic:** [Interface Model](#)

## 9.2.4.11.1 createELLLink

---

This interface is used to create an encapsulation layer link (ELL).

### Definition

```
void createELLLink(  
    in ELLinkCreateData_T createData,  
    out EncapsulationLayerLink_T theELL,  
    out string errorReason)
```

```
raises(globaldefs::ProcessingFailureException);
```

## Function

Create an ELL.

## Parameters

Parameter	Input/Output	Description	Value
createData	Input	The data of the ELL to be created.	ELLLinkCreateData_T
theELL	Output	The created ELL.	EncapsulationLayerLink_T
errorReason	Output	The failure cause.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

- The point-to-multipoint ELL is not supported.
- The uniqueness of userLabel is not supported.
- The unidirectional ELL is not supported.
- The unterminated ELL does not support the automatic creation of the server layer.
- When btname is used, the server layer cannot be created automatically.
- The VC4 server trail cannot be created automatically.

**Parent topic:** [EncapsulationLayerLinkMgr\\_I](#)

## 9.2.4.11.2 activateELLink

---

This interface is used to activate an encapsulation layer link (ELLLink) by its name.

## Definition

```
void activateELLLink(  
    in globaldefs::NamingAttributes_T ellName,  
    out EncapsulationLayerLink_T theELL,  
    out string errorReason)  
raises(globaldefs::ProcessingFailureException);
```

## Function

Activate a specified ELLLink.

## Parameters

Parameter	Input/Output	Description	Value
ellName	Input	The name of the ELLLink to be activated	globaldefs::NamingAttributes_T
theELL	Output	The activated ELLLink.	EncapsulationLayerLink_T
errorReason	Output	The failure reason	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

errorReason is always blank.

**Parent topic:** [EncapsulationLayerLinkMgr\\_I](#)

## 9.2.4.11.3 deactivateELLLink

---

This interface is used to deactivate an encapsulation layer link (ELL) by its name.

### Definition

```
void deactivateELLLink(  
    in globaldefs::NamingAttributes_T ellName,  
    out EncapsulationLayerLink_T theELL,  
    out string errorReason)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Deactivate a specified ELL.

### Parameters

Parameter	Input/Output	Description	Value
ellName	Input	An ELL to be deactivated.	globaldefs::NamingAttributes_T
theELL	Output	The deactivated ELLLink.	EncapsulationLayerLink_T
errorReason	Output	The failure reason	string

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

### Restrictions

errorReason is always blank.

**Parent topic:** [EncapsulationLayerLinkMgr\\_I](#)

## 9.2.4.11.4 deleteELLLink

---

This interface is used to delete an encapsulation layer link (ELL) by its name.

### Definition

```
void deleteELLLink(  
    in globaldefs::NamingAttributes_T ellName)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Delete a specified ELL.

### Parameters

Parameter	Input/Output	Description	Value
ellName	Input	The name of the ELL to be deleted.	globaldefs::NamingAttributes_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

### Restrictions

The server layer cannot be deleted.

**Parent topic:** [EncapsulationLayerLinkMgr\\_I](#)

## 9.2.4.11.5 increaseBandwidthOfELLLink

---

This interface is used to increase the bandwidth of a specified encapsulation layer link (ELL).

## Definition

```
void increaseBandwidthOfELLLink(
    in globaldefs::NamingAttributes_T ellName,
    in boolean automatic,
    in subnetworkConnection::SNCCreateDataList_T additionalSNCs,
    in short numberOfSNCs,
    in transmissionParameters::LayeredParameterList_T transmissionParams,
    in globaldefs::NVSLIST_T additionalModificationInfo,
    out EncapsulationLayerLink_T newELL)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Increase the bandwidth of a specified ELL. In the case of an unterminated service, you can only increase the bandwidth manually.

## Parameters

Parameter	Input/Output	Description	Value
ellName	Input	The name of the ELL to be modified.	globaldefs::NamingAttributes_T
automatic	Input	Whether the bandwidth is added automatically or not.	boolean
additionalSNCs	Input	List of SNCs to be added. For details of the element model, see SNCCreateData_T.	subnetworkConnection::SNCCreateDataList_T
numberOfSNCs	Input	Number of SNCs to be added.	short
transmissionParams	Input	Transmission parameters	transmissionParameters::LayeredParameterList_T
additionalModificationInfo	Input	Additional modification information	globaldefs::NVSLIST_T
newELL	Output	The modified ELL.	EncapsulationLayerLink_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The transmissionParams and additionalModificationInfo fields are not processed.

**Parent topic:** [EncapsulationLayerLinkMgr\\_I](#)

## 9.2.4.11.6 decreaseBandwidthOfELLLink

---

This interface is used to decrease the bandwidth of a specified encapsulation layer link (ELL).

### Definition

```
void decreaseBandwidthOfELLLink(
    in globaldefs::NamingAttributes_T ellName,
    in globaldefs::NamingAttributesList_T sncNames,
    in short numberOfSNCs,
    in globaldefs::NVSList_T additionalModificationInfo,
    out EncapsulationLayerLink_T newELL)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Decrease the bandwidth of a specified ELL.

### Parameters

Parameter	Input/Output	Description	Value
ellName	Input	The name of the ELL to be modified.	globaldefs::NamingAttributes_T
sncNames	Input	The names of the SNCs that shall	globaldefs::NamingAttributesList_T

Parameter	Input/Output	Description	Value
		be removed from providing bandwidth for the ELL.	
numberOfSNCs	Input	The number of SNCs to be removed.	short
additionalModificationInfo	Input	Additional modification information	globaldefs::NVSLList_T
newELL	Output	The modified ELL.	EncapsulationLayerLink_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The additionalModificationInfo field is not processed.

Whether the sncNames queue length is consistent with numberOfSNCs is not checked.

When the sncNames queue length is zero, the bandwidth is decreased automatically according to numberOfSNCs.

**Parent topic:** [EncapsulationLayerLinkMgr\\_I](#)

## 9.2.4.11.7 setELLinkLCASState

---

This interface is used to set the LCAS enable status for an encapsulation layer link (ELL).

### Definition

```

void setELLLinkLCASState(
    in globaldefs::NamingAttributes_T ellName,
    in boolean enableState)
raises(globaldefs::ProcessingFailureException);

```

## Function

Set the LCAS enable status for an ELLLink.

## Parameters

Parameter	Input/Output	Description	Value
ellName	Input	The name of the ELL for which to set LCAS State.	globaldefs::NamingAttributes_T
enableState	Input	LCAS State enabling flag of the ELL.	boolean

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The parameter is set directly without distinguishing the original status of the ELL.

**Parent topic:** [EncapsulationLayerLinkMgr\\_I](#)

## 9.2.4.12 FlowDomainMgr\_I

---

This interface is used to query information about flow domain fragments and matrix flow domain fragments. The MSTP equipment is supported only.

- [createFDFr](#)  
This interface is used to create a flow domain fragment (FDFr).

- [activateFDFr](#)  
This interface is used to activate a flow domain fragment FDFr by its name.
- [deactivateFDFr](#)  
This interface is used to deactivate a flow domain fragment (FDFr) by its name.
- [deleteFDFr](#)  
This interface is used to delete a flow domain fragment (FDFr) by its name.
- [performEthernetOAMCommand](#)  
This interface is used to run an Ethernet OAM command. OAM is short for operation, administration and maintenance.
- [createFTP](#)
- [deleteFTP](#)

**Parent topic:** [Interface Model](#)

## 9.2.4.12.1 createFDFr

---

This interface is used to create a flow domain fragment (FDFr).

### Definition

```
void createFDFr(
    in flowDomainFragment::FDFrCreateData_T createData,
    in ConnectivityRequirement_T connectivityRequirement,
    inout globaldefs::NamingAttributesList_T endTPs,
    inout globaldefs::NamingAttributesList_T internalTPs,
    inout flowDomainFragment::MatrixFlowDomainFragmentList_T mfdfrs,
    inout subnetworkConnection::TPDataList_T tpsToModify,
    out flowDomainFragment::FlowDomainFragment_T theFDFr,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create an FDFr.

### Parameters

Parameter	Input/Output	Description	Value
createData	Input	The FDFr Data to be created	flowDomainFragment::FDFrCreateData_T
connectivityRequirement	Input	This parameter is ignored.	ConnectivityRequirement
endTPs	Input/Output	A list of names of flow points	globaldefs::NamingAttributesList_T
internalTPs	Input/Output	A list of internal CPTP names that must be included in the route of the FDFr.	globaldefs::NamingAttributesList_T
mfdfrs	Input/Output	This parameter is ignored.	flowDomainFragment::MatrixFlowDomainFragmentList_T
tpsToModify	Input/Output	A list of TPs to apply. On method return the list is updated to provide the resulting parameters.	subnetworkConnection::TPDataList_T For details of the element model, see subnetworkConnection::TPData_T.
theFDFr	Output	The new created flow domain fragment.	flowDomainFragment::FlowDomainFragment_T
errorReason	Output	This parameter is ignored.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

- The creation of the EVPLAN is not supported.
- The automatic creation of the ELL is not supported.
- The connectivityRequirement, mfdfrs, and errorReason fields are not processed.
- The creation of unidirectional services, except the QinQ EvplType service, is not supported.
- When the createData and additionalCreationInfo fields are set to Eplan, an EPLAN trail is created.
- When the endTPs list length is 1, an unterminated trail is created.
- When the endTPs list length is 2, a terminated trail is created.

**Parent topic:** [FlowDomainMgr](#) |

## 9.2.4.12.2 activateFDFr

---

This interface is used to activate a flow domain fragment FDFr by its name.

### Definition

```
void activateFDFr(  
    in globaldefs::NamingAttributes_T fdfrName,  
    out flowDomainFragment::FlowDomainFragment_T fdfr)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Activate a specified FDFr.

### Parameters

Parameter	Input/Output	Description	Value
fdfrName	Input	The name of the FDFr to be activated.	globaldefs::NamingAttributes_T
fdfr	Output	The activated flow domain fragment.	flowDomainFragment::FlowDomainFragment_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [FlowDomainMgr\\_I](#)

## 9.2.4.12.3 deactivateFDFr

---

This interface is used to deactivate a flow domain fragment (FDFr) by its name.

### Definition

```
void deactivateFDFr(
    in globaldefs::NamingAttributes_T fdfrName,
    out flowDomainFragment::FlowDomainFragment_T fdfr)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Deactivate a specified FDFr.

### Parameters

Parameter	Input/Output	Description	Value
fdfrName	Input	The name of the FDFr to deactivate.	globaldefs::NamingAttributes_T
fdfr	Output	The deactivated flow domain fragment.	flowDomainFragment::FlowDomainFragment_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [FlowDomainMgr\\_I](#)

## 9.2.4.12.4 deleteFDFr

---

This interface is used to delete a flow domain fragment (FDFr) by its name.

### Definition

```
void deleteFDFr(
    in globaldefs::NamingAttributes_T fdfrName,
    inout subnetworkConnection::TPDataList_T tpsToModify)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Delete a specified FDFr.

### Parameters

Parameter	Input/Output	Description	Value
fdfrName	Input	The name of the FDFr to be deleted.	globaldefs::NamingAttributes_T
tpsToModify	Input/Output	A list of TPs to apply. On method return the list is updated to provide the resulting parameters.	flowDomainFragment::FlowDomainFragment_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [FlowDomainMgr\\_I](#)

## 9.2.4.12.5 performEthernetOAMCommand

---

This interface is used to run an Ethernet OAM command. OAM is short for operation, administration and maintenance.

### Definition

```
void performEthernetOAMCommand(
    in EthernetOAMOperation_T operation,
    out EthernetLTTestResultList_T ltTestResult)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Run an Ethernet OAM command.

## Parameters

Parameter	Input/Output	Description	Value
operation	Input	Operation to be performed	EthernetOAMOperation_T
ltTestResult	Output	List of OAM results. For element model, see EthernetLTTestResult_T.	EthernetLTTestResultList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [FlowDomainMgr\\_I](#)

## 9.2.4.12.6 createFTP

---

### Definition

```
void createFTP(
    in flowDomain::FTPCreateData_T createData,
    inout subnetworkConnection::TPDataList_T tpsToModify,
    out terminationPoint::TerminationPoint_T theFTP)
    raises(globaldefs::ProcessingFailureException);
```

## Function

## Parameters

None

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	
EXCPT_ENTITY_NOT_FOUND	
EXCPT_INTERNAL_ERROR	

## Restrictions

**Parent topic:** [FlowDomainMgr\\_I](#)

## 9.2.4.12.7 deleteFTP

---

### Definition

```
void deleteFTP(
    in globaldefs::NamingAttributes_T ftpName)
    raises(globaldefs::ProcessingFailureException);
```

### Function

## Parameters

None

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	
EXCPT_ENTITY_NOT_FOUND	
EXCPT_INTERNAL_ERROR	

## Restrictions

**Parent topic:** [FlowDomainMgr\\_I](#)

### 9.2.4.13 MaintenanceMgr\_I

---

This interface is used to manage maintenance functions.

- [performMaintenanceOperation](#)

This interface is used to perform maintenance operations, including setting and canceling maintenance operations on termination points (TPs), enabling loopback (LB), link trace (LT), ping and traceroute tests, activating and deactivating the Ethernet OAM connectivity check (CC) connectivity verification (CV) and fast failure detection (FFD) test.

- [enablePRBSTest](#)

This interface is used to enable the PRBS test.

- [disablePRBSTest](#)

This interface is used to disable the PRBS test.

- [createMaintenanceDomain](#)

This interface is used to create a maintenance domain (MD).

- [createMaintenanceAssociation](#)

This interface is used to create a maintenance association (MA).

- [createMaintenancePoints](#)

This interface is used to create a maintenance point (MP). The MP can be a maintenance intermediate point (MIP), maintenance end point (MEP) or remote MEP.

- [deleteMaintenanceDomain](#)

This interface is used to delete a maintenance point (MD) by its name.

- [deleteMaintenanceAssociation](#)

This interface is used to delete a maintenance association (MA) by its name.

- [deleteMaintenancePoint](#)

This interface is used to delete a maintenance point (MP) by its name.

- [setOAMParameters](#)

This interface is used to set OAM parameters and monitoring thresholds.

**Parent topic:** [Interface Model](#)

## **9.2.4.13.1 performMaintenanceOperation**

---

This interface is used to perform maintenance operations, including setting and canceling maintenance operations on termination points (TPs), enabling loopback (LB), link trace (LT), ping and traceroute tests, activating and deactivating the Ethernet OAM connectivity check (CC) connectivity verification (CV) and fast failure detection (FFD) test.

### **Definition**

```
void performMaintenanceOperation(  
    in CurrentMaintenanceOperation_T maintenanceOperation,  
    in MaintenanceOperationMode_T maintenanceOperationMode)  
raises (globaldefs::ProcessingFailureException);
```

### **Function**

Set and cancel maintenance operations on TPs, enable OAM LB and LT test, activate and deactivate OAM CC test.

Enable traceroute and ping tests, and activate and deactivate CV and FFD test for tunnels.

Enable traceroute and ping tests, and activate and deactivate CV and FFD test for pseudo wires (PWs).

### **Parameters**

Parameter	Input/Output	Description	Value
maintenanceOperation	Input	Information on the maintenance operation to perform	CurrentMaintenanceOperation_T
maintenanceOperationMode	Input	Indicates whether the maintenance operation is to be operated or released.	MaintenanceOperationMode_T This field has two values: MOM_OPERATE MOM_RELEASE

### **Abnormal Values**

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

For SDH NEs, the inloop and outloop for the PTP or CTP can be set or canceled.

For WDM NEs, the loop for the WDM PTP can be set or canceled.

**Parent topic:** [MaintenanceMgr\\_I](#)

## 9.2.4.13.2 enablePRBSTest

---

This interface is used to enable the PRBS test.

### Definition

```
void enablePRBSTest(
    in PRBSTestParameterList_T testParaList,
    out globaldefs::NamingAttributesList_T failedTPList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Enable the PRBS test.

### Parameters

Parameter	Input/Output	Description	Value
testParaList	Input	List of testing parameters	PRBSTestParameterList_T For details of the element model, see PRBSTestParameter_T.
failedTPList	Output	List of TPs that fail to be tested	globaldefs::NamingAttributesList_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

The DWDM equipment is not supported.

**Parent topic:** [MaintenanceMgr\\_I](#)

## 9.2.4.13.3 disablePRBSTest

---

This interface is used to disable the PRBS test.

### Definition

```
void disablePRBSTest(
    in globaldefs::NamingAttributesList_T tpNameList,
    out globaldefs::NamingAttributesList_T failedTPList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Disable the PRBS test.

### Parameters

Parameter	Input/Output	Description	Value
tpNameList	Input	List of the TPs where the tests need to be disabled	globaldefs::NamingAttributesList_T
failedTPList	Output	List of TPs that fail to be tested	globaldefs::NamingAttributesList_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

The DWDM equipment is not supported.

**Parent topic:** [MaintenanceMgr\\_I](#)

## 9.2.4.13.4 createMaintenanceDomain

---

This interface is used to create a maintenance domain (MD).

### Definition

```
void createMaintenanceDomain(
    in maintenanceOps::HW_MaintenanceDomain_T md,
    out maintenanceOps::HW_MaintenanceDomain_T theMD,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create an maintenance domain(MD).

### Parameters

Parameter	Input/Output	Description	Value
mdCreateData	Input	Indicates parameters of the MD to be created.	maintenanceOps::HW_MaintenanceDomain_T
theMD	Output	Indicates information about the MD that has been	maintenanceOps::HW_MaintenanceDomain_T

Parameter	Input/Output	Description	Value
		successfully created.	
errorReason	Output	Indicates failure causes of the creation.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

This interface is applicable to only the PTN and RTN domains.

**Parent topic:** [MaintenanceMgr\\_I](#)

## 9.2.4.13.5 createMaintenanceAssociation

---

This interface is used to create a maintenance association (MA).

### Definition

```
void createMaintenanceAssociation(
    in HW_MaintenanceAssociation_T ma,
    out HW_MaintenanceAssociation_T theMA,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create an MA.

### Parameters

Parameter	Input/Output	Description	Value
ma	Input	Indicates parameters of the MA to be created.	HW_MaintenanceAssociation_T
theMA	Output	Indicates information about the MA that has been successfully created.	HW_MaintenanceAssociation_T
errorReason	Output	Indicates failure causes of the creation.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

This interface is applicable to only the PTN and RTN domains.

**Parent topic:** [MaintenanceMgr\\_I](#)

## 9.2.4.13.6 createMaintenancePoints

---

This interface is used to create a maintenance point (MP). The MP can be a maintenance intermediate point (MIP), maintenance end point (MEP) or remote MEP.

### Definition

```
void createMaintenancePoints(
    in HW_MaintenancePointCreateData_T mpCreateData,
    out HW_MaintenancePoint_T theMP,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Create an MP. The MP can be an MIP, maintenance end point (MEP) or remote MEP.

## Parameters

Parameter	Input/Output	Description	Value
mpCreateData	Input	Indicates the parameters of the MP to be created.	HW_MaintenancePointCreateData_T
theMP	Output	Indicates the information about the MP that has been successfully created.	HW_MaintenancePoint_T
errorReason	Output	Indicates the failure causes of the creation.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

This interface is applicable to only the PTN and RTN domains.

**Parent topic:** [MaintenanceMgr\\_I](#)

## 9.2.4.13.7 deleteMaintenanceDomain

---

This interface is used to delete a maintenance point (MD) by its name.

## Definition

```

void deleteMaintenanceDomain(
in globaldefs::NamingAttributes_T mdName)
raises(globaldefs::ProcessingFailureException);

```

## Function

Delete an MD.

## Parameters

Parameter	Input/Output	Description	Value
mdName	Input	Indicates the name of the MD to be deleted.	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

This interface is applicable to only the PTN and RTN domains.

**Parent topic:** [MaintenanceMgr\\_I](#)

## 9.2.4.13.8 deleteMaintenanceAssociation

---

This interface is used to delete a maintenance association (MA) by its name.

### Definition

```

void deleteMaintenanceAssociation(
in globaldefs::NamingAttributes_T maName)
raises(globaldefs::ProcessingFailureException);

```

## Function

Delete an MA.

## Parameters

Parameter	Input/Output	Description	Value
maName	Input	Indicates the name of the MA to be deleted.	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

This interface is applicable to only the PTN and RTN domains.

**Parent topic:** [MaintenanceMgr\\_I](#)

## 9.2.4.13.9 deleteMaintenancePoint

---

This interface is used to delete a maintenance point (MP) by its name.

### Definition

```
void deleteMaintenancePoint(  
    in globaldefs::NamingAttributes_T mpName)  
raises(globaldefs::ProcessingFailureException);
```

## Function

This interface is used to delete an MP. The MP can be an MIP, maintenance end point (MEP), or remote MEP.

## Parameters

Parameter	Input/Output	Description	Value
mpName	Input	Indicates the name of an MP to be deleted.	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

This interface is applicable to only the PTN and RTN domains.

**Parent topic:** [MaintenanceMgr\\_I](#)

## 9.2.4.13.10 setOAMParameters

---

This interface is used to set OAM parameters and monitoring thresholds.

### Definition

```
void setOAMParameters(
    in globaldefs::NamingAttributes_T name,
    in OAMParamType_T oamParamType,
    in transmissionParameters::LayeredParameterList_T ParamList,
    out OAMParametersData_T oamParameters)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Set OAM parameters and monitoring thresholds.

## Parameters

Parameter	Input/Output	Description	Value
name	Input	Indicates the name of the object to be set.	globaldefs::NamingAttributes_T
oamParamType	Input	Indicates the type of the object to be set.	OAMParamType_T The value is: EthPortOAM
ParamList	Input	Indicates the parameters of the object to be set.	LayeredParameterList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

This interface applies to only PTN and RTN domains.

**Parent topic:** [MaintenanceMgr\\_I](#)

## 9.2.4.14 TCProfileMgr\_I

---

This interface is used to manage traffic policy profiles. Traffic policy profiles include port, Ethernet V-UNI ingress or egress, PW, ATM, ATM COS mapping and DS domain mapping policy profiles. PTN equipment is supported.

- [\*\*HW\\_createTCProfile\*\*](#)  
This interface is used to create a traffic policy profile.
- [\*\*HW\\_modifyTCProfile\*\*](#)  
This interface is used to modify a traffic policy profile.

- [deleteTCProfile](#)  
This interface is used to delete a traffic policy profile by its name.
- [assignTrafficConditioningProfile](#)  
This interface is used to assign a traffic policy profile to a specified object.
- [deassignTrafficConditioningProfile](#)  
This interface is used to deassign a traffic policy profile from a specified object.

**Parent topic:** [Interface Model](#)

## 9.2.4.14.1 HW\_createTCProfile

---

This interface is used to create a traffic policy profile.

### Definition

```
void HW_createTCProfile(
    in HW_TCProfileCreateData_T newTCProfileCreateData,
    out HW_TCProfile_T newTCProfile)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create a traffic policy profile.

### Parameters

Parameter	Input/Output	Description	Value
newTCProfileCreateData	Input	Data of the traffic policy profile to be created.	HW_TCProfileCreateData_T
newTCProfile	Output	Returned information about the traffic policy profile that is successfully created.	HW_TCProfile_T

### Abnormal Values

Abnormal Value	Description
EXCPT_NOT_IMPLEMENTED	This value is not supported by the U2000.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

Currently, the following profiles are supported:

Port mapping policy profile

Ethernet V-UNI ingress/egress mapping policy profile

PW mapping policy profile

ATM mapping policy profile

ATM CoS mapping policy profile

DS domain mapping policy profile

**Parent topic:** [TCProfileMgr\\_I](#)

## 9.2.4.14.2 HW\_modifyTCProfile

---

This interface is used to modify a traffic policy profile.

### Definition

```
void HW_modifyTCProfile(
    in globaldefs::NamingAttributes_T tcProfileName,
    in HW_TCProfileCreateData_T tcProfileModifyData,
    out HW_TCProfile_T modifiedTCProfile,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Modify a traffic policy profile.

### Parameters

Parameter	Input/Output	Description	Value
tcProfileName	Input	Name of a traffic policy profile that to be modified.	globaldefs::NamingAttributes_T
tcProfileModifyData	Input	Information about a traffic policy profile that needs to be modified.	HW_TCProfileCreateData_T
modifiedTCProfile	Output	Returned information about the traffic policy profile that is successfully modified.	HW_TCProfile_T
errorReason	Output	Returned error information.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_NOT_IMPLEMENTED	The value is not supported by the U2000.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [TCProfileMgr\\_I](#)

## 9.2.4.14.3 deleteTCProfile

---

This interface is used to delete a traffic policy profile by its name.

## Definition

```
void deleteTCPProfile(  
    in globaldefs::NamingAttributes_T tcProfileName)  
raises(globaldefs::ProcessingFailureException);
```

## Function

Delete a traffic policy profile.

## Parameters

Parameter	Input/Output	Description	Value
tcProfileName	Input	Name of a traffic policy profile to be deleted.	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_NOT_IMPLEMENTED	The value is not supported by the U2000.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [TCPProfileMgr\\_I](#)

## 9.2.4.14.4 assignTrafficConditioningProfile

---

This interface is used to assign a traffic policy profile to a specified object.

## Definition

```

void assignTrafficConditioningProfile(
in TrafficConditioningProfileAssignList_T resourceList,
out TrafficConditioningProfileAssignList_T failedResourceList)
raises(globaldefs::ProcessingFailureException);

```

## Function

Apply a traffic policy profile to an object.

## Parameters

Parameter	Input/Output	Description	Value
resourceList	Input	List of objects where the traffic policy profile is applied.	TrafficConditioningProfileAssignList For element model, see TrafficConditioningProfileAssign_T.
failedResourceList	Output	Returned list of objects where the policy fails to be applied.	TrafficConditioningProfileAssignList For element model, see TrafficConditioningProfileAssign_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_NOT_IMPLEMENTED	The value is not supported by the U2000.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

Currently, the port policy and DS domain mapping are supported.

**Parent topic:** [TCProfileMgr\\_I](#)

## **9.2.4.14.5 deassignTrafficConditioningProfile**

---

This interface is used to deassign a traffic policy profile from a specified object.

### **Definition**

```
void deassignTrafficConditioningProfile(  
    in TrafficConditioningProfileDeassignList_T resourceList,  
    out TrafficConditioningProfileDeassignList_T failedResourceList)  
raises(globaldefs::ProcessingFailureException);
```

### **Function**

Unapply a traffic policy profile from an object.

### **Parameters**

Parameter	Input/Output	Description	Value
resourceList	Input	List of objects where policies are unapplied.	TrafficConditioningProfileDeassignList_T For element model, see TrafficConditioningProfileDeassign_T.
failedResourceList	Output	Returned list of objects where the policies fail to be unapplied.	TrafficConditioningProfileDeassignList_T For element model, see TrafficConditioningProfileDeassign_T.

### **Abnormal Values**

Abnormal Value	Description
EXCPT_NOT_IMPLEMENTED	The value is not supported by the U2000.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

### **Restrictions**

Currently, the port policy and DS domain mapping are supported.

**Parent topic:** [TCPProfileMgr\\_I](#)

## 9.2.4.15 Session\_I

---

This interface is used to query NMS managers and check the network communication.

- [ping](#)  
This interface is used to check whether the communication is normal.
- [endSession](#)  
This interface is used to end the session connection.

**Parent topic:** [Interface Model](#)

### 9.2.4.15.1 ping

---

This interface is used to check whether the communication is normal.

#### Definition

```
void ping( ) ;
```

#### Function

Check whether the communication is normal.

#### Parameters

None

#### Abnormal Values

None

#### Restrictions

There is no restriction.

**Parent topic:** [Session\\_I](#)

## 9.2.4.15.2 endSession

---

This interface is used to end the session connection.

### Definition

```
void endSession( ) ;
```

### Function

End the session connection.

### Parameters

None

### Abnormal Values

None

### Restrictions

There is no restriction.

**Parent topic:** [Session\\_I](#)

## 9.2.4.16 HW\_securityMgr\_I

---

This interface is used to control security. Currently, only the modifyPassword interface is available.

- [modifyPassword](#)

This interface is used to change the password of the CORBA user that has logged in.

**Parent topic:** [Interface Model](#)

## 9.2.4.16.1 modifyPassword

---

This interface is used to change the password of the CORBA user that has logged in.

## Definition

```
void modifyPassword(  
    in string userName,  
    in string oldPassword,  
    in string newPassword)  
raises(globaldefs::ProcessingFailureException);
```

## Function

Modify the password of the CORBA user that has logged in.

## Parameters

Parameter	Input/Output	Description	Value
userName	Input	Name of the CORBA user that has logged in currently	string
oldPassword	Input	Old password.	string
newPassword	Input	New password.	string

## Abnormal Values

None

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_securityMgr\\_I](#)

## 9.2.4.17 HW\_VPNMgr\_I

This interface is used to manage services, such as, PWE3 (ATM, CES, and EES services), VPLS, NativeEth and tunnel services. The supported equipment is as follows: PTN, Hybrid MSTP, and RTN900 series equipment. NativeEth services are applicableonly to RTN equipment of V100R002 version.

- [createMFDFr](#)

This interface is used to create a matrix flow domain fragment (MFDFr). PWE3, VPLS and NativeETH services can be created.

- [deleteMFDFr](#)

This interface is used to delete a matrix flow domain fragment (MFDFr) by its name.

- [activateMFDFr](#)

This interface is used to activate a matrix flow domain fragment (MFDFr) by its name.

- [deactivateMFDFr](#)

This interface is used to deactivate a matrix flow domain fragment (MFDFr) by its name.

- [modifyMFDFr](#)

This interface is used to modify a specified matrix flow domain fragment (MFDFr).

- [createTrafficTrunk](#)

This interface is used to create a traffic trunk such as an RSVP-TE tunnel, IP tunnel and static CR TunnelTrail.

- [deleteTrafficTrunk](#)

This interface is used to delete a traffic trunk by its name.

- [activateTrafficTrunk](#)

This interface is used to activate a traffic trunk by its name.

- [deactivateTrafficTrunk](#)

This interface is used to deactivate a traffic trunk by its name.

- [modifyTrafficTrunk](#)

This interface is used to modify a specified traffic trunk.

- [createIPCrossConnections](#)

This interface is used to create an IP cross-connection and applicable to the static tunnel and PW switch.

- [deleteIPCrossConnections](#)

This interface is used to delete an IP cross-connection by its name.

- [activateIPCrossConnections](#)

This interface is used to activate an IP cross-connection by its name.

- [deactivateIPCrossConnections](#)

This interface is used to deactivate a specified IP cross-connection by its name.

- [modifyIPCrossConnection](#)

This interface is used to modify an IP cross-connection.

- [createFDFr](#)

This interface is used to create an FDFr. The supported service is E2E PWE3 (CES and EES).

- [activateFDFr](#)

This interface is used to activate an FDFr. The supported service is E2E PWE3 (CES and EES).

- **deactivateFDFr**

This interface is used to deactivate an FDFr. The supported service is E2E PWE3 (CES and EES).

- **deleteFDFr**

This interface is used to delete an FDFr. The supported service is E2E PWE3 (CES and EES).

**Parent topic:** [Interface Model](#)

## 9.2.4.17.1 createMFDFr

---

This interface is used to create a matrix flow domain fragment (MFDFr). PWE3, VPLS and NativeETH services can be created.

### Definition

```
void createMFDFr (
    in MatrixFlowDomainFragment_T createData,
    inout subnetworkConnection::TPDataList_T tpsToModify,
    out MatrixFlowDomainFragment_T theMFDFr,
    out globaldefs::NamingAttributesList_T notConnectableCPTPList,
    out globaldefs::NamingAttributesList_T parameterProblemsTPList,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create an MFDFr.

### Parameters

Parameter	Input/Output	Description	Value
createData	Input	Data of the MFDFr to be created	MatrixFlowDomainFragment_T
tpsToModify	Input/Output	TP list to be updated (the updated TP list in the output)	subnetworkConnection::TPDataList_T For element model, sesubnetworkConnection::TPData_T.
theMFDFr	Output	The MFDFr that has been created	MatrixFlowDomainFragment_T

Parameter	Input/Output	Description	Value
notConnectableCPTPList	Output	List of objects that fail to be connected during the creation	globaldefs::NamingAttributesList_T
parameterProblemsTPLList	Output	List of TPs at the source and sink ends where the MFDFr fails to be created	globaldefs::NamingAttributesList_T
errorReason	Output	Error cause	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The following services can be created:

ATM emulation service

TDM emulation service

EPL service

EPLan service

The tpsToModify and notConnectableCPTPList parameters are not supported.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.2 deleteMFDFr

---

This interface is used to delete a matrix flow domain fragment (MFDFr) by its name.

## Definition

```
void deleteMFDFr(
    in globaldefs::NamingAttributes_T mfdfrName)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Delete a specified MFDFr.

## Parameters

Parameter	Input/Output	Description	Value
mfdfrName	Input	Name of the MFDFr to be deleted	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The ATM emulation, TDM emulation, EPL, EPLan services are supported.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.3 activateMFDFr

---

This interface is used to activate a matrix flow domain fragment (MFDFr) by its name.

## Definition

```
void activateMFDFr(
    in globaldefs::NamingAttributes_T mfdfrName,
    inout subnetworkConnection::TPDataList_T tpsToModify,
    out MatrixFlowDomainFragment_T theMFDFr,
    out string errorReason)
```

```
raises(globaldefs::ProcessingFailureException);
```

## Function

Activate a specified MFDFr.

## Parameters

Parameter	Input/Output	Description	Value
mfdfrName	Input	Name of the MFDFr to be activated	globaldefs::NamingAttributes_T
tpsToModify	Input/Output	TP data to be modified	subnetworkConnection::TPDataList_T For the element model, see subnetworkConnection::TPData_T.
theMFDFr	Output	The MFDFr that has been activated	MatrixFlowDomainFragment_T
errorReason	Output	Failure cause	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The tpsToModify is not supported.

The ATM emulation, TDM emulation, EPL, EPLan services are supported.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.4 deactivateMFDFr

---

This interface is used to deactivate a matrix flow domain fragment (MFDFr) by its name.

## Definition

```
void deactivateMFDFr(  
in globaldefs::NamingAttributes_T mfdfrName,  
inout subnetworkConnection::TPDataList_T tpsToModify,  
out MatrixFlowDomainFragment_T theMFDFr,  
out string errorReason)  
raises(globaldefs::ProcessingFailureException);
```

## Function

Deactivate a specified MFDFr.

## Parameters

Parameter	Input/Output	Description	Value
mfdfrName	Input	Name of the MFDFr to be deactivated	globaldefs::NamingAttributes_T
tpsToModify	Input/Output	TP data to be modified For the element model, see subnetworkConnection::TPDataList_T.	subnetworkConnection::TPDataList_T
theMFDFr	Output	The MFDFr that has been deactivated	MatrixFlowDomainFragment_T
errorReason	Output	Failure cause	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The tpsToModify is not supported.

The ATM emulation, TDM emulation, EPL, EPLan services are supported.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.5 modifyMFDFr

---

This interface is used to modify a specified matrix flow domain fragment (MFDFr).

### Definition

```
void modifyMFDFr(
    in globaldefs::NamingAttributes_T mfdfrName,
    in MFDFrModifyData_T modifyData,
    out MatrixFlowDomainFragment_T theMFDFr,
    out globaldefs::NamingAttributesList_T notConnectableCPTPList,
    out globaldefs::NamingAttributesList_T parameterProblemsTPLList,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Modify a specified MFDFr. This interface cannot be used to modify the source and sink information of services in batches.

### Parameters

Parameter	Input/Output	Description	Value
mfdfrName	Input	Name of the MFDFr to be modified	globaldefs::NamingAttributes_T
modifyData	Input	MFDFr Data to be modified	MFDFrModifyData_T
theMFDFr	Output	MFDFr that has been modified	MatrixFlowDomainFragment_T
notConnectableCPTPList	Output	List of objects that fail to be connected during the modification	globaldefs::NamingAttributesList_T
parameterProblemsTPLList	Output	List of TPs that fail to be modified at the	globaldefs::NamingAttributesList_T

Parameter	Input/Output	Description	Value
		source and sink ends	
errorReason	Output	Failure cause	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The notConnectableCPTPList is not supported.

The ATM emulation, TDM emulation, EPL, EPLan services are supported.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.6 createTrafficTrunk

---

This interface is used to create a traffic trunk such as an RSVP-TE tunnel, IP tunnel and static CR TunnelTrail.

### Definition

```
void createTrafficTrunk(
    in TrafficTrunkCreateData_T createData,
    out TrafficTrunk_T theTrafficTrunk,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create a traffic trunk.

### Parameters

Parameter	Input/Output	Description	Value
createData	Input	Data of the traffic trunk to be created	TrafficTrunkCreateData_T
theTrafficTrunk	Output	Information about the traffic trunk that has been created	TrafficTrunk_T
errorReason	Output	Error reason	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The dynamic RSVP-TE tunnel, IP tunnel and static CR TunnelTrail are supported.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.7 deleteTrafficTrunk

---

This interface is used to delete a traffic trunk by its name.

### Definition

```
void deleteTrafficTrunk(
    in globaldefs::NamingAttributes_T trafficTrunkName)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Delete a traffic trunk tunnel.

### Parameters

Parameter	Input/Output	Description	Value
trafficTrunkName	Input	Name of the traffic trunk to be deleted.	globaldefs::NamingAttributes_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The dynamic RSVP-TE tunnel, IP tunnel and static CR TunnelTrail are supported.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.8 activateTrafficTrunk

---

This interface is used to activate a traffic trunk by its name.

### Definition

```
void activateTrafficTrunk(
    in globaldefs::NamingAttributes_T trafficTrunkName,
    out TrafficTrunk_T theTrafficTrunk,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Activate a specified traffic trunk.

### Parameters

Parameter	Input/Output	Description	Value
trafficTrunkName	Input	Name of the traffic trunk to be activated	globaldefs::NamingAttributes_T
theTrafficTrunk	Output	Information about the traffic trunk that has been activated	TrafficTrunk_T
errorReason	Output	Error reason	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The dynamic RSVP-TE tunnel, IP tunnel and static CR TunnelTrail are supported.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.9 deactivateTrafficTrunk

---

This interface is used to deactivate a traffic trunk by its name.

### Definition

```
void deactivateTrafficTrunk(
    in globaldefs::NamingAttributes_T trafficTrunkName,
    out TrafficTrunk_T theTrafficTrunk,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Deactivate a specified traffic trunk.

## Parameters

Parameter	Input/Output	Description	Value
trafficTrunkName	Input	Name of the traffic trunk to be deactivated	globaldefs::NamingAttributes_T
theTrafficTrunk	Output	Information about the traffic trunk that has been modified	TrafficTrunk_T
errorReason	Output	Error reason	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The dynamic RSVP-TE tunnel, IP tunnel and static CR TunnelTrail are supported.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.10 modifyTrafficTrunk

---

This interface is used to modify a specified traffic trunk.

### Definition

```
void modifyTrafficTrunk(
    in globaldefs::NamingAttributes_T trafficTrunkName,
    in TrafficTrunkModifyData_T modifyData,
    out TrafficTrunk_T newTrafficTrunk,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Modify a specified traffic trunk.

## Parameters

Parameter	Input/Output	Description	Value
trafficTrunkName	Input	Name of the traffic trunk to be modified	globaldefs::NamingAttributes_T
modifyData	Input	The data of the traffic trunk to be modified	TrafficTrunkModifyData_T
theTrafficTrunk	Output	Information about the traffic trunk that has been modified.	TrafficTrunk_T
errorReason	Output	Error reason	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The dynamic RSVP-TE tunnel and IP tunnel can be created.

Parent topic: [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.11 createIPCrossConnections

---

This interface is used to create an IP cross-connection and applicable to the static tunnel and PW switch.

## Definition

```

void createIPCrossConnections(
in IPCrossConnectionList_T ipCCList,
out IPCrossConnectionList_T successedIPCCList,
out IPCrossConnectionList_T failedIPCCList)
raises(globaldefs::ProcessingFailureException);

```

## Function

Create an IP cross-connection.

## Parameters

Parameter	Input/Output	Description	Value
ipCCList	Input	List of IP cross-connections to be created	IPCrossConnectionList_T For the element model, see IPCrossConnection_T.
successedIPCCList	Output	List of IP cross-connections that are successfully created	IPCrossConnectionList_T For the element model, see IPCrossConnection_T.
failedIPCCList	Output	List of IP cross-connections that fail to be created	IPCrossConnectionList_T For the element model, see IPCrossConnection_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The static tunnel and PW switch are supported.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.12 deleteIPCrossConnections

---

This interface is used to delete an IP cross-connection by its name.

### Definition

```
void deleteIPCrossConnections(  
    in globaldefs::NamingAttributesList_T ipCCNameList,  
    out globaldefs::NamingAttributesList_T successedIPCCNameList,  
    out globaldefs::NamingAttributesList_T failedIPCCNameList)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Delete an IP cross-connection.

### Parameters

Parameter	Input/Output	Description	Value
ipCCNameList	Input	List of IP cross-connections to be deleted	globaldefs::NamingAttributesList_T
successedIPCCNameList	Output	List of IP cross-connections that are successfully deleted	globaldefs::NamingAttributesList_T
failedIPCCNameList	Output	List of IP cross-connections that fail to be deleted	globaldefs::NamingAttributesList_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

### Restrictions

The static tunnel and PW switch are supported.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.13 activateIPCrossConnections

---

This interface is used to activate an IP cross-connection by its name.

### Definition

```
void activateIPCrossConnections(
    in globaldefs::NamingAttributesList_T ipCCNameList,
    out globaldefs::NamingAttributesList_T successsedIPCCNameList,
    out globaldefs::NamingAttributesList_T failedIPCCNameList,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Activate an IP cross-connection.

### Parameters

Parameter	Input/Output	Description	Value
ipCCNameList	Input	List of IP cross-connections to be activated	globaldefs::NamingAttributesList_T
successsedIPCCNameList	Output	List of IP cross-connections that have been successfully activated	globaldefs::NamingAttributesList_T
failedIPCCNameList	Output	List of IP cross-connections that fail to be activated	globaldefs::NamingAttributesList_T
errorReason	Output	Error reason	string

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The static tunnel and PW switch are supported.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.14 deactivateIPCrossConnections

---

This interface is used to deactivate a specified IP cross-connection by its name.

### Definition

```
void deactivateIPCrossConnections (
    in globaldefs::NamingAttributesList_T ipCCNameList,
    out globaldefs::NamingAttributesList_T successedIPCCNameList,
    out globaldefs::NamingAttributesList_T failedIPCCNameList,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Deactivate an IP cross-connection.

### Parameters

Parameter	Input/Output	Description	Value
ipCCNameList	Input	List of IP cross-connections to be deactivated	globaldefs::NamingAttributesList_T
successedIPCCNameList	Output	List of IP cross-connections that are successfully deactivated	globaldefs::NamingAttributesList_T

Parameter	Input/Output	Description	Value
failedIPCCNameList	Output	List of IP cross-connections that fail to be deactivated	globaldefs::NamingAttributesList_T
errorReason	Output	Error reason	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The static tunnel and PW switch are supported.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.15 modifyIPCrossConnection

---

This interface is used to modify an IP cross-connection.

### Definition

```
void modifyIPCrossConnection(
    in globaldefs::NamingAttributes_T ipCCName,
    in transmissionParameters::LayeredParameters_T transmissionParams,
    out IPCrossConnection_T newIPCC,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Modify an IP cross-connection.

### Parameters

Parameter	Input/Output	Description	Value
ipCCName	Input	Name of the IP cross-connection to be modified.	globaldefs::NamingAttributesList_T
transmissionParams	Input	The parameters to be modified.	transmissionParameters::LayeredParameters_T
newIPCC	Output	Information about the IP cross-connection that has been modified.	IPCrossConnection_T
errorReason	Output	Error reason	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The static tunnel is supported.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.16 createFDFr

---

This interface is used to create an FDFr. The supported service is E2E PWE3 (CES and EES).

### Definition

```
void createFDFr(
    in FDFrCreateData_T createData,
    in flowDomain::ConnectivityRequirement_T connectivityRequirement,
    inout subnetworkConnection::TPDataList_T endTPs,
```

```

inout subnetworkConnection::TPDataList_T internalTPs,
inout MatrixFlowDomainFragmentList_T mfdfrs,
inout subnetworkConnection::TPDataList_T tpsToModify,
out FlowDomainFragment_T theFDFr,
out string errorReason)
raises(globaldefs::ProcessingFailureException);

```

## Function

Create an FDFr.

## Parameters

Parameter	Input/Output	Description	Value
createData	Input	Indicates the data to create an FDFr.	FDFrCreateData_T
connectivityRequirement	Input	Indicates the operation mode for continuity requests. This field is not supported and is always left blank.	flowDomain::ConnectivityRequirement_T
endTPs	Input/Output	Indicates the source and sink TP for creating a service.	subnetworkConnection::TPDataList_T For the element model, see subnetworkConnection::TPData_T.
internalTPs	Input/Output	Indicates the intermediate IP for creating a service. This field is not supported and is always left blank.	subnetworkConnection::TPDataList_T For the element model, see subnetworkConnection::TPData_T.
mfdfrs	Input/Output	Indicates the created FDFr object. This field is not supported and is always left blank.	MatrixFlowDomainFragment_T

Parameter	Input/Output	Description	Value
tpsToModify	Input/Output	Indicates the TPs to be updated. This field is not supported and is always left blank.	subnetworkConnection::TPDataList_T For the element model, see subnetworkConnection::TPData_T.
theFDFr	Output	Indicates the services that are successfully created.	FlowDomainFragment_T
errorReason	Output	Indicates the error cause.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

Only E2E TDM emulation services and E-Line services for PTN equipment can be created.

Services can be created only by specifying a server trail.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.17 activateFDFr

---

This interface is used to activate an FDFr. The supported service is E2E PWE3 (CES and EES).

### Definition

```
void activateFDFr(
```

```

in globaldefs::NamingAttributes_T fdfrName,
out FlowDomainFragment_T fdfr)
raises(globaldefs::ProcessingFailureException);

```

## Function

Activate an FDFr.

## Parameters

Parameter	Input/Output	Description	Value
fdfrName	Input	Indicates the name of the service to be activated.	globaldefs::NamingAttributes_T
fdfr	Output	Indicates the services that are successfully activated.	FlowDomainFragment_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.18 deactivateFDFr

---

This interface is used to deactivate an FDFr. The supported service is E2E PWE3 (CES and EES).

## Definition

```

void deactivateFDFr(
in globaldefs::NamingAttributes_T fdfrName,
out FlowDomainFragment_T fdfr)
raises(globaldefs::ProcessingFailureException);

```

## Function

Deactivate an FDFr.

## Parameters

Parameter	Input/Output	Description	Value
fdfrName	Input	Indicates the name of the service to be deactivated.	globaldefs::NamingAttributes_T
fdfr	Output	Indicates the services that are successfully deactivated.	FlowDomainFragment_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.17.19 deleteFDFr

---

This interface is used to delete an FDFr. The supported service is E2E PWE3 (CES and EES).

## Definition

```

void deleteFDFr(
in globaldefs::NamingAttributes_T fdfrName,
inout subnetworkConnection::TPDataList_T tpsToModify)
raises(globaldefs::ProcessingFailureException);

```

## Function

Delete an FDFr.

## Parameters

Parameter	Input/Output	Description	Value
fdfrName	Input	Indicates the name of the service to be deleted.	globaldefs::NamingAttributes_T
tpsToModify	Input/Output	Indicates the TPs to be updated. This field is not supported and is always left blank.	subnetworkConnection::TPDataList_T For the element model, see subnetworkConnection::TPData_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.2.4.18 TrailNtwProtMgr\_I

---

This interface provides protection for network trails, including tunnels.

- [createTrailNtwProtection](#)

This interface used to create tunnel network protection (TNP). The TNP types are 1+1 and 1:1.

- [deleteTrailNtwProtection](#)

This interface is used to delete specified TNP.

**Parent topic:** [Interface Model](#)

## 9.2.4.18.1 createTrailNtwProtection

---

This interface used to create tunnel network protection (TNP). The TNP types are 1+1 and 1:1.

### Definition

```
void createTrailNtwProtection(
    in TrailNtwProtCreateData_T tnpCreateData,
    out TrailNtwProtection_T theTNP,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Create TNP.

### Parameters

Parameter	Input/Output	Description	Value
tnpCreateData	Input	Indicates the TNP data to be created.	TrailNtwProtCreateData_T
theTNP	Output	Indicates the created TNP.	TrailNtwProtection_T
errorReason	Output	Indicates the error cause.	string

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates that the input is invalid.

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

Static-CR tunnel APS protection groups are supported.

**Parent topic:** [TrailNtwProtMgr](#)

## 9.2.4.18.2 deleteTrailNtwProtection

---

This interface is used to delete specified TNP.

### Definition

```
void deleteTrailNtwProtection(
    in globaldefs::NamingAttributes_T tnpName,
    in boolean keepPGs,
    in globaldefs::NamingAttributes_T swapTPname,
    inout globaldefs::NVSList_T additionalInfo,
    out protection::ProtectionGroupList_T deletedPGList,
    out TrailNtwProtection_T deletedTNP,
    out string errorReason)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Delete specified TNP.

### Parameters

Parameter	Input/Output	Description	Value
tnpName	Input	Indicates the name of the TNP to be deleted.	globaldefs::NamingAttributes_T
keepPGs	Input	Specifies whether to keep the TNP. This field is has a fixed value of 0, which	Boolean

Parameter	Input/Output	Description	Value
		means to delete the TNP.	
swapTPname	Input	This field is not supported and is always left blank.	globaldefs::NamingAttributes_T
additionalInfo	Input/Output	Indicates additional information. This field is always blank.	globaldefs::NVSList_T
deletedPGList	Output	Indicates the list of the protection groups to be deleted. This field is not supported and is always left blank.	protection::ProtectionGroupList_T
deletedTNP	Output	Indicates the deleted protection group. This field is not supported and is always left blank.	TrailNtwProtection_T
errorReason	Output	Indicates the error cause.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

TNP can be deleted.

**Parent topic:** [TrailNtwProtMgr\\_I](#)

## 9.2.5 Information Model

---

This topic describes information models supported by the CORBA NBI, including TMF 814 recommendation-based models and customized models.

- **[emsMgr](#)**

This topic describes EMS information models.

- **[equipment](#)**

This topic describes the information model of equipment and boards.

- **[managedElement](#)**

This topic describes information models of NE management processes.

- **[subnetworkConnection](#)**

This topic describes the information model of subnet connections (SNCs).

- **[multiLayerSubnetwork](#)**

This topic describes the information model of subnet connections (SNCs).

- **[topologicalLink](#)**

This topic describes the information model of topological links.

- **[terminationPoint](#)**

This topic describes information models of termination point (TP) management. TPs consist of physical ports, such as SDH, PDH, E1 and Ethernet ports, and logical ports, such as IMA groups, MP groups and logical serial ports.

- **[protection](#)**

This topic describes information models of protection groups and protection group switching.

- **[HW\\_mstpInventory](#)**

This topic describes information models of MSTP inventories.

- **[HW\\_mstpProtection](#)**

This topic describes information models of MSTP protection groups and protection switching.

- **[HW\\_mstpService](#)**

This topic describes information models of MSTP services.

- **[trafficDescriptor](#)**

This topic describes information models of traffic descriptors. These information models are applicable to PTN devices of the transport domain.

- **[encapsulationLayerLink](#)**

This topic describes information models of encapsulation layer links.

- [flowDomain](#)  
This topic describes information models offlow domains, flow domain fragments and Ethernet OAM operations.
- [HW controlPlane](#)  
This topic describes information models of SNPP links.
- [maintenanceOps](#)  
This topic describes information models of traffic descriptors. These information models are applicable to PTN equipment and RTN equipment.
- [TopoManagementManager](#)  
This topic describes the information model of topologymanagement.
- [trafficConditioningProfile](#)  
This topic describes information models of traffic control policy profiles.
- [HW vpnManager](#)  
This topic describes information models of virtual private network (VPN) services. Tunnels and services carried by these tunnels are necessary for successful VPN service transport. The model for MPLS static tunnels and PW switches is IPCrossConnection. The model for dynamic MPLS tunnels and IP tunnels is TrafficTrunk. The model for PWE3 (that is, ATM services, CES services, and EES services), VPLS and NativeEth services is MFDFr. PTN, Hybrid MSTP and RTN 900 series equipment is supported. NativeEthservices are applicable only to RTN equipment of V100R002 version.
- [trailNtwProtection](#)  
This topic describes the information models of network trail protection.

**Parent topic:** [CORBA NBI Developer Guide \(Configuration\)](#)

## 9.2.5.1 emsMgr

---

This topic describes EMS information models.

- [EMS\\_T](#)  
This topic describes the data structure of EMSs.

**Parent topic:** [Information Model](#)

## 9.2.5.1.1 EMS\_T

---

This topic describes the data structure of EMSs.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of an EMS.
userLabel	String	"iManager U2000" by default. This field can be set through the setUserLabel interface.
nativeEMSName	string	The value of this field is consistent with the name of the EMS in the name field mentioned above. The default value is Huawei/U2000. This field can be set through the Msuite.
owner	String	"HUAWEI" by default. This field can be set through the setOwner interface.
emsVersion	string	Version (in the form of VxxRxxxCxx) of the EMS, for example, U2000 V100R007C00.
type	string	For the U2000, the default value is U2000. This field cannot be set.
addtionalInfo	globaldefs::NVSLList_T	Additional information. For details, see additionalInfo::EMS_T.

**Parent topic:** [emsMgr](#)

## 9.2.5.2 equipment

---

This topic describes the information model of equipment and boards.

- [Equipment\\_T](#)  
This topic describes the data structure of boards.
- [EquipmentHolder\\_T](#)  
This topic describes the data structure of equipment holders.

- [EQTCreateData\\_T](#)

This topic describes the data structure of equipment installation.

**Parent topic:** [Information Model](#)

## 9.2.5.2.1 Equipment\_T

---

This topic describes the data structure of boards.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of a board.
userLabel	string	User label of a board. This field is blank by default.
nativeEMSName	string	Name of a board displayed on the GUI of the network management system.
owner	string	Owner of a board. This field is blank by default and can be set through the setOwner interface.(This parameter is set to HUAWEI for BITS NEs by default.)
alarmReportingIndicator	boolean	Specifies whether to enable the function of reporting alarms. This value is always set to true.
serviceState	ServiceState_T	Working state of a board.
expectedEquipmentObjectType	EquipmentObjectType_T	Type of a board configured on the network management system.
installedEquipmentObjectType	EquipmentObjectType_T	Type of a board on the NE.
installedPartNumber	string	Part number of a board, which is a part of the bar code of the board.
installedVersion	string	Version number of a board.

Name	Type	Description
installedSerialNumber	string	Serial number of a board, which is a part of the bar code of the board.
additionalInfo	globaldefs::NVSList_T	Indicates additional information. For details, see additionalInfo::Equipment_T.

**Parent topic:** [equipment](#)

## 9.2.5.2.2 EquipmentHolder\_T

---

This topic describes the data structure of equipment holders.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of a holder.
userLabel	string	User label of the holder.
nativeEMSName	string	Name of the holder displayed on the GUI of the network management system.
owner	string	Name of a holder. This field is blank by default. In the case of a WDM subrack, the value can be set through the interface. In the case of other equipment, the value cannot be modified.
alarmReportingIndicator	boolean	Whether reporting alarms of the holder is enabled. The value is always true.
holderType	EquipmentHolderType_T	Type of the holder. The value is rack, shelf, or slot, or sub_slot.
expectedOrInstalledEquipment	globaldefs::NamingAttributes_T	If the holder is a slot where a board is installed, the value is the name of the board. Otherwise, this field is blank.

Name	Type	Description
acceptableEquipmentTypeList	EquipmentObjectTypeList_T	If the holder is a slot, the value is the list of the boards that can be installed in the slot. Otherwise, this field is blank.(This parameter is blank for BITS NEs.)
holderState	HolderState_T	State of the holder.
additionalInfo	globaldefs::NVSList_T	Indicates additional information. For details, see additionalInfo::EquipmentHolder_T.

**Parent topic:** [equipment](#)

### 9.2.5.2.3 EQTCreateData\_T

---

This topic describes the data structure of equipment installation.

Name	Type	Description
userLabel	string	User label of the equipment to be installed. The value is a character string in a free format. This field can be null.
forceUniqueness	boolean	Flag that specifies whether the user label must be unique. Currently, this field is not supported and can be set to false only.
owner	string	Owner of the equipment to be installed. The value is a character string in a free format. This field can be null.
expectedEquipmentObjectType	EquipmentObjectType_T	Type of the equipment to be installed. The value is in the format of board name(board type), for example, LWX(109).
equipmentHolderName	globaldefs::NamingAttributes_T	Name of the equipment holder.

Name	Type	Description
additionalInfo	globaldefs::NVSList_T	Additional field, which is not used or processed currently.

**Parent topic:** [equipment](#)

## 9.2.5.3 managedElement

---

This topic describes information models of NE management processes.

- [ManagedElement\\_T](#)

This topic describes the data structure of NEs.

**Parent topic:** [Information Model](#)

### 9.2.5.3.1 ManagedElement\_T

---

This topic describes the data structure of NEs.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of an NE.
userLabel	string	User label of the NE. The value is blank by default; the value is always blank for BITS.
nativeEMSName	string	Name of the NE displayed on the GUI.
owner	string	Owner of the NE. The value is blank by default and can be set through the setOwner interface.
location	string	Equipment room where the NE resides; the value is always blank for BITS.

Name	Type	Description
version	string	Software version of the NE; the value is always blank for BITS.
productName	string	For the U2000, the value is the name of the NE type.
communicationState	CommunicationState_T	State of communications between the NE and the network management system.
emsInSyncState	boolean	State of data synchronization between the NE and the network management system.
supportedRates	transmissionParameters::LayerRateList_T	List of the cross connection rates supported by the NE; the value is always blank for BITS.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. For details, see additionalInfo::ManagedElement_T.

**Parent topic:** [managedElement](#)

## 9.2.5.4 subnetworkConnection

---

This topic describes the information model of subnet connections (SNCs).

- [CrossConnect\\_T](#)

This object is used to specify the data of a cross-connection.

- [TPData\\_T](#)

This topic describes the data structure of termination points (TPs).

- [SubnetworkConnection\\_T](#)

This topic describes the data structure of subnetwork connections (SNCs).

- [SNCCreateData\\_T](#)

This topic describes the data structure of SNC creation.

- [SNCModifyData\\_T](#)

This topic describes the data structure of SNC attribute modification.

- [CreatePresetRouteData\\_T](#)  
This information model describes create data for preset restoration trail of the ASON SNC.
- [PresetRoute\\_T](#)  
This information model describes the route information about preset restoration trails for the ASON SNC.
- [SharedRoute\\_T](#)  
This topic describes the routing information of the shared restoration trail of an ASON SNC.
- [CreateSharedRouteData\\_T](#)  
This topic describes the creation data of the shared restoration trail of an ASON SNC.

**Parent topic:** [Information Model](#)

## 9.2.5.4.1 CrossConnect\_T

---

This object is used to specify the data of a cross-connection.

Name	Type	Description
active	boolean	Indicates the cross-connection status (active or inactive).
direction	globaldefs::ConnectionDirection_T	Indicates the cross-connection direction. The options are as follows: CD_UNI CD BI
ccType	SNCType_T	Indicates the cross-connection type. The options are as follows: ST_SIMPLE ST_ADD_DROP_A ST_ADD_DROP_Z ST_INTERCONNECT ST_DOUBLE_INTERCONNECT ST_DOUBLE_ADD_DROP ST_OPEN_ADD_DROP ST_EXPLICIT
aEndNameList	globaldefs::NamingAttributesList_T	Indicates the list of the source termination points (TPs).

Name	Type	Description
zEndNameList	globaldefs::NamingAttributesList_T	Indicates the list of sink TPs.
addtionalInfo	globaldefs::NVSLList_T	Indicates the additional information. For details, see additionalInfo::CrossConnect_T.

**Parent topic:** [subnetworkConnection](#)

## 9.2.5.4.2 TPData\_T

---

This topic describes the data structure of termination points (TPs).

Name	Type	
tpName	globaldefs::NamingAttributes_T	Name of a TP.
tpMappingMode	terminationPoint::TerminationMode_T	Mapping mode.
transmissionParams	transmissionParameters::LayeredParameterList_T	Transmission parameters. The parameters and other attributes of the layer rate.
ingressTrafficDescriptorName	globaldefs::NamingAttributes_T	Ingress traffic descriptor. This parameter is used to fill in the current attribute of the CTP structure with the QoS policies configured in the IngressTCProfileName (configured in this parameter). QoS policy format: \name=EMS\value=Huawei/U2000\na scenario: When you invoke the modify operation, only one policy can be applied in the following format:EMS Huawei/U2000\name=Huawei\value=Huawei/U2000
egressTrafficDescriptorName	globaldefs::NamingAttributes_T	Egress traffic descriptor. This parameter is used to fill in the current attribute of the CTP structure with the QoS policies applied, fill in the current attribute (excluding egressTmdRef) are configured. The direction involved are also configured. Format: \name=EMS\value=Huawei/U2000\name=Huawei\value=Huawei/U2000
additionalInfo	globaldefs::NVSLList_T	Extension field.

**Parent topic:** [subnetworkConnection](#)

## 9.2.5.4.3 SubnetworkConnection\_T

---

This topic describes the data structure of subnetwork connections (SNCs).

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of the SNC object.
userLabel	string	Indicates the user label.
nativeEMSName	string	Indicates the native NMS name.
owner	string	Indicates the owner of the object.
sncState	SNCState_T	Indicates the activation of the SNC.
direction	globaldefs::ConnectionDirection_T	Indicates the direction. The value are CD_UNI, CD_BI.
rate	transmissionParameters::LayerRate_T	Indicates the layer rate level of the SNC.
staticProtectionLevel	StaticProtectionLevel_T	Indicates the static protection level. Value Range: PREEMPTIBLE UNPROTECTED PARTIALLY_PROTECTED FULLY_PROTECTED HIGHLY_PROTECTED
sncType	SNCType_T	Indicates the SNC type. Currently, only ST_SIMPLE (one source and one sink), ST_ADD_DROP_A (two sources and one sink), and ST_ADD_DROP_Z (one source and two sinks) are supported.
aEnd	TPDataList_T	Indicates the TP list of the SNC source. For the source and sink model, see TPData_T.
zEnd	TPDataList_T	Indicates the TP list of the SNC sink. For the source and sink model, see TPData_T.

Name	Type	Description
rerouteAllowd	Reroute_T	Indicates the RR indication. The values are RR_NA, RR_NO, and RR_YES.
neworkRouted	NetworkRouted_T	Indicates the NR indication. The values are NR_NA, NR_NO, and NR_YES.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. For details, see additionalInfo::SubnetworkConnection_T.

**Parent topic:** [subnetworkConnection](#)

## 9.2.5.4.4 SNCCreateData\_T

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This topic describes the data structure of SNC creation.

Name	Type	Description
userLabel	string	User label that is specified during the creation of an SNC.
forceUniqueness	boolean	Whether the user label is unique. The value can be false only and cannot be true.
owner	string	Owner that is specified during the creation of an SNC.
direction	globaldefs::ConnectionDirection_T	Direction of a created trail. The value is CD_UNI (indicates a unidirectional trail) or CD_BI (indicates a bidirectional trail). When an ASON trail is created, the value of this field cannot be CD_UNI.
staticProtectionLevel	StaticProtectionLevel_T	When a WDM trail is created, this field is invalid. When SDH trails are created in non-full-route mode, this field indicates the protection level that routes are first calculated for. This

Name	Type	Description
		<p>field works with the protectionEffort field. When the value of protectionEffort is EFFORT_WHATEVER, routes are calculated for trails in the following order:</p> <ul style="list-style-type: none"> <li>PREEMPTIBLE: preemptible trail -&gt; unprotected trail -&gt; protected trail -&gt; fully protected trail.</li> <li>UNPROTECTED: unprotected trail -&gt; protected trail -&gt; fully protected trail.</li> <li>PARTIALLY_PROTECTED: partially protected trail -&gt; fully protected trail -&gt; unprotected trail.</li> <li>FULLY_PROTECTED or HIGHLY_PROTECTED: fully or highly protected trail -&gt; protected trail -&gt; unprotected trail.</li> </ul> <p>When an SDH trail is created in full-route mode, this field is invalid.</p> <p>When an ASON trail is created, this field means the level of the ASON trail. In this case, this field is consistent with staticProtectionLevel in SubnetworkConnection_T.</p>
protectionEffort	ProtectionEffort_T	Flag of protection effort. The value is EFFORT_WHATEVER, EFFORT_SAME_OR_BETTER, EFFORT_SAME_OR_WORSE, or EFFORT_SAME.
rerouteAllowed	Reroute_T	Flag of rerouting. The value is RR_NA, RR_NO, or RR_YES.
networkRouted	NetworkRouted_T	Flag of network routes. The value is NR_NA, NR_NO, or NR_YES. This field indicates the type (SDH, WDM, or ASON) of a trail being created. The value NR_YES indicates that an ASON trail is created.

Name	Type	Description
sncType	SNCType_T	<p>Type of the SNC created.</p> <p>In non-full-route mode: When an SDH, WDM, or ASON trail is created, the value of this field can be ST_SIMPLE only.</p> <p>In full-mode mode: When an SDH trail is created, the value of this field is ST_SIMPLE, ST_ADD_DROP_A, or ST_ADD_DROP_Z. When a WDM or ASON trail is created, the value of this field can be ST_SIMPLE only.</p>
layerRate	transmissionParameters::LayerRate_T	<p>Level of a trail.</p> <p>When an SDH trail is created, the value of this field is E1 (VC12), E3 (VC3), E4 (VC4), VC4 Server, 4C, 8C, 16C, or 64C.</p> <p>When a WDM trail is created, the value of this field is GE Client and ODUk.</p> <p>When an ASON trail is created, the value of this field is be VC4, 4C, 8C, 16C, or 64C.</p> <p>When an RTN trail is created, the value of this field is VC4.</p>
ccInclusions	CrossConnectList_T	<p>In Non-full-route mode, this field is invalid.</p> <p>In Full-route mode, when creating an SDH/RTN and ASON trail, you can specify all the route information. When creating a WDM trail, you need to specify only the dynamic cross-connection information.</p> <p>Input restriction on cross-connections. When creating an SDH trail, you can input ST_SIMPLE, ST_ADD_DROP_A, ST_ADD_DROP_Z as the cross-connection type. When protection is available, the working cross-connection must be followed by</p>

Name	Type	Description
		<p>the protection cross-connection. For a source TP under 1+1 protection, you need not to deliver dual-feed services. When creating a WDM trail, you must use a cross-connection of the ST_SIMPLE type and specify the attribute (working or protection) of the cross-connection according to the additionalInfo field of the cross-connection. For the parameters to be input, see the description of the additionalInfo field in the CrossConnect_T structure.</p>
neTpInclusions	ResourceList_T	<p>In Full-route mode, this field is invalid.</p> <p>In non-full-route mode, the operation of this field varies with the trail type.</p> <p>When creating an SDH/RTN trail, you can specify the following items that the trail must pass through:</p> <ul style="list-style-type: none"> <li>NEs and ports: When creating a higher-order service, you can specify ports and VC4 timeslots in this field.</li> <li>Timeslots: When creating a lower-order service, you can specify VC4 timeslots and lower-order timeslots.</li> <li>SNCs: When creating a lower-order service, you can specify a VC4 server trail and a link server trail in this field.</li> <li>TLs: When creating a higher-order service, you can specify the TLs that the trail must pass through.</li> </ul> <p>When creating a ASON trail, you can specify the NEs, ports, and timeslots that the trail must pass through. You cannot specify any SNC or TL that the trail must pass through. Additionally, you can</p>

Name	Type	Description
		<p>constrain a working route instead of a protection route.</p> <p>When creating a WDM trail, you can specify the ports and channels that the trail must pass through. You cannot specify any NE, SNC, or TL that the trail must pass through.</p>
neTpSncExclusions	ResourceList_T	<p>In full-route mode, this field is invalid.</p> <p>In non-full-route mode, the operation of this field varies with the trail type.</p> <p>When creating an SDH trail, you can specify the following items that the trail must not pass through:</p> <ul style="list-style-type: none"> <li>NEs and ports: When creating a higher-order service, you can specify ports and VC4 timeslots in this field.</li> <li>Timeslots: When creating a lower-order service, you can specify VC4 timeslots and lower-order timeslots.</li> <li>SNCs: When creating a lower-order service, you can specify a VC4 Server trail in this field.</li> <li>TLs: When creating a higher-order service, you can specify the TLs that the trail must not pass through.</li> </ul> <p>When you create a WDM trail, this field is not supported.</p> <p>When creating an ASON trail, you can specify the NEs, ports, and timeslots that the trail must not pass through. You cannot specify any SNC or TL that the trail must not pass through. Additionally, you can constrain a working route instead of a protection route.</p>
fullRoute	boolean	Flag of full route.

Name	Type	Description
		True: indicates that trails are created in full-route mode. False: indicates that trails are created in non-full-route mode.
aEnd	globaldefs::NamingAttributesList_T	When creating trails, specify a list of the TPs at the source end of the trail.
zEnd	globaldefs::NamingAttributesList_T	When creating trails, specify a list of the TPs at the sink end of the trail.
additionalCreateInfo	globaldefs::NVSList_T	When creating trails, you can specify additional information. For details, see additionalInfo::SNCCreateData_T.

**Parent topic:** [subnetworkConnection](#)

## 9.2.5.4.5 SNCModifyData\_T

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This topic describes the data structure of SNC attribute modification.

Name	Type	Description
userLabel	string	New user label after the modification.
owner	string	New owner after the modification.
forceUniqueness	boolean	Specifies whether the user label must be unique. The value can be only false and cannot be true.
direction	globaldefs::ConnectionDirection_T	Direction of the connection. This field is not used.
modifyType	string	Type of the modification. The value is rerouting, add_protection, remove_protection, reverting,

Name	Type	Description
		modify_original, optimize_preset or optimize_shared.
rerouteAllowed	Reroute_T	Flag of rerouting. When an ASON trail is rerouted, this field indicates rerouting of the ASON trail. In other cases, this field is not used.
networkRerouted	NetworkRouted_T	New flag of network route after the modification.
sncType	SNCType_T	This field is not used.
staticProtectionLevel	StaticProtectionLevel_T	Static protection level
retainOldSNC	boolean	This field is not used.
modifyServers_allowed	boolean	This field is not used.
protectionEffort	ProtectionEffort_T	This field is not used.
layerRate	transmissionParameters::LayerRate_T	This field indicates the layer rate.
neTpInclusions	ResourceList_T	In full-route mode, this field is not used.  This field is valid only when the routing constraints of an ASON trail are modified in non-full-route mode. In this case, the NEs, ports, and timeslots that the trail must pass through can be set.
neTpSncExclusions	ResourceList_T	In full-route mode, this field is not used.  This field is valid only when the routing constraints of an ASON trail are modified. In this case, the NEs, ports that the trail must not pass through can be set.
fullRoute	boolean	This field specifies routing constraints when a trail is set. A trail can be set in full-route or non-full-route mode. In other cases, this field is not used.
addedOrNewRoute	RouteList_T	Information about a new route.

Name	Type	Description
		<p>When the routes of an SDH trail are modified, this field indicates the information about the route added to the SDH trail. The supported cross-connection types are ST_SIMPLE, ST_ADD_DROP_A, and ST_ADD_DROP_Z.</p> <p>When setting routing constraints for an ASON trail in full-route mode, you can use a unidirectional cross-connection of only the ST_SIMPLE type. Additionally, you must specify the attribute (working or protection) of the cross-connection according to the additionalInfo field of the cross-connection. For the parameters to be input, see the description of the additionalInfo field in the CrossConnect_T structure.</p> <p>In other cases, this field is not used.</p>
removedRoute	RouteList_T	<p>Information about a removed route.</p> <p>When the routes of an SDH trail are modified, this field indicates the information about the route removed from the SDH trail. The supported cross-connection types are ST_SIMPLE, ST_ADD_DROP_A, and ST_ADD_DROP_Z.</p> <p>In other cases, this field is not used.</p>
aEnd	globaldefs::NamingAttributesList_T	New list of the TPs at the source end of trails after the modification.
zEnd	globaldefs::NamingAttributesList_T	New list of the TPs at the sink end of trails after the modification.
additionalCreateInfo	globaldefs::NVSList_T	Additional information about the modification. For details, see additionalInfo::SNCModifyData_T.

**Parent topic:** [subnetworkConnection](#)

## 9.2.5.4.6 CreatePresetRouteData\_T

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This information model describes create data for preset restoration trail of the ASON SNC.

Name	Type	Description
sncName	FIXED STRING	Indicates the name of the ASON SNC.
presetRouteID	Number[1,2]	Indicates the ID of a preset restoration trail.
priority	Number[1,2]	Indicates the priority of a preset restoration trail.
neTpInclusions	ResourceList_T	Indicates the list of explicit NEs and ports. This parameter is invalid in fullRoute mode. In non-fullRoute mode, you can specify explicit NEs and ports, and working route constraints. You cannot specify protection route constraints.
neTpSncExclusions	ResourceList_T	Indicates the list of excluded NEs and ports. This parameter is invalid in fullRoute mode. When creating ASON preset restoration trails, you can specify excluded NEs and ports, and working route constraints. You cannot specify protection route constraints.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. Unsupported.

**Parent topic:** [subnetworkConnection](#)

## 9.2.5.4.7 PresetRoute\_T

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This information model describes the route information about preset restoration trails for the ASON SNC.

Name	Type	Description
presetRouteID	Number[1,2]	Indicates the ID of a preset restoration trail.
priority	Number[1,2]	Indicates the priority of a preset restoration trail.
route	Route_T	Indicates the route information of a preset restoration trail. The route of ASON preset restoration trails has different cross-connections from common trails. Its source and sink ends are on two NEs and support ports only. Route_T, namely List<CrossConnect_T>.

**Parent topic:** [subnetworkConnection](#)

## 9.2.5.4.8 SharedRoute\_T

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This topic describes the routing information of the shared restoration trail of an ASON SNC.

Name	Type	Description
sharedRouteID	unsigned long	Indicates the ID of the shared restoration trail.
priority	unsigned long	Indicates the priority of the shared restoration trail.
route	Route_T	Indicates the routing information of the shared restoration trail. The value Route_T indicates List<CrossConnect_T>.

**Parent topic:** [subnetworkConnection](#)

## 9.2.5.4.9 CreateSharedRouteData\_T

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This topic describes the creation data of the shared restorationtrail of an ASON SNC.

Name	Type	Description
sncName	globaldefs::NamingAttributes_T	Indicates the name of the ASON SNC.
sharedRouteID	unsigned long	Indicates the ID of the shared restoration trail.
priority	unsigned long	Indicates the priority of the shared restoration trail. The value is fixed to 1.
neTpInclusions	ResourceList_T	Indicates the list of the explicit NEs and ports. This parameter is invalid in fullRoute mode. In non-fullRoute mode, you can specify the explicit NEs and ports. Besides, you can only specify the constraints of the working route.
neTpSncExclusions	ResourceList_TCaret	Indicates the list of the excluded NEs and ports. This parameter is invalid in fullRoute mode. When creating an ASON preset restoration trail, you can specify the excluded NEs and ports. Besides, you can only specify the constraints of the working route.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information, which is not supported.

**Parent topic:** [subnetworkConnection](#)

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## 9.2.5.5 multiLayerSubnetwork

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This topic describes the information model of subnet connections (SNCs).

- [MultiLayerSubnetwork\\_T](#)

This object is used to specify the data of a subnetwork.

**Parent topic:** [Information Model](#)

## 9.2.5.5.1 MultiLayerSubnetwork\_T

---

This object is used to specify the data of a subnetwork.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the subnetwork name.
userLabel	string	Indicates the user label. The default value is SubnetWork_1.
nativeEMSName	string	Indicates the name of the subnetwork on the EMS GUI. The default value is SubnetWork_1.
owner	string	Indicates the object owner. This parameter is left blank by default.
subnetworkType	Topology_T	Indicates the subnetwork type. The value is always multiLayerSubnetwork::TOPO_MESH.
supportedRates	transmissionParameters::LayerRateList_T	Indicates the supported rate levels.
addtionalInfo	globaldefs::NVSLList_T	Indicates the additional information.

**Parent topic:** [multiLayerSubnetwork](#)

## 9.2.5.6 topologicalLink

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This topic describes the information model of topological links.

- [TopologicalLink\\_T](#)

This topic describes the data structure of topological links.

**Parent topic:** [Information Model](#)

## 9.2.5.6.1 TopologicalLink\_T

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This topic describes the data structure of topological links.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of topological links.
userLabel	string	User label. This field is blank by default.
nativeEMSName	string	Local name.
owner	string	Name of the owner of the object. This field is blank by default.
direction	"globaldefs ::ConnectionDirection_T"	Direction. The value are: CD_UNI, CD BI.
rate	transmissionParameters::LayerRate_T	Layer rate.
aEndTP	globaldefs::NamingAttributes_T	Source.
zEndTP	globaldefs::NamingAttributes_T	Sink.
additionalInfo	globaldefs::NVSLList_T	Additional information. For details, see addtionalInfo::TopologicalLink_T.

**Parent topic:** [topologicalLink](#)

## 9.2.5.7 terminationPoint

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This topic describes information models of terminationpoint (TP) management. TPs consist of physical ports, such as SDH, PDH, E1 and Ethernet ports, and logical ports, such asIMA groups, MP groups and logical serial ports.

- [TerminationPoint\\_T](#)  
This topic describes the data structure of termination points (TPs).

**Parent topic:** [Information Model](#)

## 9.2.5.7.1 TerminationPoint\_T

---

This topic describes the data structure of termination points (TPs).

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of a TP.
userLabel	String	Indicates the user label of a TP. This parameter is blank by default.
nativeEMSName	String	Indicates the name of a TP displayed in the GUI of the network management system. This field cannot be set.
owner	String	Indicates the owner of a TP. This parameter is blank by default. For a PTP or FTP, the value can be set by the setOwner interface.
ingressTrafficDescriptorName	globaldefs::NamingAttributes_T	Indicates the descriptor of the incoming traffic. This parameter is blank by default.
egressTrafficDescriptorName	globaldefs::NamingAttributes_T	Indicates the descriptor of the outgoing traffic. This parameter is blank by default.
type	TPTType_T	Indicates the type of a TP. The options are as follows: TPT_PTP (indicates a PTP or FTP) TPT_CTP (indicates a CTP)
connectionState	TPConnectionState_T	Indicates the connection state. The value is TPCS_NA for PTP objects and inverse multiplexing FTP objects. The values are as follows for non-inverse multiplexing FTP objects and CTP objects: TPCS_SOURCE_CONNECTED: The TP is connected as a source.

Name	Type	Description
		TPCS_SINK_CONNECTED: The TP is connected as a sink. TPCS BI_CONNECTED: The TP is connected in two directions. TPCS NOT_CONNECTED: The TP is not connected.
tpMappingMode	TerminationMode_T	Indicates the mapping mode of a TP.
direction	Directionality_T	Indicates the direction of a TP. The options are as follows: D_BIDIRECTIONAL (bidirectional) D_SOURCE (source) D_SINK (sink) DIR_NA (unknown)
transmissionParams	transmissionParameters::LayeredParameterList_T	Indicates the transmission parameters.
tpProtectionAssociation	TPProtectionAssociation_T	This parameter is not supported and its value is always TPPA_NA.
edgePoint	Boolean	Indicates the flag of edge point. For a CTP or an FTP, the value is always false. For a PTP, the value is false if the PTP is occupied by fibers, otherwise, the value is true.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. For details, see additionalInfo::TerminationPoint_T.

**Parent topic:** [terminationPoint](#)

## 9.2.5.8 protection

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This topic describes information models of protection groups and protection group switching.

- [ProtectionGroup\\_T](#)

This object is used to specify the data of a protection group.

- [SwitchData\\_T](#)  
This topic describes the data structure for switching protection groups.
- [WDMProtectionGroup\\_T](#)  
This object is used to specify the data of a WDM protection group.
- [WDMSwitchData\\_T](#)  
This object is used to specify the data for switching WDM protection groups.
- [EProtectionGroup\\_T](#)  
This object is used to specify the data of the equipment protection group.
- [ESwitchData\\_T](#)  
This topic describes the data structure for protection switching in equipment protection groups.
- [IPProtectionGroup\\_T](#)  
This object is used to specify the data of a tunnel APS protection group.
- [IPSwitchData\\_T](#)  
This topic describes the data structure of protection switchingin tunnel protection groups.
- [PGPCreateData\\_T](#)  
This topic describes the creation information of the protection group.
- [PGPModifyData\\_T](#)  
This topic describes the modification information of the protection group.

**Parent topic:** [Information Model](#)

## 9.2.5.8.1 ProtectionGroup\_T

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This object is used to specify the data of a protection group.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the protection group name, in the form of {name EMS value XXXX}{name ManagedElement value YYYY}{name PGP value subrack ID/protection group ID/protection group location ID}For normal NE, the subrack ID is always 1. For optical NE, the subrack ID is the ID of the subrack that the protection group belongs to.Location

Name	Type	Description
		IDs of protection groups and the corresponding meanings are as follows:11 indicates 1+1 TM protection group.12 indicates west 1+1 ADM protection group.13 indicates east 1+1 ADM protection group.14 indicates 1:N TM protection group.15 indicates west 1:N ADM protection group.16 indicates east 1:N ADM protection group.17 indicates two-fiber ring protection group.18 indicates west two-fiber ring protection group. This is available for notification events only.19 indicates east two-fiber ring protection group. This is available for notification events only.20 indicates four-fiber ring protection group.21 indicates west four-fiber 1:N protection group.22 indicates east four-fiber 1:N protection group.
userLabel	string	Indicates the user label. This parameter is left blank by default. You can set this parameter through the setUserLabel interface.
nativeEMSName	string	Indicates the native name of the protection group.
owner	string	Indicates the object owner. This parameter is left blank by default. You can set this parameter through the setOwner interface.
protectionGroupType	ProtectionGroupType_T	The types of the supported protection groups are as follows: For a 1+1 protection group, the value is PGT_MSP_1_PLUS_1. For a 1:N protection group, the value is PGT_MSP_1_FOR_N. For a two-fiber bidirectional protection group, the value is PGT_2_FIBER_BLSR. For a four-fiber bidirectional protection group, the value is PGT_4_FIBER_BLSR.

Name	Type	Description
protectionSchemeState	ProtectionSchemeState_T	<p>Indicates the protection scheme status. The options are as follows:</p> <ul style="list-style-type: none"> <li>PSS_UNKNOWN: indicates that the protection group is in the idle state, normal state or unknown state.</li> <li>PSS_FORCED_OR_LOCKED_OUT: indicates that the protection group is in the locked state, forced switching state or manual switching state.</li> <li>PSS_AUTOMATIC: indicates that the protection group is in the automatic switching state.</li> </ul>
reversionMode	ReversionMode_T	<p>Indicates the reversion mode. The options are as follows:</p> <ul style="list-style-type: none"> <li>RM_REVERTIVE: revertive mode</li> <li>RM_NON_REVERTIVE: non-revertive mode</li> <li>RM_UNKNOWN: unknown</li> </ul>
rate	transmissionParameters::LayerRate_T	Indicates the transmission rate.
pgpTPList	globaldefs::NamingAttributesList_T	<p>Indicates the list of TPs that belong to the protection group. The list of TPs is partially ordered. A protection TP always trails its working TPs.</p> <p>1. For a 1+1 TM protection group, the TPs are listed in the following order: west working PTP, west protection PTP.</p> <p>For a west 1+1 ADM protection group, the TPs are listed in the following order: west working PTP, west protection PTP.</p> <p>For an east 1+1 ADM protection group, the TPs are listed in the following order: east working PTP, east protection PTP.</p> <p>2. For a 1:N TM protection group, the TPs are listed in the following order: west working PTPs (PTP 1 to PTP N), west protection PTP.</p> <p>For a west 1:N ADM protection group, the TPs are listed in the following order: west working PTPs</p>

Name	Type	Description
		<p>(PTP 1 to PTP N), west protection PTP.</p> <p>For an east 1:N ADM protection group, the TPs are listed in the following order: east working PTPs (PTP 1 to PTP N), east protection PTP.</p> <p>3. For a two-fiber ring protection group, the TPs are listed in the following order: west working PTP, east protection PTP.</p> <p>4. For a four-fiber ring protection group, the TPs are listed in the following order: west working PTP, west protection PTP, east working PTP, east protection PTP.</p> <p>For a west four-fiber ring 1:N protection group, the TPs are listed in the following order: west working PTP, west protection PTP.</p> <p>For an east four-fiber ring 1:N protection group, the TPs are listed in the following order: east working PTP, east protection PTP.</p>
pgpParameters	globaldefs::NVSLList_T	<p>Contains a name value list for the known parameters of the protection group. The supported parameters are as follows:</p> <p>SwitchMode: switching mode. For a 1+1 protection group, the value is SingleEnded (indicates switching at a single end) or DualEnded (indicates switching at two ends).</p> <p>For other protection modes, the value is DualEnded.</p> <p>wtrTime: wait-to-restore time.</p> <p>HoldOffTime: hold-off time.</p> <p>LODNumSwitches: number of switches. Currently, this parameter is not supported and is always set to Unknown.</p> <p>LODDuration: works with LODNumSwitches. Currently, this</p>

Name	Type	Description
		<p>parameter is not supported and is always set to Unknown.</p> <p>SPRINGProtocol: a ring switching protocol. This parameter is available for two-fiber rings and four-fiber rings only. The value is Standard.</p> <p>SPRINGNodeId: ID of a ring switching node. This parameter is available for two-fiber rings and four-fiber rings only.</p> <p>SwitchPosition: switching position.</p> <p>nonPre-EmptibleTraffic: determines whether non-preemptible traffic can be configured on protection. This parameter is available for only two-fiber ring and 1:N protection groups. The value is NOT_ALLOWED.</p>
additionalInfo	globaldefs::NVSLList_T	This parameter is left blank.

**Parent topic:** [protection](#)

## 9.2.5.8.2 SwitchData\_T

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This topic describes the data structure for switching protection groups.

Name	Type	Description
protectionType	ProtectionType_T	For a 1+1, 1:N, two-fiber, or four-fiber protection group, the value is PT_MSP_APS. For an SNCP protection group, the value is PT_SNCP.
switchReason	SwitchReason_T	<p>Switching cause.</p> <ol style="list-style-type: none"> <li>In case of the idle state, the value is SR_RESTORED.</li> <li>In the case of the lockout, forced switching, or manual switching state, the value is SR_MANUAL.</li> </ol>

Name	Type	Description
		<p>3. In the case of the wait-to-restore or automatic switching state, the value is SR_AUTOMATIC_SWITCH.</p> <p>4. In the case of the SD switching state, the value is SR_SIGNAL_DEGRADE.</p> <p>5. In the case of the SF switching state, the value is SR_SIGNAL_FAIL.</p> <p>6. In other cases, the value is SR_NA.</p>
LayerRate	transmissionParameters::LayerRate_T	Layer rate of the protection group.
groupName	globaldefs::NamingAttributes_T	Name of the protection group.
protectedTP	globaldefs::NamingAttributes_T	Protected TP during the switching.
switchToTP	globaldefs::NamingAttributes_T	Destination TP that is switched to.
additionalInfo	globaldefs::NVSList_T	Blank.

**Parent topic:** [protection](#)

## 9.2.5.8.3 WDMProtectionGroup\_T

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This object is used to specify the data of a WDM protection group.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the protection group name, in the form of {name EMS value XXXX}{name ManagedElement value YYYY}{name PGP value /protection group type/Shelf/ ID of the protection group}

Name	Type	Description
		<p>Types of protection groups and the corresponding meanings are as follows:</p> <ul style="list-style-type: none"> <li>0: Unknown</li> <li>1: 1:N optical channel protection group</li> <li>2: Optical line protection group</li> <li>3: Intra-board 1+1 protection group</li> <li>4: Inter-board 1+1 protection group</li> <li>5: Client 1+1 protection group</li> <li>6: Intra-Sub-shelf 1+1 protection group</li> <li>7: OWSP protection group</li> <li>8: WXCP protection group for traditional WDM NEs SNCP protection group for NG WDM NEs</li> <li>9: 1+1 optical channel protection group for OptiX BWS 320G</li> <li>10: OLP-board-based optical line protection group for OptiX BWS 320G. Currently, it is not supported.</li> <li>11: Extended intra-board protection</li> <li>12: Optical line protection for NG WDM NEs</li> <li>13: Intra-board 1+1 protection for NG WDM NEs</li> <li>14: Client 1+1 protection for NG WDM NEs</li> <li>15: DPPS protection</li> <li>16: TPS protection</li> <li>17: Inter-shelf 1+1 protection for Optix OSN 1800</li> </ul>
userLabel	string	This parameter is left blank by default. You can set this parameter through the setUserLabel interface.
nativeEMSName	string	A non-OLP protection group is named in the format of NE name + ID of the protection group. An OLP protection group is named in the format of NE name + OLP + slot ID. This parameter is read-only.

Name	Type	Description
owner	string	This parameter is left blank by default. You can set this parameter through the setOwner interface.
protectionGroupType	WDMProtectionGroupType_T	For a 1:N protection group, the value is 1VN. For other protection groups, the value is 1P1.
protectionSchemeState	ProtectionSchemeState_T	Indicates the protection scheme status. The options are as follows: PSS_UNKNOWN: indicates that the protection group is in the normal state or unknown state. PSS_FORCED_OR_LOCKED_OUT: indicates that the protection group is in the locked state, forced switching state or manual switching state. PSS_AUTOMATIC: indicates that the protection group is in the automatic switching state.
reversionMode	ReversionMode_T	Indicates the reversion mode. The options are as follows: RM_REVERTIVE: revertive mode RM_NON_REVERTIVE: non-revertive mode RM_UNKNOWN: unknown
pgpTPList	globaldefs::NamingAttributesList_T	Indicates the list of TPs that belong to the protection group. The list of TPs is partially ordered. 1. A protection TP always trails its working TPs. For example, working TP 1, protection TP1, working TP2, protection TP2. 2. For a non-revertive 1+1 protection group, the roles of the protection TP and the working TP change during the switching.
pgpParameters	globaldefs::NVSLList_T	Indicates the revertive mode. HoldOffTime is supported. The options can be Unknown or the duration time of the protection group. Indicates the non-revertive mode. wtrTime is supported. The value is

Name	Type	Description
		the WTR time of the protection group. HoldOffTime is supported. The options can be Unknown or the duration time of the protection group.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. Currently, this parameter is left blank.

**Parent topic:** [protection](#)

## 9.2.5.8.4 WDMSwitchData\_T

---

This object is used to specify the data for switching WDM protection groups.

Name	Type	Description
protectionType	WDMProtectionGroupType_T	Indicates the protection group type. For a 1:N protection group, the value is 1VN. For other protection groups, the value is 1P1.
switchReason	SwitchReason_T	Reflects the reason why a switch occurred. The options are as follows:  SR_RESTORED is used for revertive groups to indicate a return to the normal state. SR_MANUAL indicates a switch that was requested by the operator and includes forced switches. SR_AUTOMATIC_SWITCH is used when the exact switch reason is unknown, in retrievals of switch data if a protection switch is currently active or in protection switch notifications. SR_SIGNAL_MISMATCH is used in the case the signal is

Name	Type	Description
		good, but is identified as coming from an incorrect source. SR_NA is used upon retrieval of switch data for non-revertive groups, if a more precise value is not available.
wPGPName	globaldefs::NamingAttributes_T	Indicates the name of the protection group.
protectedTP	globaldefs::NamingAttributes_T	Reroute the current work is the active IP recovery mode and non-recovery mode work on the active IP. If the current working reroute the standby IP recovery mode from Standby IP switchover to the active IP, non-recovery mode switch are still work on standby IP. Special notes on a 1:N protection group. Lockout: The protected TP is always the first working path. Clearance of switching: In the normal state, the protected TP is always the first working path. In other switching states, the protected TP is the working path where the switching occurs.
switchToTP	globaldefs::NamingAttributes_T	Reroute the current work is the active IP recovery mode and non-recovery mode work on the active IP. If the current working reroute the standby IP recovery mode from Standby IP switchover to the active IP, non-recovery mode switch are still work on standby IP. Special notes on a 1:N protection group. Lockout: The protected TP is always the first working path. Clearance of switching: In the normal state, the protected TP is always the first working path. In other switching states, the protected TP is the working path where the switching occurs.

Name	Type	Description
additionalInfo	globaldefs::NVSList_T	Additional information. Currently, this parameter is left blank.

**Parent topic:** [protection](#)

## 9.2.5.8.5 EProtectionGroup\_T

---

This object is used to specify the data of the equipment protection group.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of the equipment protection group.
userLabel	string	Indicates the user label. This parameter is left blank by default.
nativeEMSName	string	Indicates the native name of the equipment protection group.
owner	string	This parameter is left blank by default and cannot be set through the setOwner interface.
eProtectionGroupType	EProtectionGroupType_T	Indicates the type of the equipment protection group. The options are as follows: 1_PLUS_1 INBD_1_PLUS_1 1_FOR_N BPS
protectionSchemeState	ProtectionSchemeState_T	The value is always PSS_UNKNOWN.
reversionMode	ReversionMode_T	Indicates the reversion mode. The options are as follows: RM_REVERTIVE: indicates revertive mode.

Name	Type	Description
		RM_NON_REVERTIVE: indicates non-revertive mode. RM_UNKNOWN: indicates that the reversion mode is unknown.
protectedList	globaldefs::NamingAttributesList_T	Indicates the name of the protected equipment, that is, the working equipment.
protectingList	globaldefs::NamingAttributesList_T	Indicates name of the protection equipment.
ePgpParameters	globaldefs::NVSLList_T	Indicates the parameters of the protection group, including the following:  type: indicates the function type of the equipment protection group. The values of this parameter are as follows: PGT_TPS: indicates 1:N protection or BPS protection. PGT_XC: indicates protection of cross-connections. PGT_STG: indicates clock protection. PGT_SCC: indicates protection of the SCC board. PGT_LESS_XC: indicates protection of secondary cross-connections as contrasted with protection of primary cross-connections, for example, protection of lower-order cross-connections of OptiX 10G V2. PG_XC_STG: protection of the SCC board and clock. In certain equipment, the clock and cross-connection functions cannot be switched separately. PG_ATM: indicates 1+1 protection of ATM boards. wtrTime: indicates wait-to-restore time. This parameter is

Name	Type	Description
		valid for a revertive protection group only.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. Currently, this parameter is left blank.

**Parent topic:** [protection](#)

## 9.2.5.8.6 ESwitchData\_T

---

This topic describes the data structure for protection switching in equipment protection groups.

Name	Type	Description
eProtectionGroupType	EProtectionGroupType_T	For details about the parameter description, see section EProtectionGroup_T.
eSwitchReason	ESwitchReason_T	Indicates the switching cause. The options are as follows: For forced and manual switching, the value is SR_MANUAL. For automatic switching, the value is SR_E_FAILURE. For other switching, the value is SR_NA.
ePGPName	globaldefs::NamingAttributes_T	Indicates the name of the equipment protection group.
protectedE	globaldefs::NamingAttributes_T	Indicates the list of protected boards. For a non-revertive protection group, the protected boards are the working boards. For a revertive protection group, the protected boards are always the initial working boards.
switchToE	globaldefs::NamingAttributes_T	Indicates the switch-to boards.

Name	Type	Description
additionalInfo	globaldefs::NVSList_T	Indicates the additional information of protection switching. This parameter is left blank.

**Parent topic:** [protection](#)

## 9.2.5.8.7 IPProtectionGroup\_T

---

This object is used to specify the data of a tunnel APS protection group.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of a tunnel protection group.
userLabel	string	Indicates the user label. This parameter is left blank by default.
nativeEMSName	string	This parameter is always left blank.
owner	string	Indicates the object owner. This parameter is left blank by default.
protectionGroupType	string	Indicates the type of a tunnel protection group. The options are as follows: PGT_MSP_1_PLUS_1: corresponding to 1+1 on the U2000 PGT_MSP_1_FOR_N: corresponding to 1:1 and 1:N on the U2000
protectionSchemeState	ProtectionSchemeState_T	Indicates the protection scheme. The options are as follows: PSS_FORCED_OR_LOCKED_OUT PSS_AUTOMATIC PSS_UNKNOWN If the information about the switching status of the protection

Name	Type	Description
		group cannot be obtained currently, the value is PSS_UNKNOWN The value is always left blank.
reversionMode	ReversionMode_T	Indicates the reversion mode. The options are as follows: RM_REVERTIVE: revertive mode RM_NON_REVERTIVE: non-revertive mode RM_UNKNOWN: unknown
rate	transmissionParameters::LayerRate_T	Indicates the layer rate of a tunnel. The options are as follows: LR MPLS PATH(8011) LR IP PATH(8060)
protectedList	globaldefs::NamingAttributesList_T	Indicates the list of working tunnels. The tunnel is in front in the ingress direction followed by in the egress direction.
protectingList	globaldefs::NamingAttributesList_T	Indicates the list of tunnels under protection. The tunnel is in front in the ingress direction followed by in the egress direction.
pgpParameters	globaldefs::NVSLIST_T	The parameters include switchMode:switching mode. The options are as follows: DualEnded: dual-ended switching mode SingleEnded: single-ended switching wtrTime: wait-to-restore time. HoldOffTime:the hold-off time. ProtocolStatus:Specifies whether to enable a protection group protocol. The options are as follows:EnableDisable
additionalInfo	globaldefs::NVSLIST_T	This parameter is left blank.

**Parent topic:** [protection](#)

## 9.2.5.8.8 IPSwitchData\_T

---

This topic describes the data structure of protection switchingin tunnel protection groups.

Name	Type	Description
protectionType	String	Indicates the protection type.
switchReason	SwitchReason_T	Indicates the switching cause. The options are as follows: For an idle protection group, the value is SR_RESTORED. For switching lockout, forced switching, and manual switching, the value is SR_MANUAL. For wait-to-restore and automatic switching, the value is SR_AUTOMATIC_SWITCH. For signal degrade (SD) switching, the value is SR_SIGNAL_DEGRADE. For signal fail (SF) switching, the value is SR_SIGNAL_FAIL. For other switching, the value is SR_NA.
layerRate	transmissionParameters::LayerRate_T	The parameter value is consistent with the layer rate of the tunnel in a protection group. The options are as follows: LR MPLS PATH LR IP PATH
groupName	globaldefs::NamingAttributes_T	Indicates the name of a protection group.
protectedList	globaldefs::NamingAttributesList_T	Indicates the list of protected tunnels.
switchToList	globaldefs::NamingAttributesList_T	Indicates the list of switch-to tunnels.

Name	Type	Description
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. This parameter is left blank.

**Parent topic:** [protection](#)

## 9.2.5.8.9 PGPCreateData\_T

---

This topic describes the creation information of the protection group.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the protection group name. This field does not need to be entered during creation.
protectionGroupType	ProtectionGroupType_T	Indicates the protection group type. This field can be set to 0 (1+1 protection) or 1 (1:N protection).
rate	transmissionParameters::LayerRate_T	Indicates the layer rate.
modifiableAttributes	PGPModifyData_T	Indicates the modification information of the protection group.

**Parent topic:** [protection](#)

## 9.2.5.8.10 PGPMODifyData\_T

---

This topic describes the modification information of the protection group.

Name	Type	Description
userLabel	string	Indicates the user label.
forceUniqueness	boolean	Indicates the uniqueness of the user label.
owner	string	Indicates the name of the object owner.
reversionMode	ReversionMode_T	Indicates the reversion mode. This field can be modified. Currently, the revertive and non-revertive modes are supported. Value: 1: non-revertive 2: revertive
pgpTPList	globaldefs::NamingAttributesList_T	Indicates the port information of the protection group.
pgpParameters	globaldefs::NVSLList_T	Indicates the parameter information of the protection group. LODDuration, wtrTime, and SwitchMode can be entered. wtrTime and SwitchMode can be modified.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. It does not need to be entered.

**Parent topic:** [protection](#)

## 9.2.5.9 HW\_mstplnventory

---

This topic describes information models ofMSTP inventories.

- [HW\\_MSTPEndPoint\\_T](#)  
This object is used to specify the data of an MSTP end point.

- [HW\\_VirtualBridge\\_T](#)  
This topic describes the data structure of virtual bridges.
- [HW\\_VirtualLAN\\_T](#)  
This object is used to specify the data of a VLAN.
- [HW\\_ForwardEndPoint\\_T](#)  
This object is used to specify the data of a VLAN forwarding port.
- [HW\\_MSTPBindingPath\\_T](#)  
This object is used to specify the data of MSTP bound paths.
- [HW\\_QosRule\\_T](#)  
This topic describes the data structure of QoS rules.
- [HW\\_Flow\\_T](#)  
This object is used to specify the data of a flow.
- [HW\\_LinkAggregationGroup\\_T](#)  
This object is used to specify the data of a link aggregation group (LAG).
- [HW\\_LAGBranchPort\\_T](#)  
This topic describes the data structure of the HW\_LAGBranchPort\_T object.
- [HW\\_SpanningTree\\_T](#)  
This topic describes the data structure of the HW\_SpanningTree\_Tobject.
- [HW\\_STCurrentPort\\_T](#)  
This topic describes the data structure of the HW\_STCurrentPort\_T object.
- [ShapingQueue](#)  
This topic describes the data structure of the ShapingQueueobject.

**Parent topic:** [Information Model](#)

## 9.2.5.9.1 HW\_MSTPEndPoint\_T

---

This object is used to specify the data of an MSTP end point.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of the end point.
userLabel	string	Indicates the user label.

Name	Type	Description
nativeEMSName	string	Indicates the name displayed on the EMS GUI.
owner	string	Indicates the owner. This parameter is left blank by default.
direction	terminationPoint::Directionality_T	Indicates the direction of the MSTP end point. The value is always D_BIDIRECTIONAL.
type	HW_MSTPEndPointType_T	The supported types are as follows: HW_MEPT_NA HW_MEPT_ATM HW_MEPT_ATMTRUNK HW_MEPT_ETH HW_MEPT_ETHTRUNK HW_MEPT_LP HW_MEPT_RPR
transmissionParams	transmissionParameters::LayeredParameterList_T	Indicates the transmission parameters that can be queried.  For transmission parameters of ATM and ATM trunk ports, see MSTP ATM Ports in the Transport Domain in CORBA NBI Developer Guide (Resource) .  For transmission parameters of ETH, ETH trunk, and RPR ports, see MSTP Ethernet Ports in the Transport Domain in CORBA NBI Developer Guide (Resource) .  When the IMA group exists on the ATMTRUNK port, the following IMA attributes are displayed at the transmission parameter 8003 layer (that is, the LR_ATM layer):  IMAProtocolVersion, which indicates the IMA protocol version and the value is a numeral. IMAFrameLength, which indicates the length of the IMA frame and the value is a numeral. IMAConfigMode, which indicates the IMA configuration mode and the value can be the following: SymmetricalModeAndSymmetricalOperation SymmetricalModeAndAsymmetricalOperation AsymmetricalModeAndAsymmetricalOperation UNKONW

Name	Type	Description
		IMAId, which indicates the IMA number and the value is a numeral.
additionalInfo	globaldefs::NVSList_T additionalInfo	Indicates additional information. This field applies only to LP ports. Model: Hub, Spoke, and UNKNOWN

**Parent topic:** [HW\\_mstplInventory](#)

## 9.2.5.9.2 HW\_VirtualBridge\_T

---

This topic describes the data structure of virtual bridges.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name.
userLabel	string	User label.
nativeEMSName	string	Name displayed on the GUI of the network management system.
owner	string	Owner.
logicalTPLList	HW_MSTPLLogicalEndPointList_T	Logical ports of the virtual bridge. For the element model, see <a href="#">HW_MSTPEndPoint_T</a> .
additionalInfo	globaldefs::NVSList_T	Additional information, For details, see <a href="#">additionalInfo::HW_VirtualBridge_T</a> .

**Parent topic:** [HW\\_mstplInventory](#)

## 9.2.5.9.3 HW\_VirtualLAN\_T

---

This object is used to specify the data of a VLAN.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the VLAN name.
userLabel	string	Indicates the user label.
nativeEMSName	string	Indicates the name displayed on the EMS GUI.
owner	string	Indicates the owner.
paraList	globaldefs::NVSLIST_T	No attribute of the VLAN can be queried or set.
forwardTPLList	HW_ForwardEndPointList_T	Indicates the list of forwarding ports in the VLAN. For details on the element model, see HW_ForwardEndPoint_T.
additionalInfo	globaldefs::NVSLIST_T	Indicates the additional information. Currently, this parameter is left blank.

**Parent topic:** [HW\\_mstplInventory](#)

## 9.2.5.9.4 HW\_ForwardEndPoint\_T

---

This object is used to specify the data of a VLAN forwarding port.

Name	Type	Description
logicTPName	globaldefs::NamingAttributes_T	Indicates the port name.
paraList	globaldefs::NVSLIST_T	No attribute of the VLAN forwarding port can be queried or set.
additionalInfo	globaldefs::NVSLIST_T	Indicates the additional information. Currently, this parameter is left blank.

**Parent topic:** [HW\\_mstplInventory](#)

## **9.2.5.9.5 HW\_MSTPBindingPath\_T**

---

This object is used to specify the data of MSTP bound paths.

Name	Type	Description
direction	terminationPoint::Directionality_T	Indicates the path direction. The options are as follows: terminationPoint::D_SOURCE terminationPoint::D_SINK terminationPoint::D_BIDIRECTIONAL
allPathList	globaldefs::NamingAttributesList_T	Indicates all the binding paths that can be used.
usedPathList	globaldefs::NamingAttributesList_T	Indicates the binding paths that are used.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. Currently, this parameter is left blank.

**Parent topic:** [HW\\_mstplInventory](#)

## **9.2.5.9.6 HW\_QosRule\_T**

---

This topic describes the data structure of QoS rules.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of a data structure.
userLabel	String	Indicates a user label.
nativeEMSName	String	Indicates the name displayed in the GUI of a network management system.
owner	String	Indicates the owner name.
type	HW_QosType_T	Indicates the QoS type. The options are as follows:

Name	Type	Description
		HW_QT_CAR HW_QT_COS
paraList	globaldefs::NVSLIST_T	<p>The following parameter are supported for CAR:</p> <p>EnableCar: whether to enable CAR.</p> <p>CIR: the committed information rate.</p> <p>DCBS: the additional burst size of cache.</p> <p>PIR: the peak information rate.</p> <p>DMBS: the additional maximum burst size of cache.</p> <p>In the case of CoS, supported parameter set varies with the value of CoSType.</p> <p>Here list the value of CosType and the supported parameter.</p> <ul style="list-style-type: none"> <li>SIMPLE: SimplePri</li> <li>IPTOS4: IPTOSD: the minimum delay. IPTOS: the maximum throughput. IPTOSR: the highest reliability. IPTOSC: the minimum expenditure.</li> <li>IPTOS16: IPTOSn (n ranges from 0000 to 1111 in binary mode)</li> <li>DSCP: DSCPn (n ranges from 000000 to 111111 in binary mode)</li> <li>TAGPRI: TAGPRIn (n ranges from 0 to 7)</li> </ul>
additionalInfo	globaldefs::NVSLIST_T	Indicates the additional information. This parameter is blank.

**Parent topic:** [HW\\_mstInventory](#)

## 9.2.5.9.7 HW\_Flow\_T

---

This object is used to specify the data of a flow.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the flow name.
userLabel	string	Indicates the user label.
nativeEMSName	string	Indicates the name displayed on the EMS GUI.
owner	string	Indicates the owner.
qosRuleNames	globaldefs::NamingAttributesList_T	Indicates the names of QoS rules.
paraList	globaldefs::NVSLIST_T	Indicates the supported parameters: FlowType, PortType, PortID and CaretVlanID.
additionalInfo	globaldefs::NVSLIST_T	Indicates the additional information. This parameter is left blank.

**Parent topic:** [HW\\_mstInventory](#)

## 9.2.5.9.8 HW\_LinkAggregationGroup\_T

---

This object is used to specify the data of a link aggregation group (LAG).

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the LAG name.
userLabel	string	Indicates the user label.
nativeEMSName	string	Indicates the name displayed on the EMS GUI.
owner	string	Indicates the owner.
paraList	globaldefs::NVSLIST_T	Supported parameters are as follows:

Name	Type	Description
		Type indicates type of the link aggregation group. SharingType indicates the sharing state.
mainPortName	globaldefs::NamingAttributes_T	Indicates the name of the main port.
branchPortList	HW_LAGBranchPortList_T	Indicates the detailed information about the branch ports. For details about the element model, see HW_LAGBranchPort_T.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. This parameter is left blank.

**Parent topic:** [HW\\_mstplInventory](#)

## 9.2.5.9.9 HW\_LAGBranchPort\_T

---

This topic describes the data structure of the HW\_LAGBranchPort\_T object.

Name	Type	Description
branchPortName	globaldefs::NamingAttributes_T	Name of a branch port.
branchPortParaList	globaldefs::NVSLList_T	Supported parameters are as follows:  States indicates the state of the branch port. Priority indicates the priority of the branch port.

**Parent topic:** [HW\\_mstplInventory](#)

## 9.2.5.9.10 HW\_SpanningTree\_T

---

This topic describes the data structure of the HW\_SpanningTree\_T object.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name.
userLabel	string	User label.
nativeEMSName	string	Local name.
owner	string	Name of the owner of the object.
STInfo	globaldefs::NVSList_T	Information of the spanning tree.
STCurrentBridge	globaldefs:: NVSList _T	Information of the spanning tree bridge.
STCurrentPort	HW_STCurrentPortList_T	Information of the port of the spanning tree bridge. For the element model, see <a href="#">HW_STCurrentPort_T</a> .

**Parent topic:** [HW\\_mstInventory](#)

## 9.2.5.9.11 HW\_STCurrentPort\_T

---

This topic describes the data structure of the HW\_STCurrentPort\_T object.

Name	Type	Description
portName	globaldefs::NamingAttributes_T	Port name.
userLabel	string	User label.
nativeEMSName	string	Local name.
owner	string	Name of the owner of the object.

Name	Type	Description
additionalInfo	globaldefs::NVSList_T	Additional information, For details, see additionalInfo::HW_STCurrentPort_T.

**Parent topic:** [HW\\_mstpInventory](#)

## 9.2.5.9.12 ShapingQueue

---

This topic describes the data structure of the ShapingQueue object.

Name	Type	Description
queueID	unsigned long	Queue ID.
bEnable	boolean	Whether ShapingQueue is enabled.
CIR	long	Committed information rate.
CBS	long	Committed burst size.
EIR	long	Excess information rate.
EBS	long	Excess burst size.

**Parent topic:** [HW\\_mstpInventory](#)

## 9.2.5.10 HW\_mstpProtection

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This topic describes information models of MSTP protection groups and protection switching.

- [HW\\_RPRNode\\_T](#)  
This topic describes the data structure of Resilient Packet Ring (RPR) nodes.
- [HW\\_RPRTopolInfo\\_T](#)  
This topic describes the data structure of the HW\_RPRTopolInfo\_T object.

- [\*\*HW\\_RPRSwitchData\\_T\*\*](#)  
This topic describes the data structure of the HW\_RPRSwitchData\_T object.
- [\*\*HW\\_AtmProtectGroup\\_T\*\*](#)  
This object is used to specify the data of an ATM protection group.
- [\*\*HW\\_AtmServiceProtectPair\\_T\*\*](#)  
This topic describes the data structure for switching ATM protection groups.
- [\*\*HW\\_AtmPGSwitchData\\_T\*\*](#)  
This topic describes the data structure of protection switching in ATM protection groups.
- [\*\*HW\\_AtmPGSingleEndSwitchPara\\_T\*\*](#)  
This topic describes the data structure for single-ended switching of ATM protection groups.
- [\*\*HW\\_RPRLinkInfo\\_T\*\*](#)  
This topic describes information about protection subnet links.

**Parent topic:** [Information Model](#)

## 9.2.5.10.1 HW\_RPRNode\_T

---

This topic describes the data structure of Resilient Packet Ring (RPR) nodes.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of an RPR node.
userLabel	String	Indicates the user label of an RPR node.
nativeEMSName	String	Indicates the RPR node name displayed on the NMS.
owner	String	Indicates the owner of an RPR node.
nodeNo	Unsigned short	Indicates the ID of an RPR node.
protocolEnabled	Boolean	Specifies whether the RPR protocol is enabled on a node.
nodeParameters	globaldefs::NVSLList_T	Indicates the list of supported parameters.

Name	Type	Description
		The value are as follows: holdOffTime wtrTime protectMode restoreMode slowTime topoTimer
additionalInfo	globaldefs::NVSLIST_T	Indicates the additional information of an RPR node. This parameter is not processed.

**Parent topic:** [HW\\_mstpProtection](#)

## 9.2.5.10.2 HW\_RPRTopoInfo\_T

---

This topic describes the data structure of the HW\_RPRTopoInfo\_T object.

Name	Type	Description
nodeName	globaldefs::NamingAttributes_T	Name of a node.
topoParameters	globaldefs::NVSLIST_T	Indicates the list of supported topology parameters. The value are as follows: direction 0RingJumpNo 1RingJumpNo ProtectMode eastNeighbordNodeNo westNeighbordNodeNo eastProtectState eastSwitchState westProtectState westSwitchState eastSendLinkWeight westSendLinkWeight eastA0ReservedBandWidth

Name	Type	Description
		westA0ReservedBandWidth 0RingReachable 1RingReachable
additionalInfo	globaldefs::NVSLIST_T	Additional information. This field is not processed.

**Parent topic:** [HW\\_mstpProtection](#)

## 9.2.5.10.3 HW\_RPRSwitchData\_T

---

This topic describes the data structure of the HW\_RPRSwitchData\_T object.

Name	Type	Description
nodeName	globaldefs::NamingAttributes_T	Name of a node.
switchReason	protection::SwitchReason_T	Reason of switching.
switchState	HW_SwitchState_T	Switching state enumerated.
switchPosition	HW_SwitchPosition_T	Switching position.
switchParameters	globaldefs::NVSLIST_T	The supported switching parameters are as follows: switchPosition switchState protectType SwitchCountTimes ProtectCountTime LastSwitchCommand This field in the HW_RPRSwitchData_T structure contains east and west switching parameters.
additionalInfo	globaldefs::NVSLIST_T	Additional information. This field is not processed.

**Parent topic:** [HW\\_mstpProtection](#)

## **9.2.5.10.4 HW\_AtProtectGroup\_T**

---

This object is used to specify the data of an ATM protection group.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the protection group name.
userLabel	string	Indicates the user label.
nativeEMSName	string	Indicates the name displayed on the EMS GUI.
owner	string	Indicates the owner.
protectType	HW_AtProtectType_T	Indicates the protection type. The options are as follows: HW_APT_1PLUS1: 1+1 protection HW_APT_1V1: 1:1 protection HW_APT_NONE: no protection HW_APT_NA: unknown
switchDirect	HW_AtPGSwitchDirect_T	Indicates the direction of switching. The options are as follows: HW_ASD_SRC: source HW_ASD_SNK: sink HW_ASD_BI: bidirectional HW_ASD_NA: unknown
useState	HW_AtPGUseState_T	Indicates the usage status. The options are as follows: HW_AUS_NA HW_AUS_USED HW_AUS_UNUSED
srcEndPara	HW_AtPGSingEndPara_T	Indicates the detailed information about the source end.
snkEndPara	HW_AtPGSingEndPara_T	Indicates the detailed information about the sink end.

Name	Type	Description
ppList	HW_AtmServiceProtectPairList_T	Indicates the list of the protection pair. For details about the element model, see HW_AtmServiceProtectPair_T.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. This parameter is left blank.

**Parent topic:** [HW\\_mstpProtection](#)

## 9.2.5.10.5 HW\_AtmServiceProtectPair\_T

---

This topic describes the data structure for switching ATM protection groups.

Name	Type	Description
workServiceName	globaldefs::NamingAttributes_T	Name of working service.
protectServiceName	globaldefs::NamingAttributes_T	Name of protection service.
monitorFlag	HW_AtmMonitorFlag_T	Indicates the monitoring status. The value are as follows: HW_AMF_NA HW_AMF_CONNECTION HW_AMF_PROTECT_PAIR
additionalInfo	globaldefs::NVSLList_T	Additional information. This field is not processed.

**Parent topic:** [HW\\_mstpProtection](#)

## 9.2.5.10.6 HW\_AtmPGSwitchData\_T

---

This topic describes the data structure of protection switchingin ATM protection groups.

Name	Type	Description
pgName	globaldefs::NamingAttributes_T	Indicates the name of an ATM protection group.
protectType	HW_AtmProtectType_T	Indicates the protection type. The options are as follows: HW_APT_NA: Indicates unknown or irrelevant protection. HW_APT_NONE: Indicates that no protection is configured. HW_APT_1PLUS1: Indicates 1+1 protection. HW_APT_1V1: Indicates 1:1 protection.
srcEndSwitchPara	HW_AtmPGSingleEndSwitchPara_T	Indicates the detailed information about the source end.
snkEndSwitchPara	HW_AtmPGSingleEndSwitchPara_T	Indicates the detailed information about the sink end.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. This parameter is not processed.

**Parent topic:** [HW\\_mstpProtection](#)

## 9.2.5.10.7 HW\_AtmPGSingleEndSwitchPara\_T

---

This topic describes the data structure for single-ended switching of ATM protection groups.

Name	Type	Description
switchReason	protection::SwitchReason_T	Reason of switching enumerated by the TMF. For details, see the IDL.

Name	Type	Description
switchState	HW_SwitchState_T	Switching state enumerated by the TMF. For details, see the IDL.
additionalInfo	globaldefs::NVSLIST_T	Additional information. This field is not processed.

**Parent topic:** [HW\\_mstpProtection](#)

## 9.2.5.10.8 HW\_RPRLinkInfo\_T

---

This topic describes information about protection subnet links.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of an RPR link.
nodeNo	unsigned short	Indicates the number of an RPR link.
rprLinkParameters	globaldefs::NVSLIST_T	Indicates the RPR link parameters. The following fields are supported:  ring0SendLinkWeight: weight of send link for ring 0 ring0AReservedBindWidth: reserved bandwidth of priority A for ring 0 ring0AUUsedBindWidth: used bandwidth of priority A for ring 0 ring0BCirUsedBindWidth: CIR of priority B for ring 0 ring1SendLinkWeight: weight of send link for ring 1 ring1AReservedBindWidth: reserved bandwidth of priority A for ring 1

Name	Type	Description
		ring1AUsedBindWidth: used bandwidth of priority A for ring 1 ring1BCirUsedBindWidth: CIR of priority B for ring 1
additionalInfo	globaldefs::NVSLIST_T	This field is left blank by default.

**Parent topic:** [HW\\_mstpProtection](#)

## 9.2.5.11 HW\_mstpService

---

This topic describes information models ofMSTP services.

- [HW\\_EthServiceTP\\_T](#)  
This topic describes the data structure of source or sink termination points (TPs) of Ethernet services.
- [HW\\_EthService\\_T](#)  
This topic describes the data structure of Ethernet services.
- [HW\\_AtmService\\_T](#)  
This topicdescribes the data structure of ATM services.
- [HW\\_AtmServiceTP\\_T](#)  
This topic describes the data structure of source and sinktermination points (TPs) of ATM services.
- [HW\\_EthServiceCreateData\\_T](#)  
This topic describes the data structure of Ethernet servicecreation.
- [HW\\_AtmServiceCreateData\\_T](#)  
This topic describes the data structure of ATM servicecreation.

**Parent topic:** [Information Model](#)

## 9.2.5.11.1 HW\_EthServiceTP\_T

---

This topic describes the data structure of source or sink termination points (TPs) of Ethernet services.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name.
vlanID	unsigned short	VLAN ID.
tunnel	unsigned long	Tunnel label.
vc	unsigned long	VC label.
additionalInfo	globaldefs::NVSLList_T	Additional information.

**Parent topic:** [HW\\_mstpService](#)

## 9.2.5.11.2 HW\_EthService\_T

---

This topic describes the data structure of Ethernet services.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name.
userLabel	string	User label.
nativeEMSName	string	Name displayed on the GUI of the network management system.
owner	string	Owner.
serviceType	HW_EthServiceType_T	Type of a service: HW_EST_NA HW_EST_EPL HW_EST_EVPL HW_EST_EPLAN HW_EST_EVPLAN
direction	globaldefs::ConnectionDirection_T	Direction of the service: CD_UNI: unidirectional CD_BI: bidirectional

Name	Type	Description
activeState	boolean	State of the service.
aEndPoint	HW_EthServiceTP_T	Information about the source end of the service.
zEndPoint	HW_EthServiceTP_T	Information about the sink end of the service.
additionalInfo	globaldefs::NVSLList_T	Additional information. For details, see additionalInfo::HW_EthService_T.

**Parent topic:** [HW\\_mstpService](#)

## 9.2.5.11.3 HW\_Atmservice\_T

---

This topic describes the data structure of ATM services.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name.
userLabel	string	User label.
nativeEMSName	string	Name displayed on the GUI of the network management system.
owner	string	Owner.
protectType	HW_mstpProtection::HW_AtmserviceProtectType_T	Protection type: HW_APT_NA HW_APT_NONE HW_APT_1PLUS1 HW_APT_1V1
serviceType	HW_AtmserviceType_T	Type of the service: HW_AST_NA HW_AST_PVP HW_AST_PVC

Name	Type	Description
spreadType	HW_AtmserviceSpreadType_T	Spread type: HW_ASST_NA HW_ASST_P2P HW_ASST_P2MPROOT HW_ASST_P2MPEAF
protectRole	HW_AtmserviceProtectRole_T	Protection role: HW_APR_NA HW_APR_WORKING HW_APR_PROTECTING
activeState	boolean	Flag that specifies whether the service is active.
aEndPoint	HW_AtmserviceTP_T	TP at the source end of the service.
zEndPoint	HW_AtmserviceTP_T	TP at the sink end of the service.
additionalInfo	globaldefs::NVSLIST_T	Additional information.

**Parent topic:** [HW\\_mstpService](#)

## 9.2.5.11.4 HW\_AtmserviceTP\_T

---

This topic describes the data structure of source and sinktermination points (TPs) of ATM services.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of the TP at the source or sink end of the ATM service
trafficDescriptorName	globaldefs::NamingAttributes_T	Name of the traffic descriptor.
bPC	boolean	Whether to enable the traffic control.
additionalInfo	globaldefs::NVSLIST_T	Additional information.

**Parent topic:** [HW\\_mstpService](#)

## 9.2.5.11.5 HW\_EthServiceCreateData\_T

---

This topic describes the data structure of Ethernet servicecreation.

Name	Type	Description
serviceType	HW_EthServiceType_T	Indicates the type of a service, which is specified when the service is created.
direction	globaldefs::ConnectionDirection_T	Indicates the direction of the service.
aEndPoint	HW_EthServiceTP_T	Indicates the TP at the source end of the service.
zEndPoint	HW_EthServiceTP_T	Indicates the TP at the sink end of the service.
additionalInfo	globaldefs::NVSList_T	Indicates additional information. This field is not processed.

**Parent topic:** [HW\\_mstpService](#)

## 9.2.5.11.6 HW\_AtmServiceCreateData\_T

---

This topic describes the data structure of ATM servicecreation.

Name	Type	Description
protectType	HW_mstpProtection::HW_AtmProtectType_T	Protection type.
serviceType	HW_AtmServiceType_T	Type of the service.
spreadType	HW_AtmServiceSpreadType_T	Spread type.
protectRole	HW_AtmProtectRole_T	Protection role.

Name	Type	Description
aEndPoint	HW_AtmServiceTP_T	Indicates the TP at the source end of the service.
zEndPoint	HW_AtmServiceTP_T	Indicates the TP at the sink end of the service.
active	boolean	Indicates the flag that specifies whether the service is active.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. This field is not processed.

**Parent topic:** [HW\\_mstpService](#)

## 9.2.5.12 trafficDescriptor

---

This topic describes information models of traffic descriptors. These information models are applicable to PTN devices of the transport domain.

- [\*\*TrafficDescriptor\\_T\*\*](#)  
This topic describes the data structure of traffic descriptors.
- [\*\*TDCreateData\\_T\*\*](#)  
This topic describes the data structure for creating trafficdescriptors.

**Parent topic:** [Information Model](#)

### 9.2.5.12.1 TrafficDescriptor\_T

---

This topic describes the data structure of traffic descriptors.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name

Name	Type	Description
userLabel	string	User label.
nativeEMSName	string	Local name.
owner	string	Name of the owner of the object.
serviceCategory	ServiceCategory_T	Category of the traffic descriptor.
trafficParameters	TrafficParameterList_T	<p>Indicates traffic descriptor parameters, including:</p> <p>PCR-&lt;0+1&gt;: the maximum transmit rate of cells.</p> <p>PCR-&lt;0&gt;: the peak information rate (PIR) of cells when Clp (cell loss priority) is 0.</p> <p>SCR-&lt;0+1&gt;: the sustainable PIR of cells. Based on traffic types, the traffic that exceeds the SCR will be tagged or discarded.</p> <p>SCR-&lt;0&gt;: the sustainable transmit rate of cells.</p> <p>CDVT: the cell delay variation tolerance.</p> <p>MBS: the maximum burst size of cells.</p> <p>TAG: tags.</p> <p>TRANSPARENT: the traffic state.</p> <p>FDISCARD: whether the frame discarding is enabled.</p> <p>QOSLEVEL: traffic QoS.</p> <p>MCR: minimum cell rate.</p> <p>UPC/NPC: usage parameter control/network parameter control.</p>
conformanceDefinition	string	The value is always UNI 4.1.
activeState	boolean	Flag of activation.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. For details, see additionalInfo::TrafficDescriptor_T.

**Parent topic:** [trafficDescriptor](#)

## 9.2.5.12.2 TDCreateData\_T

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This topic describes the data structure for creating traffic descriptors.

Name	Type	Description
userLabel	string	User label.
forceUniqueness	boolean	Whether the userlabel is required to be unique. The value True is not supported.
owner	string	Name of the owner of the object.
serviceCategory	ServiceCategory_T	Type of the traffic descriptor.
trafficParameters	TrafficParameterList_T	Indicates traffic descriptor parameters, including: PCR-<0+1>: the maximum transmit rate of cells. PCR-<0>: the peak information rate (PIR) of cells when Clp (cell loss priority) is 0. SCR-<0+1>: the sustainable PIR of cells. Based on traffic types, the traffic that exceeds the SCR will be tagged or discarded. SCR-<0>: the sustainable transmit rate of cells. CDVT: the cell delay variation tolerance. MBS: the maximum burst size of cells. TAG: tags. TRANSPARENT: the traffic state. FDISCARD: whether the frame discarding is enabled. QOSLEVEL: traffic QoS. MCR: minimum cell rate. UPC/NPC: usage parameter control/network parameter control.
conformanceDefinition	string	The value is always UNI 4.1.

Name	Type	Description
activeState	boolean	Flag of activation.
additionalInfo	globaldefs::NVSList_T	Additional information. This field is not processed.

**Parent topic:** [trafficDescriptor](#)

## 9.2.5.13 encapsulationLayerLink

---

This topic describes information models of encapsulation layer links.

- [EncapsulationLayerLink\\_T](#)  
This topic describes the data structure of encapsulationlayer links.
- [ELLinkCreateData\\_T](#)  
This topic describes the data structure of encapsulation layer link creation.

**Parent topic:** [Information Model](#)

### 9.2.5.13.1 EncapsulationLayerLink\_T

---

This topic describes the data structure of encapsulationlayer links.

Name	Type	Description
name	globaldefs::NamingAttributes_T	The name of the encapsulation layer link.
userLabel	string	User label.
nativeEMSName	string	Local name.
owner	string	Name of the owner of the object.
type	LinkType_T	The value is always LT_POINT_TO_POINT.

Name	Type	Description
transmissionParams	transmissionParameters::LayeredParameters_T	Transmission parameters.
rate	transmissionParameters::LayerRate_T	The value is always LR_Encapsulation.
networkAccessDomain	string	The value is always blank.
endTPs	globaldefs::NamingAttributesList_T	The list of termination points (TPs) terminating the encapsulation layer link.
route	globaldefs::NamingAttributesList_T	The list of server SNC names.
segment	boolean	Whether the state of the ELL is terminal.
routeGroups	globaldefs::NamingAttributesList_T	The value is always blank.
additionalInfo	globaldefs::NVSList_T	The value is always blank.

**Parent topic:** [encapsulationLayerLink](#)

## 9.2.5.13.2 ELLinkCreateData\_T

---

This topic describes the data structure of encapsulation layer link creation.

Name	Type	Description
userLabel	string	User label.
forceUniqueness	boolean	Indicates whether the user label is unique. The value can be false only and cannot be true.
owner	string	Name of the owner of the object.
networkAccessDomain	string	The value is always null.
transmissionParams	transmissionParameters::LayeredParameters_T	Transmission parameters.

Name	Type	Description
rate	transmissionParameters::LayerRate_T	The value is always 96.
type	LinkType_T	The value is always LT_POINT_TO_POINT.
endTPs	globaldefs::NamingAttributesList_T	Indicates the list of TPs terminating the encapsulation layer link.
segment	boolean	Indicates whether the state of the ELL is terminal.
provisioningMode	BandwidthProvisioningMode_T	Indicates the bandwidth provisioning mode. The value is BP_NONE, BP_AUTOMATIC, BP_MANUAL, or BP_BY_CALL.
sncList	subnetworkConnection::SNCCreateDataList_T	Indicates the name list of SNCs at the server layer.
callName	globaldefs::NamingAttributes_T	Name.
additionalCreateInfo	globaldefs::NVSList_T	Indicates additional information. For details, see additionalInfo::ELLinkCreateData_T.

**Parent topic:** [encapsulationLayerLink](#)

## 9.2.5.14 flowDomain

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This topic describes information models offlow domains, flow domain fragments and Ethernet OAM operations.

- [\*\*FlowDomain\\_T\*\*](#)  
This topic describes the data structure of flow domains.
- [\*\*FlowDomainFragment\\_T\*\*](#)  
This topic describes the data structure of flow domain fragments (FDFrs).
- [\*\*EthernetOAMPoint\\_T\*\*](#)  
This topic describes the data structure of Ethernet OAMpoints.

- [EthernetOAMOperation\\_T](#)  
This topic describes the data structure of Ethernet OAM operations.
- [EthernetOAMPramer\\_T](#)  
This topic describes the data structure of Ethernet OAMparameters.
- [EthernetLTTestResult\\_T](#)  
This topic describes the data structure of results of linktrace (LT) tests.
- [FDFrCreateData\\_T](#)  
This topic describes the data structure of flow domain fragment creation.
- [FTPCreateData\\_T](#)  
This topic describes the data structure for creating floating termination points (FTPs).

**Parent topic:** [Information Model](#)

## 9.2.5.14.1 FlowDomain\_T

---

This topic describes the data structure of flow domains.

Name	Type	Description
name	globaldefs::NamingAttributes_T	The name of the flow domain.
userLabel	string	The default value is Flowdomain_1
nativeEMSName	string	The default value is Flowdomain_1
owner	string	The value is always blank.
transmissionParams	transmissionParameters::LayeredParameterList_T	The value is always blank.
networkAccessDomain	string	The value is always blank.
mfds	globaldefs::NamingAttributesList_T	The value is always blank.
fdEdgeCPTPs	globaldefs::NamingAttributesList_T	The value is always blank.
fdInternalCPTPs	globaldefs::NamingAttributesList_T	The value is always blank.
fDConnectivityState	ConnectivityState_T	The value is always flowDomain::CS_UNKNOWN

Name	Type	Description
fdType	FDTtype_T	The value is always FDT_NETWORK
additionalInfo	globaldefs::NVSList_T	Additional information.

**Parent topic:** [flowDomain](#)

## 9.2.5.14.2 FlowDomainFragment\_T

---

This topic describes the data structure of flow domain fragments (FDFrs).

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the FDFr name.
userLabel	String	Indicates the user label of an FDFr. This parameter is left blank by default.
nativeEMSName	String	Indicates the FDFr name displayed on the NMS.
owner	String	Indicates the FDFr owner. This parameter is left blank by default.
direction	globaldefs::ConnectionDirection_T	Indicates the FDFr direction. The options are as follows: CD_UNI CD BI
transmissionParams	transmissionParameters::LayeredParameterList_T	Indicates the supported transmission parameters, including: FlowdomainFragmentType: Indicates the FDFr type. Terminal: Indicates the termination point (TP).
endTPs	globaldefs::NamingAttributesList_T	Indicates the TPs terminating on the encapsulation layer link.
networkAccessDomain	String	The value is always blank.

Name	Type	Description
flexible	Boolean	The value is always false
administrativeState	performance::AdministrativeState_T	The value is always performance::AS_Unlocked.
fdfrState	subnetworkConnection::SNCState_T	Indicates the FDFr state. The options are as follows: SNCS_NONEXISTENT: Indicates that the FDFr does not exist. SNCS_PENDING: Indicates that the FDFr is deactivated. SNCS_ACTIVE: Indicates that the FDFr is activated. SNCS_PARTIAL: Indicates that the FDFr is partially activated.
fdfrType	FDFrType_T	Indicates the FDFr type. The options are as follows: FDFRT_POINT_TO_POINT: Indicates a point-to-point FDFr. FDFRT_POINT_TO_MULTIPOINT: Indicates a point-to-multipoint FDFr. FDFRT_MULTIPOINT: Indicates a multipoint-to-multipoint FDFr.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. NoVB is displayed for a non-VB node if the EOW/EOO contains E-LAN services of non-VB nodes.

**Parent topic:** [flowDomain](#)

## 9.2.5.14.3 EthernetOAMPoint\_T

---

This topic describes the data structure of Ethernet OAMpoints.

Name	Type	Description
Name	String	Indicates the name of an Ethernet OAM point.

Name	Type	Description
type	EthernetOAMPointType_T	<p>Indicates the type of an Ethernet OAM point. The options are as follows:</p> <ul style="list-style-type: none"> <li>EOT_MEPC: Indicates that the Ethernet OAM point is an edge point in a maintenance association.</li> <li>EOP_MIP: Indicates that the Ethernet OAM point is a point in a maintenance association.</li> </ul>
direction	EthernetOAMPointDirection_T	<p>Indicates the direction of an Ethernet OAM point. The options are as follows:</p> <ul style="list-style-type: none"> <li>EOPD_BI: Indicates the Ethernet OAM point is bidirectional.</li> <li>EOPD_INGRESS: Indicates that the Ethernet OAM point is an ingress port.</li> <li>EOPD_EGRESS: Indicates that the Ethernet OAM point is an egress port.</li> </ul>
level	Unsigned long	Indicates the level of an Ethernet OAM point.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information.

**Parent topic:** [flowDomain](#)

## 9.2.5.14.4 EthernetOAMOperation\_T

---

This topic describes the data structure of Ethernet OAM operations.

Name	Type	Description
command	EthernetOAMCommandType_T	<p>Indicates the type of an Ethernet OAM command. The options are as follows:</p> <ul style="list-style-type: none"> <li>EOCT_CC: Indicates that the command is used to perform a connectivity check.</li> </ul>

Name	Type	Description
		EOCT_LB: Indicates that the command is used to perform loopback. EOCT_LT: Indicates that the command is used to perform a link test.
srcPoint	EthernetOAMParamer_T	Indicates the source OAM point.
snkPoint	EthernetOAMParamer_T	Indicates the sink OAM point.
additionalInfo	globaldefs::NVSList_T	Indicates the additional information. For details, see additionalInfo::EthernetOAMOperation_T.

**Parent topic:** [flowDomain](#)

## 9.2.5.14.5 EthernetOAMParamer\_T

---

This topic describes the data structure of Ethernet OAMparameters.

Name	Type	Description
oamPointName	string	The name of the OAM point.
period	unsigned long	The period of ethernet OAM command.

**Parent topic:** [flowDomain](#)

## 9.2.5.14.6 EthernetLTTestResult\_T

---

This topic describes the data structure of results of linktrace (LT) tests.

Name	Type	Description
oamPointName	string	The name of the OAM point.

Name	Type	Description
hopNumber	unsigned long	The hop-number of the Link-Trace.
result	boolean	The result of the Link-Trace.

**Parent topic:** [flowDomain](#)

## 9.2.5.14.7 FDFrCreateData\_T

---

This topic describes the data structure of flow domain fragment creation.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of the flow domain fragment.
userLabel	string	User label.
forceUniqueness	boolean	Indicates whether the user label is unique. The value can be false only and cannot be true.
owner	string	Indicates the name of the owner of the object.
networkAccessDomain	string	The value is always null.
administrativeState	performance::AdministrativeState_T	The value is always performance::AS_Unlocked
transmissionParams	transmissionParameters::LayeredParameters_T	Transmission parameters.
additionalCreateInfo	globaldefs::NVSLList_T	Additional information. For details, see additionalInfo::FDFrCreateData_T.

**Parent topic:** [flowDomain](#)

## 9.2.5.14.8 FTPCreateData\_T

---

This topic describes the data structure for creating floating termination points (FTPs).

Name	Type	Description
equipmentName	globaldefs::NamingAttributes_T	Indicates the equipment name. LAG, MPGGroup, Serial, and VE interfaces are all based on NEs. Therefore, you only need to check whether the value indicates a valid NE object when verifying this parameter.
userLabel	string	Indicates a user label. This parameter will be set to the initial value of the nativeEMSName parameter.
forceUniqueness	boolean	Specifies whether the user label is unique. The value can be only false.
owner	string	Indicates the name of an object owner.
ftpType	string	Indicates an FTP type.
ingressTrafficDescriptorName	globaldefs::NamingAttributesList_T	Indicates the name of an ingress traffic descriptor. The value is left blank.
egressTrafficDescriptorName	globaldefs::NamingAttributes_T	Indicates the name of an egress traffic descriptor. The value is left blank.
connectionState	terminationPoint::TPConnectionState_T	Indicates the connection status. For physical termination points (PTPs), the value is TPCS_NA. For FTPs and connection termination points (CTPs), options are as follows: TPCS_SOURCE_CONNECTED: source connected TPCS_SINK_CONNECTED: sink connected

Name	Type	Description
		TPCS_BI_CONNECTED: bidirection connected TPCS_NOT_CONNECTED: unconnected
tpMappingMode	terminationPoint::TerminationMode_T	Indicates the TP mapping mode.
direction	terminationPoint::Directionality_T	Indicates the TP direction. Options are as follows: D_BIDIRECTIONAL: bidirection D_SOURCE: source D_SINK: sink D_NA: unknown
transmissionParams	transmissionParameters::LayeredParameterList_T	Indicates transmission parameters.
tpProtectionAssociation	terminationPoint::TPProtectionAssociation_T	This field is reserved currently. The value is TPPA_NA.
edgePoint	boolean	Specifies whether a TP is an edge point.
additionalCreateInfo	globaldefs::NVSLList_T	Indicates additional information. For details, see additionalInfo::FTPCreateData_T.

**Parent topic:** [flowDomain](#)

## 9.2.5.15 HW\_controlPlane

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This topic describes information models of SNPP links.

- [\*\*HW\\_SnppLink\\_T\*\*](#)  
This topic describes the data structure of the HW\_SnppLink\_T object.
- [\*\*HW\\_Capacity\\_T\*\*](#)  
This topic describes the data structure of bandwidth capacities.

**Parent topic:** [Information Model](#)

## **9.2.5.15.1 HW\_SnppLink\_T**

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This topic describes the data structure of the HW\_SnppLink\_T object.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of the SNPPLink.
userLabel	string	Indicates the user label.
nativeEMSName	string	Indicates the local name
owner	string	Indicates the name of the owner of the object.
aEndSnppName	globaldefs::NamingAttributes_T	Indicates the name of the source TP of the SNPPLink.
zEndSnppName	globaldefs::NamingAttributes_T	Indicates the name of the sink TP of the SNPPLink.
direction	globaldefs::ConnectionDirection_T	Indicates the direction of the SNPPLink.
rateList	transmissionParameters::LayerRateList_T	Indicates the list of the cross-connection rate supported by the SNPPLink.
cost	unsigned short	Indicates the weight of the SNPPLink.
protectType	HW_LinkProtectType_T	The protection types of the SNPPLink supported are as follows: PROTECTED PREEMPTIBLE UNPROTECTED PROTECTED/PREEMPTIBLE PROTECTED/PREEMPTIBLE/UNPROTECTED
linkCapacity	HW_LinkCapacity_T	Indicates the bandwidth capacity of the SNPPLink. For the element model, see HW_Capacity_T.
linkState	HW_LinkState	Indicates the connection status of the SNPPLink, containing the following: DISCONNECTED CONNECTED
srlgIDList	HW_SRLGIDList_T	Indicates the list of the shared risk link group ID. For the element model, see HW_SRLGID_T (unsigned long).

Name	Type	Description
additionalInfo	globaldefs::NVSList_T	Indicates the additional information. For details, see additionalInfo::HW_SnppLink_T.

**Parent topic:** [HW\\_controlPlane](#)

## 9.2.5.15.2 HW\_Capacity\_T

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This topic describes the data structure of bandwidth capacities.

Name	Type	Description
unit	"transmissionParameters ::LayerRate_T"	The list of the cross-connection rate supported.
Bandwidth	unsigned long	The bandwidth.
additionalInfo	globaldefs::NVSList_T	Additional information.

**Parent topic:** [HW\\_controlPlane](#)

## 9.2.5.16 maintenanceOps

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This topic describes information models of traffic descriptors. These information models are applicable to PTN equipment and RTN equipment.

- [CurrentMaintenanceOperation\\_T](#)  
This topic describes the data structure of current maintenance operations.
- [PRBSTestResult\\_T](#)  
This topic describes the data structure of PRBS test results.
- [PRBSTestParameter\\_T](#)  
This topic describes the data structure of PRBS test parameters.
- [SampleResult\\_T](#)  
This topic describes the data structure of sampling results.

- [TestDuration\\_T](#)  
This topic describes the data structure of test duration.
- [HW\\_MaintenanceDomain\\_T](#)  
This topic describes the data structure of maintenance domains (MDs).
- [HW\\_MaintenanceAssociation\\_T](#)  
This topic describes the data structure of maintenance associations (MAs).
- [HW\\_MaintenancePoint\\_T](#)  
This describes the data structure of maintenance points (MPs).
- [HW\\_MaintenancePointCreateData\\_T](#)  
This topic describes the data structure for creating maintenance points (MPs).

**Parent topic:** [Information Model](#)

## 9.2.5.16.1 CurrentMaintenanceOperation\_T

---

This topic describes the data structure of current maintenance operations.

Name	Type	Description
tpName	globaldefs::NamingAttributes_T	Indicates the name of a TP.
maintenanceOperation	MaintenanceOperation_T	Indicates the current maintenance operation that has been invoked, including:  FACILITY_LOOPBACK: outloop setting. TERMINAL_LOOPBACK: inloop setting. FACILITY_FORCED_AIS: forced AIS alarms for devices. TERMINAL_FORCED_AIS: forced AIS alarms for terminals. FORCE_RDI: forced RDI alarms. OAM_ETHSVR_CC: the CC test on Ethernet services. OAM_ETHSVR_LB: the LB test on Ethernet services. OAM_ETHSVR_LT: the LT test on Ethernet services.

Name	Type	Description
		<p>OAM_ETHLINK_FIND: Ethernet link discovery.</p> <p>OAM_ETHLINK_LOOP: Ethernet link loopbacks.</p> <p>OAM_LSP_CC: the CC test on LSP services.</p> <p>OAM_LSP_LB: the LB test on LSP services.</p> <p>OAM_LSP_LT: the LT test on LSP services.</p> <p>OAM_PW_CC: the CC test on PW services.</p> <p>OAM_PW_LT: the LT test on PW services.</p> <p>OAM_PW_LB: the LB test on PW services.</p>
layerRate	"transmissionParameters ::LayerRate_T"	Indicates the layer rate to which the maintenance operation applies.
additionalInfo	globaldefs::NVSList_T	Indicates the additional information.

**Parent topic:** [maintenanceOps](#)

## 9.2.5.16.2 PRBSTestResult\_T

---

This topic describes the data structure of PRBS test results.

Name	Type	Description
testPara	PRBSTestParameter_T	The test parameters
startTime	globaldefs::Time_T	The start time of the test
sampleResultList	SampleResultList_T	The result of the test. For the element model, see SampleResult_T

Name	Type	Description
totalBitError	unsigned long	The total number of the bit errors.
realDuration	TestDuration_T	The duration of the actual test. For the element model, see TestDuration_T

**Parent topic:** [maintenanceOps](#)

## 9.2.5.16.3 PRBSTestParameter\_T

---

This topic describes the data structure of PRBS test parameters.

Name	Type	Description
tpName	globaldefs::NamingAttributes_T	The name of the TP.
testDuration	TestDuration_T	The duration of the test.
sampleGranularity	SampleGranularity_T	Sampling period.
testType	PRBSTestType_T	The test types supported are as follows: FACILITY_PRBS_TEST TERMINAL_PRBS_TEST
accumulatingIndicator	boolean	Accumulate bit error values or not.

**Parent topic:** [maintenanceOps](#)

## 9.2.5.16.4 SampleResult\_T

---

This topic describes the data structure of sampling results.

Name	Type	Description
sampleTime	globaldefs::Time_T	Sampling time
value	unsigned long	The number of the bit errors

**Parent topic:** [maintenanceOps](#)

## 9.2.5.16.5 TestDuration\_T

---

This topic describes the data structure of test duration.

Name	Type	Description
value	unsigned long	The value of the test duration.
unit	string	The unit of the test duration.

**Parent topic:** [maintenanceOps](#)

## 9.2.5.16.6 HW\_MaintenanceDomain\_T

---

This topic describes the data structure of maintenance domains (MDs).

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates a name.
userLabel	string	Indicates a user label.
nativeEMSName	string	Indicates a local EMS name.
owner	string	Indicates the name of an object owner.
mdParameters	globaldefs::NVSLList_T	Indicates MD parameters.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information.

**Parent topic:** [maintenanceOps](#)

## 9.2.5.16.7 HW\_MaintenanceAssociation\_T

---

This topic describes the data structure of maintenance associations (MAs).

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates a name.
userLabel	string	Indicates a user label.
nativeEMSName	string	Indicates a local EMS name.
owner	string	Indicates the name of an object owner.
associatedService	globaldefs::NamingAttributes_T	Indicates the name of an associated service.
maParameters	globaldefs::NVSLList_T	Indicates MA parameters.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information.

**Parent topic:** [maintenanceOps](#)

## 9.2.5.16.8 HW\_MaintenancePoint\_T

---

This describes the data structure of maintenance points (MPs).

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates a name.
userLabel	string	Indicates a user label.
nativeEMSName	string	Indicates a local EMS name.

Name	Type	Description
owner	string	Indicates the name of an object owner.
tpName	globaldefs::NamingAttributes_T	Indicates the name of a port where an MP resides.
transmissionParams	transmissionParameters::LayeredParameters_T	Indicates MP parameters.
additionalInfo	globaldefs::NVSList_T	Indicates additional information.

**Parent topic:** [maintenanceOps](#)

## 9.2.5.16.9 HW\_MaintenancePointCreateData\_T

---

This topic describes the data structure for creating maintenance points (MPs).

Name	Type	Description
mdOrMaName	globaldefs::NamingAttributes_T	Indicates the name of a maintenance domain (MD) or maintenance association (MA).
userLabel	string	Indicates a user label.
nativeEMSName	string	Indicates a local EMS name.
owner	string	Indicates the name of an object owner.
transmissionParams	transmissionParameters::LayeredParameters_T	Indicates MP parameters. Includes layerRate and the corresponding transmission parameters. The transmission parameters includes the following parameters:Direction,

Name	Type	Description
		VLANID, CCStatus, MPID.
tpName	globaldefs::NamingAttributes_T	Indicates the name of a port where an MP resides.
additionalInfo	globaldefs::NVSList_T	Indicates additional information.

**Parent topic:** [maintenanceOps](#)

## 9.2.5.17 TopoManagementManager

---

This topic describes the information model of topologymanagement.

- [Node\\_T](#)  
This topic describes the data structure of nodes.
- [Position\\_T](#)  
This topic describes the data structure of positions.

**Parent topic:** [Information Model](#)

### 9.2.5.17.1 Node\_T

---

This topic describes the data structure of nodes.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the node name.
nativeEMSName	String	Indicates the node name displayed on the NMS.
nodeType	NodeType_T	Indicates the node type. The options are as follows:

Name	Type	Description
		NODETYPE_ME: Indicates a managed NE. NODETYPE_TOPO_SN: Indicates a service node.
position	Position_T	Indicates the node position.
parent	globaldefs::NamingAttributes_T	Indicates the name of the parent topology node.
additionalInfo	globaldefs::NVSList_T	Indicates the additional information.

**Parent topic:** [TopoManagementManager](#)

## 9.2.5.17.2 Position\_T

---

This topic describes the data structure of positions.

Name	Type	Description
xPos	long	X-axis
yPos	long	Y-axis

**Parent topic:** [TopoManagementManager](#)

## 9.2.5.18 trafficConditioningProfile

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This topic describes information models of traffic control policy profiles.

- [\*\*HW\\_TrafficClassifier\\_T\*\*](#)  
This topic describes the data structure for traffic classification.
- [\*\*HW\\_TCProfile\\_T\*\*](#)  
This topic describes the data structure of traffic classification profiles.

- [TrafficConditioningProfileAssign\\_T](#)  
This topic describes the data structure for applying traffic policy profiles.
- [TrafficConditioningProfileDeassign\\_T](#)  
This topic describes the data structure for unapplying traffic policy profiles.
- [HW\\_TCProfileCreateData\\_T](#)  
This topic describes the data structure of traffic policyprofile creation.

**Parent topic:** [Information Model](#)

## 9.2.5.18.1 HW\_TrafficClassifier\_T

---

This topic describes the data structure for traffic classification.

Name	Type	Description
classifierID	string	Traffic classification ID. Value range: 1-16. Traffic classification ,when the QoS is CBQoS.
logicalRelationType	string	Matching rules of the traffic classification. When the parameter is set to OR, the traffic classification types can be the same. Options: AND, OR, UNDEFINE.
action	string	Operation type that identifies the adding, modification or deletion in the traffic classification list. The necessary attributes are delivered to identify the adding and modification. The traffic classification ID is filled to identify the deletion. Options: Add, Delete, Modify.

Name	Type	Description
transmissionParams	transmissionParameters::LayeredParameterList_T	Transmission parameter, including the traffic classification and traffic action transmission parameters.

**Parent topic:** [trafficConditioningProfile](#)

## 9.2.5.18.2 HW\_TCProfile\_T

---

This topic describes the data structure of traffic classification profiles.

Name	Type	Description
name	globaldefs::NamingAttributes_T	<p>{name EMS value Huawei/U2000} {name TCPPROFILE value /type=Port/devtype=1960/name=portprofile1900 {name EMS value Huawei/U2000} {name TCPPROFILE value /type=ATM/devtype=0/name=AtmProfile}</p> <p>Value of the TCPPROFILE tag, type indicates the policy type. devtype indicates the type ID of the equipment that is used to distinguish equipment types and is set to 0 if equipment types are not distinguished. name indicates the policy name. Policy types and equipment types (in the brackets) are as follows:</p> <ul style="list-style-type: none"> <li>Port (PTN3900, PTN1900, PTN3900_8, PTN910, PTN912, PTN950, OSN1500, OSN3500, Metro1000V3, RTN910, and RTN950)</li> <li>VUNIIIngress (PTN3900, PTN1900, PTN3900_8, PTN910, PTN912, PTN950, OSN1500, OSN3500, Metro1000V3, RTN910, and RTN950)</li> <li>VUNIEgress</li> <li>PW</li> <li>ATM</li> <li>ATMCoSMapping</li> <li>DSDomain</li> </ul>

Name	Type	Description
		QinQ ServiceWred PortWred CAR SVlanDEIUsedFlag CoSQueueMapping Wfq Currently, it is only required to fill the equipment type for the Port and VUNIIngress policies. The Port, VUNIIngress, VUNIEgress, PW, ATM, ATMCosMapping, and DS fields are supported.
userLabel	string	User label.
nativeEMSName	string	Name of a traffic policy.
owner	string	Name of an object owner.
classifierList	HW_TrafficClassifierList_T	List of traffic classifications and action attributes.
transmissionParams	transmissionParameters::LayeredParameterList_T	Transmission parameter.
additionalInfo	globaldefs::NVSLList_T	Extended parameter.

**Parent topic:** [trafficConditioningProfile](#)

## 9.2.5.18.3 TrafficConditioningProfileAssign\_T

---

This topic describes the data structure for applying traffic policy profiles.

Name	Type	Description
tcpRef	globaldefs::NamingAttributes_T	Policy profile name.
resourceName	globaldefs::NamingAttributes_T	Applied object.
direction	Directionality_T	Application direction.
layerRate	LayerRate_T	Layer rate.

Name	Type	Description
additionalInfo	globaldefs::NVSLIST_T	Extended parameter.

**Parent topic:** [trafficConditioningProfile](#)

## 9.2.5.18.4 TrafficConditioningProfileDeassign\_T

---

This topic describes the data structure for unapplying traffic policy profiles.

Name	Type	Description
tcpRef	globaldefs::NamingAttributes_T	Policy profile name.
resourceName	globaldefs::NamingAttributes_T	Applied object.
direction	Directionality_T	Application direction.
layerRate	LayerRate_T	Layer rate.
additionalInfo	globaldefs::NVSLIST_T	Extended parameter.

**Parent topic:** [trafficConditioningProfile](#)

## 9.2.5.18.5 HW\_TCProfileCreateData\_T

---

This topic describes the data structure of traffic policyprofile creation.

Name	Type	Description
userLabel	string	Indicates the user label.
forceUniqueness	boolean	Specifies whether the user label is unique. The value is always true.

Name	Type	Description
type	string	Indicates the policy type.
owner	string	Indicates name of the object owner.
transmissionParams	transmissionParameters::LayeredParameterList_T	Indicates the transmission parameters.
classifierList	HW_TrafficClassifierList_T	Indicates the list of traffic classification and behavior.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information.

**Parent topic:** [trafficConditioningProfile](#)

## 9.2.5.19 HW\_vpManager

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This topic describes information models of virtual private network (VPN) services. Tunnels and services carried by these tunnels are necessary for successful VPN service transport. The model for MPLS static tunnels and PW switches is IPCrossConnection. The model for dynamic MPLS tunnels and IP tunnels is TrafficTrunk. The model for PWE3 (that is, ATM services, CES services, and EES services), VPLS and NativeEth services is MFDFr. PTN, Hybrid MSTP and RTN 900 series equipment is supported. NativeEthservices are applicable only to RTN equipment of V100R002 version.

- [MatrixFlowDomainFragment\\_T](#)  
This topic describes the data structure of matrix flow domain fragments, such as VPLS, PWE3 and NativeETH services.
- [MultipointServiceAttr\\_T](#)  
This topic describes the data structure of the MultipointServiceAttr\_T object.
- [StaticMacAddress\\_T](#)  
This topic describes the data structure of static MAC addresses.
- [SplitHorizonGroup\\_T](#)  
This topic describes the data structure of split horizon groups.

- [IPCrossConnection\\_T](#)

This topic describes the data structure of IP cross-connections, such as static tunnels and PW switches.

- [TrafficTrunk\\_T](#)

This topic describes the data structure of traffic trunks.

- [MFDFrModifyData\\_T](#)

This topic describes the data structure for modifying matrix flow domain fragments (MFDFrs)

- [TrafficTrunkCreateData\\_T](#)

This topic describes the data structure for creating dynamic or IP tunnels.

- [TrafficTrunkModifyData\\_T](#)

This topic describes the data structure for modifying dynamic or IP tunnels.

- [FlowDomainFragment\\_T](#)

This topic describes the data structure of flow domain fragments (FDFRs), including E2E PWE3 services and VPLS services.

- [FDFrCreateData\\_T](#)

This topic describes the data structure for creating VPN.

- [ServerTrailType\\_T](#)

This topic describes the data structure of server trails.

- [ServerConnectionType\\_T](#)

This topic describes the data structure of server connections.

**Parent topic:** [Information Model](#)

## **9.2.5.19.1 MatrixFlowDomainFragment\_T**

---

This topic describes the data structure of matrix flow domain fragments, such as VPLS, PWE3 and NativeETH services.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name.
userLabel	string	Indicates the alias of the object. By default, the value is blank.
nativeEMSName	string	Indicates the local name.

Name	Type	Description
owner	string	Indicates the owner of the object.
direction	globaldefs::ConnectionDirection_T	Indicates the direction. The value can be CD_UNI (unidirectional), or CD BI (bidirectional).
transmissionParams	transmissionParameters::LayeredParameters_T	Indicates the transmission parameters. For details, see Transmission Parameters of the HW_vpnManager in CORBA NBI Developer Guide (Resource) . .
multipointServiceAttr	MultipointServiceAttr_T	Indicates the multipoint service attributes. In the case of a PWE3 service, this parameter is blank. For details, refer to the descriptions of MultipointServiceAttr_T.
aEnd	subnetworkConnection::TPDataList_T	Indicates the list of MFDFr source objects. For details, see Transmission Parameters of the HW_vpnManager in CORBA NBI Developer Guide (Resource) . .
zEnd	subnetworkConnection::TPDataList_T	Indicates the list of MFDFr sink objects. For details, see Transmission Parameters of the HW_vpnManager in CORBA NBI Developer Guide (Resource) . .
fdfrState	subnetworkConnection::SNCState_T	Indicates the activation status. The value can be SNCS_ACTIVE (active), SNCS_PENDING (inactive), SNCS_PARTIAL (partially active), or SNCS_NONEXISTENT (deleted).
administrativeState	performance::AdministrativeState_T	Indicates the administrative status. The value can be AS_Unlocked (locked), or AS_Locked (unlocked).
flexible	boolean	Indicates whether a service access point can be added or deleted. The value can be true, which indicates that a service access point can be added or deleted, or false, which

Name	Type	Description
		indicates that a service access point cannot be added or deleted
mfdfrType	flowDomainFragment::FDFrType_T	Indicates the MFDFr type. The value can be FDFRT_MULTIPOINT, FDFRT_POINT_TO_MULTIPOINT, FDFRT_POINT_TO_POINT, or FDFRT_EXPLICIT.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. Currently, it is blank.

**Parent topic:** [HW vpnManager](#)

## 9.2.5.19.2 MultipointServiceAttr\_T

---

This topic describes the data structure of the MultipointServiceAttr\_T object.

Name	Type	Description
paraList	globaldefs::NVSLList_T	Indicates the attribute list. For details, see the next table that lists specific attributes of a VPLS service.
staticMacList	StaticMacAddressList_T	Indicates the static MAC address list. For details, see StaticMacAddress_T.
shgList	SplitHorizonGroupAttrList_T	Indicates the split horizon group list. For details, see SplitHorizonGroup_T.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. For details, see additionalInfo::MultipointServiceAttr_T.
paraList(VPLS)	N/A	
AccessMode	string	Indicates the access interface type. The value can be C-Aware, S-Aware, or T-Aware.

Name	Type	Description
MacLearning	string	Indicates whether to enable the function of self-learning MAC addresses. The value can be Enabled, or Disabled.
MacLearnStyle	string	Indicates the MAC address type. The value can be IVL, SVL, or NA.
AgingAbility	string	Indicates whether to enable the aging ability. The value can be Enabled, or Disabled.
AgingTime	string	Indicates the aging time.
MaxMacNumber	string	Indicates the capacity of the MAC address list.
MaxMacMonitor	string	Indicates the upper threshold for MAC address monitoring.
MinMacMonitor	string	Indicates the lower threshold for MAC address monitoring.
UnknownUnicastServiceFrameDelivery	string	Indicates the method of processing unknown unicast frames. The value can be Discard, or Broadcast.
UnknownMulticastServiceFrameDelivery	string	Indicates the method of processing unknown multicast frames. The value can be Discard, or Broadcast.
ServiceTagRole	string	Indicates the service demarcation tag, value: User, Service or NA.

**Parent topic:** [HW\\_vpnManager](#)

## 9.2.5.19.3 StaticMacAddress\_T

---

This topic describes the data structure of static MAC addresses.

Name	Type	Description
staticMacType	string	Indicates the type of the static MAC address. The value can be Static or BlackHole.
macAddress	string	Indicates the MAC address.
peVID	unsigned long	Indicates the outer VLAN ID.
ceVID	unsigned long	Indicates the inner VLAN ID. This parameter is invalid(4294967295) if it is larger than 4096.
tpName	globaldefs::NamingAttributes_T	Indicates a bound physical or logical port, PW, or QinQ link. The value of this parameter is left blank if the device domain is unknown.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. For details, see additionalInfo::StaticMacAddress_T.

**Parent topic:** [HW\\_vpnManager](#)

## 9.2.5.19.4 SplitHorizonGroup\_T

---

This topic describes the data structure of split horizon groups.

Name	Type	Description
shgID	unsigned long	Indicates the ID of a split horizon group.
shgMemberNameList	globaldefs::NamingAttributesList_T	Indicates the list of the members of a split horizon group. The member can be a port, PW, or QinQ link.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. For details, see additionalInfo::SplitHorizonGroup_T.

**Parent topic:** [HW\\_vpnManager](#)

## 9.2.5.19.5 IPCrossConnection\_T

---

This topic describes the data structure of IP cross-connections, such as static tunnels and PW switches.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name.
nativeEMSName	string	Indicates the local name.
userLabel	string	Indicates the alias of the object. By default, the value is blank.
activeState	subnetworkConnection::SNCState_T	Indicates the activation status. The value can be SNCS_NONEXISTENT, SNCS_PENDING, SNCS_ACTIVE, or SNCS_PARTIAL.
administrativeState	performance::AdministrativeState_T	Indicates the administrative status. The value can be AS_Locked, or AS_Unlocked.
direction	globaldefs::ConnectionDirection_T	Indicates the direction. The value can be CD_UNI (unidirectional), or CD_BI (bidirectional).
ccType	subnetworkConnection::SNCType_T	Indicates the cross-connection type. The value can be ST_SIMPLE (one source and one sink), ST_ADD_DROP_A (two sources and one sink), ST_ADD_DROP_Z (one source and two sinks). Currently, only ST_SIMPLE is supported.
transmissionParams	transmissionParameters::LayeredParameters_T	Indicates the transmission parameters. For details, see Transmission Parameters of the HW_vpManager in

Name	Type	Description
		CORBA NBI Developer Guide (Resource) . .
aEndList	subnetworkConnection::TPDataList_T	Indicates the source list. For details, see Transmission Parameters of the Source and Sink Ends of Static Tunnels and PW Switchs in CORBA NBI Developer Guide (Resource) . .
zEndList	subnetworkConnection::TPDataList_T	Indicates the sink list. For details, see Transmission Parameters of the Source and Sink Ends of Static Tunnels and PW Switchs in CORBA NBI Developer Guide (Resource) . .
additionalInfo	globaldefs::NVSList_T	Indicates the additional information This parameter is blank.

**Parent topic:** [HW vpnManager](#)

## 9.2.5.19.6 TrafficTrunk\_T

---

This topic describes the data structure of traffic trunks.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name.
userLabel	string	Indicates the alias of the object. The default value is blank.
nativeEMSName	string	Indicates the local name.
owner	string	Indicates the owner of the object.

Name	Type	Description
activeState	subnetworkConnection::SNCState_T	Indicates the activation status. The value can be SNCS_NONEEXISTENT, SNCS_PENDING, SNCS_ACTIVE, or SNCS_PARTIAL.
direction	globaldefs::ConnectionDirection_T	Indicates the direction. The value can be CD_UNI, or CD_BI.
transmissionParams	transmissionParameters::LayeredParameters_T	Indicates the transmission parameters. For details, see Transmission Parameters of the Traffic Trunk in CORBA NBI Developer Guide (Resource) . .
aEnd	subnetworkConnection::TPDataList_T	Indicates the source list. For details, see Transmission Parameters of the MFDFr (PWE3) NNI (PW) in CORBA NBI Developer Guide (Resource) . .
zEnd	subnetworkConnection::TPDataList_T	Indicates the sink list. For details, see Transmission Parameters of the MFDFr (PWE3) NNI (PW) in CORBA NBI Developer Guide (Resource) . .
administrativeState	performance::AdministrativeState_T	Indicates the administrative status. The value can be AS_Locked, or AS_Unlocked.
rerouteAllowed	subnetworkConnection::Reroute_T	Indicates whether to enable the rerouting. The value can be RR_NA, RR_YES, or RR_NO.
networkRouted	subnetworkConnection::NetworkRouted_T	Indicates the network route. The value can be NR_NA, NR_YES, or NR_NO.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information, including CreatedTime. The CreatedTime

Name	Type	Description
		<p>value is similar to 20110708030451.0Z.</p> <p>For details, see additionalInfo::TrafficTrunk_T.</p>

**Parent topic:** [HW\\_vpnManager](#)

## 9.2.5.19.7 MFDFrModifyData\_T

---

This topic describes the data structure for modifying matrix flow domain fragments (MFDFrs)

Name	Type	Description
modifyType	string	Indicates the modification type. The value can be add_endpoint, remove_endpoint, active_endpoint, deactivate_endpoint, or modify_attr.
userLabel	string	Indicates the modified user label.
forceUniqueness	boolean	Indicates whether a user label is required to be unique. The value can only be false.
owner	string	Indicates the modified owner.
multipointServiceAttr	MultipointServiceAttr_T	Indicates the modified multipoint service attributes.
transmissionParams	transmissionParameters::LayeredParameters_T	Indicates the modified transmission parameter attributes. For details, see Transmission Parameters of the HW_vpnManager in CORBA NBI

Name	Type	Description
		Developer Guide (Resource) ..
aEnd	subnetworkConnection::TPDataList_T	Indicates the list of source termination points (TPs) to be modified.
zEnd	subnetworkConnection::TPDataList_T	Indicates the list of sink TPs to be modified.
additionalInfo	globaldefs::NVSList_T	Indicates the additional information about modifications. It is unused.

**Parent topic:** [HW vpnManager](#)

## 9.2.5.19.8 TrafficTrunkCreateData\_T

---

This topic describes the data structure for creating dynamic or IP tunnels.

Name	Type	Description
userLabel	string	Indicates the user label.
forceUniqueness	boolean	Indicates whether a user label is required to be unique. The value can only be false.
owner	string	Indicates the owner.
direction	"globaldefs ::ConnectionDirection_T"	Indicates the connection direction. The value can be CD_UNI, CD BI, or unused. Currently, only CD_UNI is supported.
rerouteAllowed	Reroute_T	Indicates the rerouting. The value can be RR_NA, RR_YES, or RR_NO.

Name	Type	Description
networkRerouted	NetworkRouted_T	Indicates the network route. The value can be NR_NA, NR_YES, or NR_NO.
transmissionParams	transmissionParameters::LayeredParameters_T	Indicates the transmission parameter attributes. For details, see Transmission Parameters of the HW_vpManager in CORBA NBI Developer Guide (Resource) . .
fullRoute	boolean	Indicates the full routing.
neTpInclusions	subnetworkConnection::ResourceList_T	Indicates the explicit port.
neTpSncExclusions	subnetworkConnection::ResourceList_T	Indicates the excluded port.
aEnd	TPDataList_T	Indicates the list of source termination points (TPs). For rsvp-te tunnels, enter the name of the source NE. For IP tunnels, enter the source port (physical termination point or floating termination point).
zEnd	TPDataList_T	Indicates the list of sink TPs. For rsvp-te tunnels and IP tunnels, enter the destination address. The format is as follows: name=EMS; value=Huawei/U2000 name=RemoteEndpoint; value=IPAddress.
ipCCIInclusions	IPCrossConnectionList_T	Indicates the list of IP cross-connections involved. It is reserved.
additionalCreateInfo	globaldefs::NVSLIST_T	Indicates the additional information about creation. It is reserved.

**Parent topic:** [HW\\_vpnManager](#)

## 9.2.5.19.9 TrafficTrunkModifyData\_T

---

This topic describes the data structure for modifying dynamic or IP tunnels.

Name	Type	Description
userLabel	string	Indicates a user label.
forceUniqueness	boolean	Indicates whether a user label is required to be unique. The value can only be false.
owner	string	Indicates the object owner. It is reserved.
direction	"globaldefs ::ConnectionDirection_T"	Indicates the connection direction. The value can be CD_UNI, CD BI, or unused. Currently, only CD_UNI is supported.
rerouteAllowed	Reroute_T	Indicates the rerouting. The value can be RR NA, RR YES, RR NO, or unused.
networkRerouted	NetworkRouted_T	Indicates the network route. The value can be NR NA, NR YES, NR NO, or unused.
transmissionParams	transmissionParameters::LayeredParameters_T	Indicates the transmission parameter attributes. For details, see Transmission Parameters of the HW_vpnManager in CORBA NBI Developer Guide (Resource) .
addedOrNewRoute	IPCrossConnectionList_T	Indicates the new IPCrossConnection list.

Name	Type	Description
removedRoute	IPCrossConnectionList_T	Indicates the deleted IPCrossConnection list.
neTpInclusions	subnetworkConnection::ResourceList_T	Indicates the explicit port.
fullRoute	boolean	Indicates the full routing.
neTpSncExclusions	subnetworkConnection::ResourceList_T	Indicates the excluded port.
aEnd	TPDataList_TTPDataList_T	Indicates the source TP list. It is reserved.
zEnd	TPDataList_T	Indicates the sink TP list. It is reserved.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. It is reserved.

**Parent topic:** [HW\\_vpnManager](#)

## 9.2.5.19.10 FlowDomainFragment\_T

---

This topic describes the data structure of flow domain fragments (FDFRs), including E2E PWE3 services and VPLS services.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of a flow domain fragment (FDFr). It identifies an FDFr uniquely.
userLabel	string	Indicates the user label.
nativeEMSName	string	Indicates the local name.
owner	string	Indicates the owner.
direction	globaldefs::ConnectionDirection_T	Indicates the direction. The options are as follows: CD_UNI: unidirectional

Name	Type	Description
		CD_BI: bidirectional For PWE3 services, the value is always CD_BI.
transmissionParams	transmissionParameters::LayeredParameters_T	Indicates the transmission parameters. For details, see HW_vpManager in CORBA NBI Developer Guide (Resource) .
multipointServiceAttr	MultipointServiceAttr_T	The parameter value is always blank.
aEnd	subnetworkConnection::TPDataList_T	Indicates the list of objects at the source of the FDFr. For a PWE3 service, it is a list of objects at the source of the service. For VPLS and L3VPN services, it is a list of UNI ports. Indicates the transmission parameters. For details, see HW_vpManager in CORBA NBI Developer Guide (Resource) .
zEnd	subnetworkConnection::TPDataList_T	Indicates the list of objects at the sink of the FDFr. For a PWE3 service, it is a list of objects at the sink of the service. For VPLS and L3VPN services, the value is left blank. Indicates the transmission parameters. For details, see HW_vpManager in CORBA NBI Developer Guide (Resource) .
networkAccessDomain	String	The value of this parameter is left blank.
flexible	Boolean	Specifies whether FDFr service access points can be added or deleted. The options are as follows: true: FDFr service access points can be added or deleted. false: FDFr service access points cannot be added or deleted. For L3VPN and VPLS services, the value is always true. For PWE3 services, the value is always false.

Name	Type	Description
administrativeState	performance::AdministrativeState_T	Indicates the FDFr administrative status. The options are as follows: AS_Unlocked: unlocked AS_Locked: locked
fdfrState	subnetworkConnection::SNCState_T	Indicates the FDFr status. The options are as follows: SNCS_ACTIVE: active SNCS_PENDING: inactive SNCS_PARTIAL: partially active
fdfrType	FDFrType_T	Indicates the MFDFr type. The options are as follows: FDFRT_POINT_TO_POINT: Indicates the point-to-point MFDFr. For PWE3 services, the value is always FDFRT_POINT_TO_POINT. FDFRT_MULTIPOINT: Indicates the multipoint-to-multipoint MFDFr. For VPLS and L3VPN services, the value is always FDFRT_MULTIPOINT. FDFRT_POINT_TO_MULTIPOINT: Indicates the point-to-multipoint MFDFr (or E-Tree services). Currently, this value is unavailable. FDFRT_EXPLICIT: Indicates the explicit MFDFr (or PWE3 services with multiple AES links).
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information.

**Parent topic:** [HW\\_vpnManager](#)

## 9.2.5.19.11 FDFrCreateData\_T

---

This topic describes the data structure for creating VPN.

Name	Type	Description
userLabel	string	Indicates the user label.
forceUniqueness	boolean	Specifies whether this field is unique. It has a fixed value of false.
nativeEMSName	string	Indicates a local EMS name.
owner	string	Indicates the name of the object owner.
direction	globaldefs::ConnectionDirection_T	Indicates the direction. The options are CD_UNI and CD_BI.
transmissionParams	transmissionParameters::LayeredParameters_T	Indicates the transmission parameters. For details, see the HW_vpManager transmission parameter description in the iManager U2000 Northbound CORBA Interface Developer Guide.
multipointServiceAttr	MultipointServiceAttr_T	Indicates multipoint service attributes. This field is left blank.
vendorExtensions	ServerTrailListType_T	Indicates the information about the server trail to which the service bound. For the element model, see ServerTrailType_T.
fdfrType	FDFrType_T	Indicates the FDFr type. The options are FDFRT_POINT_TO_POINT, FDFRT_POINT_TO_MULTIPOINT, and FDFRT_MULTIPOINT.
additionalCreateInfo	globaldefs::NVSLList_T	Additional information. For details, see additionalInfo::FDFrCreateData_T.

**Parent topic:** [HW\\_vpManager](#)

## 9.2.5.19.12 ServerTrailType\_T

---

This topic describes the data structure of server trails.

Name	Type	Description
serverConnectionList	ServerConnectionListType_T	Indicates the information about the server trail to which the service bound. For the element model, see ServerConnectionType_T.
transmissionParams	transmissionParameters::LayeredParameters_T	Indicates the transmission parameters of a service. For details, see Transmission Parameters of the MDFr (PWE3) NNI (PW) in CORBA NBI Developer Guide (Resource) . .

**Parent topic:** [HW\\_vpnManager](#)

## 9.2.5.19.13 ServerConnectionType\_T

---

This topic describes the data structure of server connections.

Name	Type	Description
nameList	globaldefs::NamingAttributesList_T	Indicates the server connection name list.
channel	string	Indicates the channel. Its format is /pwid=xx/label=xx/revlabel=xx. Labels only can be assigned automatically and this field is always blank.
usedAs	UsedAsType_T	Indicates the server connection role. The options are UA_WORKING, UA_PROTECTION, and DNI. Only UA_WORKING is supported.

**Parent topic:** [HW\\_vpnManager](#)

## 9.2.5.20 trailNtwProtection

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This topic describes the information models of network trail protection.

- [TrailNtwProtCreateData\\_T](#)

This topic describes the data structure for creating TNPs.

- [TrailNtwProtModifyData\\_T](#)

This topic describes the data structure for modifying TNPs.

- [TrailNtwProtection\\_T](#)

This topic describes the data structure of network trail protection, including tunnel APS 1+1 and 1:1 protection.

**Parent topic:** [Information Model](#)

### 9.2.5.20.1 TrailNtwProtCreateData\_T

---

This topic describes the data structure for creating TNPs.

Name	Type	Description
rate	transmissionParameters::LayerRate_T	Indicates the protection group rate (8011 layer rate of the tunnel). This field has a fixed value of LR_MPLS_Path.
trailNtwProtectionType	string	Indicates the protection type. The values are Closed and Open. Closed: The protection group, source, and sink are in the management domain. Open: None of the protection group, source, and sink are in the management domain. This field supports only Closed.

Name	Type	Description
protectionGroupAName	globaldefs::NamingAttributes_T	Indicates the name of the source protection group. This field is not configurable.
protectionGroupZName	globaldefs::NamingAttributes_T	Indicates the name of the sink protection group. This field is not configurable.
workerTrailList	globaldefs::NamingAttributesMultipleList_T	Indicates the working trail. Unidirectional and bidirectional tunnel trails are supported. For a unidirectional tunnel trail, enter the name of the forward working tunnel trail and then the name of the reverse working tunnel trail.
protectionTrail	globaldefs::NamingAttributesList_T	Indicates the protection trail. Unidirectional and bidirectional tunnel trails are supported. For a unidirectional tunnel trail, enter the name of the forward working tunnel trail and then the name of the reverse working tunnel trail.
modifiableAttributes	TrailNtwProtModifyData_T	Indicates the attributes that can be modified. For details, see TrailNtwProtModifyData_T.

**Parent topic:** [trailNtwProtection](#)

## **9.2.5.20.2 TrailNtwProtModifyData\_T**

This topic describes the data structure for modifying TNPs.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name.
nativeEMSName	string	Indicates a local EMS name.
userLabel	string	Indicates the object alias. This field is left blank by default.
forceUniqueness	boolean	Specifies whether the user label is unique. The value can be only false.
owner	string	Indicates the object owner. This field is left blank by default.
protectionGroupType	protection::ProtectionGroupType_T	Indicates the protection type. The values are PGT_MSP_1_PLUS_1 and PGT_MSP_1_FOR_N.
reversionMode	protection::ReversionMode_T	Indicates the reversion mode. The values are RM_UNKNOWN, RM_NON_REVERTIVE, and RM_REVERTIVE.
pgATPList	globaldefs::NamingAttributesList_T	Indicates the source TP. This field cannot be modified. This field is not specified in Closed mode.
pgZTPList	globaldefs::NamingAttributesList_T	Indicates the sink TP. This field cannot be modified. This field is not specified in Closed mode.
tnpParameters	globaldefs::NVSList_T	Indicates the transmission parameters. For details, see the trailNtwProtection transmission parameter description in the CORBA NBI Developer Guide(Resource).
apsFunction	string	Indicates the APS protocol type. The values are G.783, Legacy, and T-MPLS. This field is always set to T-MPLS.

Name	Type	Description
networkAccessDomain	string	Indicates the network access domain. This field is always left blank.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. This field is always blank.

**Parent topic:** [trailNtwProtection](#)

## 9.2.5.20.3 TrailNtwProtection\_T

---

This topic describes the data structure of network trail protection, including tunnel APS 1+1 and 1:1 protection.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name.
nativeEMSName	string	Indicates the local name.
userLabel	string	Indicates the alias. This parameter is left blank by default.
owner	string	Indicates the owner. This parameter is left blank by default.
protectionGroupType	protection::ProtectionGroupType_T	Indicates the protection type. The options are as follows: PGT_MSP_1_PLUS_1 PGT_MSP_1_FOR_N PGT_2_FIBER_BLSR PGT_4_FIBER_BLSR
protectionSchemeState	protection::ProtectionSchemeState_T	Indicates the protection status. The options are as follows: PSS_UNKNOWN PSS_AUTOMATIC PSS_FORCED_OR_LOCKED_OUT

Name	Type	Description
reversionMode	protection::ReversionMode_T	Indicates the reversion mode. The options are as follows: RM_UNKNOWN RM_NON_REVERTIVE RM_REVERTIVE
rate	transmissionParameters::LayerRate_T	Indicates the rate of a protection group.
trailNtwProtectionType	string	Indicates that the values of protection modes include Closed and Open.
protectionGroupAName	globaldefs::NamingAttributes_T	Indicates the name of the protection group at the source end.
protectionGroupZName	globaldefs::NamingAttributes_T	Indicates the name of the protection group at the sink end.
pgATPList	globaldefs::NamingAttributesList_T	Indicates the list of source ports. If the value is blank, all source ports are beyond the management domain of the U2000.
pgZTPLList	globaldefs::NamingAttributesList_T	Indicates the list of sink ports. If the value is blank, all sink ports are beyond the management domain of the U2000.
workerTrailList	globaldefs::NamingAttributesMultipleList_T	Indicates the working trail list (a name list of working SNCs).
protectionTrail	globaldefs::NamingAttributesList_T	Indicates the protection trail list (a name list of protection SNCs).
tnpParameters	globaldefs::NVSLList_T	For details, see Transmission Parameters of trailNtwProtection in CORBA NBI Developer Guide (Resource) . Indicates the protection trail list (a name list of protection SNCs).
apsFunction	string	Indicates the APS protocol type. The options are as follows: G.783 Legacy T-MPLS

Name	Type	Description
networkAccessDomain	string	Indicates the network access domain.
additionalInfo	globaldefs::NVSList_T	Indicates the additional information. It is blank.

**Parent topic:** [trailNtwProtection](#)

## 9.2.6 Supported Notification

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This section lists the notifications that are supported by CORBA NBI.

- **Common\_I Notifications**

This topic provides a notification that is supported by the Common\_I module.

- **EquipmentInventoryMgr\_I Notifications**

This topic provides notifications that are supported by the EquipmentInventoryMgr\_I module.

- **ManagedElementMgr\_I Notifications**

This topic provides notifications that are supported by the ManagedElementMgr\_I module.

- **MultiLayerSubnetworkMgr\_I Notifications**

This topic provides notifications that are supported by the MultiLayerSubnetworkMgr\_I module.

- **ProtectionMgr\_I Notifications**

This topic provides notifications that are supported by the ProtectionMgr\_I module.

- **HW\_MSTPInventoryMgr\_I Notifications**

This topic provides notifications that are supported by the HW\_MSTPInventoryMgr\_I module.

- **HW\_MSTPProtectionMgr\_I Notifications**

This topic provides notifications that are supported by the HW\_MSTPProtectionMgr\_I module.

- **HW\_MSTPServiceMgr\_I Notifications**

This topic provides notifications that are supported by the HW\_MSTPServiceMgr\_I module.

- **TrafficDescriptorMgr\_I Notifications**

This topic provides notifications that are supported by the TrafficDescriptorMgr\_I module.

- **HW\_controlPlaneMgr\_I Notifications**

This topic provides notifications that are supported by the HW\_controlPlaneMgr\_I module.

- [EncapsulationLayerLinkMgr\\_I Notifications](#)

This topic provides notifications that are supported by the EncapsulationLayerLinkMgr\_I module.

- [FlowDomainMgr\\_I Notifications](#)

This topic provides notifications that are supported by the FlowDomainMgr\_I module.

- [MaintenanceMgr\\_I Notification](#)

This topic provides notifications that are supported by the MaintenanceMgr\_I module.

- [TCProfileMgr\\_I Notification](#)

This topic provides notifications that are supported by the TCProfileMgr\_I module.

- [HW\\_VPNMgr\\_I Notification](#)

This topic provides notifications that are supported by the HW\_VPNMgr\_I module.

**Parent topic:** [CORBA NBI Developer Guide \(Configuration\)](#)

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## 9.2.6.1 Common\_I Notification

This topic provides a notification that is supported by the Common\_I module.

Notification Name	Description	Supported Objects	Remarks
NT_ATTRIBUTE_VALUE_CHANGE	Notification on the change of attributes	The nativeEMSName, userLabel or owner attributes of EMS, PTP, Equipment, SNC, TopologicalLink, PGP, ME, and MultiLayerSubnetwork	N/A

**Parent topic:** [Supported Notification](#)

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## 9.2.6.2 EquipmentInventoryMgr\_I Notifications

This topic provides notifications that are supported by the EquipmentInventoryMgr\_I module.

Notification Name	Description	Supported Objects	Remarks
NT_OBJECT_CREATION	Notification on creating an object.	Equipment, EquipmentHolder (shelf)	N/A
NT_OBJECT_DELETION	Notification on deleting an object.	Equipment, EquipmentHolder (shelf)	N/A
NT_ATTRIBUTE_VALUE_CHANGE	Notification on the change of object attributes	EquipmentHolder(shelf)	N/A

**Parent topic:** [Supported Notification](#)

## 9.2.6.3 ManagedElementMgr\_I Notifications

---

This topic provides notifications that are supported by the ManagedElementMgr\_I module.

Notification Name	Description	Supported Objects	Remarks
NT_OBJECT_CREATION	Notification on creating an object	Managed Element, PTP, FTP, CROSSCONNECTION	N/A
NT_OBJECT_DELETION	Notification on deleting an object	Managed Element, PTP, FTP, CROSSCONNECTION	N/A
NT_ATTRIBUTE_VALUE_CHANGE	Notification on the change of object attributes	Managed Element, PTP, FTP	The notification on partial attribute change for managed elements and PTPs (attribute change of edge points) is supported.
NT_STATE_CHANGE	Notification on the change of the object state	Managed Element, CROSSCONNECTION	Notification on the state change (including

Notification Name	Description	Supported Objects	Remarks
			communication state and data synchronization state) of managed elements is supported. Notification on the (activation and deactivation) state change of cross-connections is not supported by default.

#### NOTE:

By default, notification on the (activation and deactivation) state change of cross-connections is not supported. You can set **bReportCrossConn** to **1** to enable this function. Parameter **bReportCrossConn** is in the configuration file **bundle.cfg**.

By default, the path of **bundle.cfg** is as follows:

- On the Windows OS: **%IMAP\_ROOT%\etc\oss\_cfg\nbi\corba\conf\ii\_corbaagent\_bundle**
- On the Solaris or Linux OS: **\$IMAP\_ROOT/etc/oss\_cfg/nbi/corba/conf/ii\_corbaagent\_bundle**

**Parent topic:** [Supported Notification](#)

## 9.2.6.4 MultiLayerSubnetworkMgr\_I Notifications

This topic provides notifications that are supported by the MultiLayerSubnetworkMgr\_I module.

Notification Name	Description	Supported Objects	Remarks
NT_OBJECT_CREATION	Notification on creating an object	TopologicalLink, SNC	N/A
NT_OBJECT_DELETION	Notification on deleting an object	TopologicalLink, SNC	N/A

Notification Name	Description	Supported Objects	Remarks
NT_ATTRIBUTE_VALUE_CHANGE	Notification on the change of object attributes	TopologicalLink, SNC, MultilayerSubnetwork	N/A
NT_STATE_CHANGE	Notification on the change of the object state	SNC	N/A
NT_ROUTE_CHANGE	Notification on the route change of the object	SNC	N/A

**Parent topic:** [Supported Notification](#)

## 9.2.6.5 ProtectionMgr\_I Notifications

---

This topic provides notifications that are supported by the ProtectionMgr\_I module.

Notification Name	Description	Supported Objects	Remarks
NT_OBJECT_CREATION	Notification on creating an object	Protection group	N/A
NT_OBJECT_DELETION	Notification on deleting an object	Protection group	N/A
NT_ATTRIBUTE_VALUE_CHANGE	Notification on the change of object attributes	Protection group	N/A
NT_STATE_CHANGE	Notification on the change of the object state	Protection group	N/A
NT_PROTECTION_SWITCH	Notification on the protection switching	Protection group	N/A
NT_WDMPROTECTION_SWITCH	Notification on the protection switching	WDM Protection Group	N/A

Notification Name	Description	Supported Objects	Remarks
NT_EPROTECTION_SWITCH	Notification on the protection switching	EProtectionGroup	N/A
NT_IPPROTECTION_SWITCH	Notification on the protection switching	Tunnel APS Protection Group	N/A

**Parent topic:** [Supported Notification](#)

## 9.2.6.6 HW\_MSTPInventoryMgr\_I Notifications

---

This topic provides notifications that are supported by the HW\_MSTPInventoryMgr\_I module.

Notification Name	Description	Supported Objects	Remarks
NT_OBJECT_CREATION	Notification on creating an object	VB, VLAN, MSTPEndPoint, QoS, FLOW, LAG	N/A
NT_OBJECT_DELETION	Notification on deleting an object	VB, VLAN, MSTPEndPoint, QoS, FLOW, LAG	N/A
NT_ATTRIBUTE_VALUE_CHANGE	Notification on the change of object attributes	VB, VLAN, MSTPEndPoint, QoS, FLOW, LAG, STP, STPort, STBridge	Notifications on the changes of the VCTRUNK path binding are supported.
NT_STATE_CHANGE	Notification on the change of the object state	VB LCAS	Notifications on the changes of the LCAS state are supported.

**Parent topic:** [Supported Notification](#)

## 9.2.6.7 HW\_MSTPProtectionMgr\_I Notifications

---

This topic provides notifications that are supported by the HW\_MSTPProtectionMgr\_I module.

Notification Name	Description	Supported Objects	Remarks
NT_OBJECT_CREATION	Notification on creating an object	ATM protection group, RPR node	N/A
NT_OBJECT_DELETION	Notification on deleting an object	ATM protection group, RPR node	N/A
NT_ATTRIBUTE_VALUE_CHANGE	Notification on the change of object attributes	ATM protection group, RPR node, RPR link attribute	N/A
NT_STATE_CHANGE	Notification on the change of the object state	ATM protection group	N/A
NT_PROTECTION_SWITCH	Notification on the protection switching	ATM protection group, RPR node	The notification on the protection switching for the ATM protection group or RPR node is supported.

**Parent topic:** [Supported Notification](#)

## 9.2.6.8 HW\_MSTPServicesMgr\_I Notifications

---

This topic provides notifications that are supported by the HW\_MSTPServicesMgr\_I module.

Notification Name	Description	Supported Objects	Remarks
NT_OBJECT_CREATION	Notification on creating an object	Ethernet service object and ATM service object.	N/A
NT_OBJECT_DELETION	Notification on deleting an object	Ethernet service object and ATM service object.	N/A
NT_STATE_CHANGE	Notification on the change of the object state	ATM service object.	N/A

**Parent topic:** [Supported Notification](#)

## 9.2.6.9 TrafficDescriptorMgr\_I Notifications

---

This topic provides notifications that are supported by the TrafficDescriptorMgr\_I module.

Notification Name	Description	Supported Objects	Remarks
NT_OBJECT_CREATION	Notification on creating an object	ATM traffic descriptor	N/A
NT_OBJECT_DELETION	Notification on deleting an object	ATM traffic descriptor	N/A
NT_STATE_CHANGE	Notification on the change of the object state	ATM traffic descriptor	Change of the activation or deactivation state of the ATM traffic descriptor

**Parent topic:** [Supported Notification](#)

## 9.2.6.10 HW\_controlPlaneMgr\_I Notifications

---

This topic provides notifications that are supported by the HW\_controlPlaneMgr\_I module.

Notification Name	Description	Supported Objects	Remarks
NT_OBJECT_CREATION	Notification on creating an object	SNPP	N/A
NT_OBJECT_DELETION	Notification on deleting an object	SNPP	N/A
NT_ATTRIBUTE_VALUE_CHANGE	Notification on the change of object attributes	SNPP	N/A
NT_ASON_RESOURCE_CHANGE	Notification on the change of object resources	SNPP	N/A

**Parent topic:** [Supported Notification](#)

## 9.2.6.11 EncapsulationLayerLinkMgr\_I Notifications

---

This topic provides notifications that are supported by the EncapsulationLayerLinkMgr\_I module.

Notification Name	Description	Supported Objects	Remarks
NT_OBJECT_CREATION	Notification on creating an object	ELL	N/A
NT_OBJECT_DELETION	Notification on deleting an object	ELL	N/A
NT_ATTRIBUTE_VALUE_CHANGE	Notification on the change of object attributes	ELL	N/A
NT_STATE_CHANGE	Notification on the change of the object state	ELL	ELL activation and deactivation

**Parent topic:** [Supported Notification](#)

## 9.2.6.12 FlowDomainMgr\_I Notifications

---

This topic provides notifications that are supported by the FlowDomainMgr\_I module.

Notification Name	Description	Supported Objects	Remarks
NT_OBJECT_CREATION	Notification on creating an object	FDFr	N/A
NT_OBJECT_DELETION	Notification on deleting an object	FDFr	N/A

Notification Name	Description	Supported Objects	Remarks
NT_ATTRIBUTE_VALUE_CHANGE	Notification on the change of object attributes	FDFr	N/A
NT_STATE_CHANGE	Notification on the change of the object state	FDFr	FDFr activation and deactivation

**Parent topic:** [Supported Notification](#)

## 9.2.6.13 MaintenanceMgr\_I Notification

---

This topic provides notifications that are supported by the MaintenanceMgr\_I module.

Notification name	Description	Supported object	Remarks
NT_OBJECT_CREATION	Notification on creating an object.	RMEP, MIP, MEP, MA and MD	N/A
NT_OBJECT_DELETION	Notification on deleting an object.	RMEP, MIP, MEP, MA and MD	N/A
NT_STATE_CHANGE	Notification on object status changes, that is, the Ethernet OAM CC activate or deactivate test notification.	Ethernet OAM	N/A
NT_OAM_ETHSVR_LB_STATISTIC_REPORT	Notification on an OAM LB test.	Ethernet services	N/A
NT_OAM_ETHSVR_LT_REPORT	Notification on an OAM LT test.	Ethernet services	N/A

Notification name	Description	Supported object	Remarks
NT_OAM_PW_LB_REPORT	Notification on a PW LB test.	PWs	N/A
NT_OAM_PW_LT_REPORT	Notification on a PW LT test.	PWs	N/A
NT_OAM_LSP_LB_REPORT	Notification on a tunnel LB tests.	Tunnels	N/A
NT_OAM_LSP_LT_REPORT	Notification on a tunnel LT test.	Tunnels	N/A

**Parent topic:** [Supported Notification](#)

## 9.2.6.14 TCProfileMgr\_I Notification

---

This topic provides notifications that are supported by the TCProfileMgr\_I module.

Notification Name	Description	Supported Object	Remarks
NT_OBJECT_CREATION	Object creation notification	Traffic policy	N/A
NT_OBJECT_DELETION	Object deletion notification	Traffic policy	N/A
NT_ATTRIBUTE_VALUE_CHANGE	Notification of object attribute changes	Traffic policy and object to which a traffic policy is applied	N/A

**Parent topic:** [Supported Notification](#)

## 9.2.6.15 HW\_VPNMgr\_I Notification

---

This topic provides notifications that are supported by the HW\_VPNMgr\_I module.

Notification Name	Description	Supported Object	Remarks
NT_OBJECT_CREATION	Object creation notification	<ul style="list-style-type: none"> <li>• PWE3 services</li> <li>• VPLS services</li> <li>• NativeEth services</li> <li>• IPCrossConnection</li> <li>• TrafficTrunk</li> <li>• FlowDomainFragment</li> </ul>	N/A
NT_OBJECT_DELETION	Object deletion notification	<ul style="list-style-type: none"> <li>• PWE3 services</li> <li>• VPLS services</li> <li>• NativeEth services</li> <li>• IPCrossConnection</li> <li>• TrafficTrunk</li> <li>• FlowDomainFragment</li> </ul>	N/A
NT_ATTRIBUTE_VALUE_CHANGE	Notification of object attribute changes	<ul style="list-style-type: none"> <li>• PWE3 services</li> <li>• VPLS services</li> <li>• NativeEth services</li> <li>• IPCrossConnection</li> <li>• TrafficTrunk</li> </ul>	N/A
NT_STATE_CHANGE	Notification of object status changes	<ul style="list-style-type: none"> <li>• PWE3 services</li> <li>• VPLS services</li> <li>• NativeEth services</li> <li>• IPCrossConnection</li> <li>• TrafficTrunk</li> <li>• FlowDomainFragment</li> </ul>	N/A

**Parent topic:** [Supported Notification](#)

## 9.2.7 Format of Notification Events

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In the additionalInfoUsage.pdf and AVC\_SC\_Notifications.pdf among the supporting documentation of the TMF 814 recommendation, the structure of each notification event of the CORBA interface is described. This chapter presents the detailed definitions of the structure of the notification events.

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 **NOTE:**

By default, the CORBA NBI does not send notifications for access device resource changes. If the OSS needs to know about these changes, set the configuration item BMS\_NOTIFY\_ENABLE\_NBI\_SWITCH for the access subsystem by referring to the "Guidelines for Configuring Configuration Items Using the GUI-based Tool".

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- [\*\*Format of the NT\\_OBJECT\\_CREATION Event\*\*](#)

This topic describes the format of notification events upon the creation of the following objects: inventories, subnet connections, and services.

- [\*\*Format of the NT\\_OBJECT\\_DELETION Event\*\*](#)

This topic describes the format of notification events upon the deletion of the following objects: inventories, subnet connections, and services.

- [\*\*Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event\*\*](#)

This topic describes the format of notification events that are reported when the attributes of the following objects are changed: inventory, subnet connections, and services.

- [\*\*Format of the NT\\_STATE\\_CHANGE Event\*\*](#)

This topic describes the formats of notification events reported when the status of the following objects are changed: inventories, subnet connections, and services.

- [\*\*Format of the NT\\_PROTECTION\\_SWITCH Event\*\*](#)

This topic describes the format of notifications on switching of the following objects: linear SDH protection groups, ring SDH protection groups, and OTN subnetwork connection protection (SNCP) groups.

- [\*\*Format of the NT\\_ATMPROTECTION\\_SWITCH Event\*\*](#)

This topic describes the formats of notification events reported upon the switching of an ATM protection group.

- [\*\*Format of the NT\\_WDMPROTECTION\\_SWITCH Event\*\*](#)

This topic describes the format of notifications on switching of WDM protection groups and OTN subnetwork connection protection (SNCP) groups (SW or ODUk type).

- [\*\*Format of the NT\\_RPRPROTECTION\\_SWITCH Event\*\*](#)

This topic describes the formats of notification events reported upon the switching of an RPR protection group.

- [\*\*Format of the NT\\_EPROTECTION\\_SWITCH Event\*\*](#)

This topic describes the formats of notification events reported upon equipment protection switching.

- [\*\*Format of the NT\\_ROUTE\\_CHANGE Event\*\*](#)

This topic describes the format of notification events reported when routes of the following objects are changed: subnet connections (SNCs).

- [\*\*Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event\*\*](#)

This topic describes the format of notification events reported when simple network paging protocol (SNPP) links are changed.

- [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event](#)

This topic describes the formats of notification events reported when the file transfer status is changed.

- [Format of the NT\\_PRBTEST\\_STATUS Event](#)

This topic describes the format of notification events reported when the pseudo random binary sequence (PRBS) test status is changed.

- [Format of the NT\\_HEARTBEAT Event](#)

This topic describes the format of heartbeat status change notification events. This notification indicates the network connectivity status.

- [Format of the NT\\_IPPROTECTION\\_SWITCH Event](#)

This topic describes the format of notification events reported upon the switching of an IP protection group of the following objects: linear tunnel protection groups.

**Parent topic:** [CORBA NBI Developer Guide \(Configuration\)](#)

## 9.2.7.1 Format of the NT\_OBJECT\_CREATION Event

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This topic describes the format of notification events upon the creation of the following objects: inventories, subnet connections, and services.

- [Header Format of the NT\\_OBJECT\\_CREATION Event](#)

This topic describes the header format of an object creation event (NT\_OBJECT\_CREATION). The type of the NT\_OBJECT\_CREATION event can be obtained based on its header format.

- [Format of the NT\\_OBJECT\\_CREATION Event \(filterable\\_data\)](#)

This topic describes the format of the filterable\_data of an object creation event (NT\_OBJECT\_CREATION). The object and time of the NT\_OBJECT\_CREATION event can be obtained from the format of its filterable\_data.

- [Format of the NT\\_OBJECT\\_CREATION Event \(remainder\\_of\\_body\)](#)

This topic describes the format of the remainder\_of\_body of an object creation event (NT\_OBJECT\_CREATION). Detailed object information of the NT\_OBJECT\_CREATION event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

## **9.2.7.1.1 Header Format of the NT\_OBJECT\_CREATION Event**

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This topic describes the header format of an object creation event (NT\_OBJECT\_CREATION). The type of the NT\_OBJECT\_CREATION event can be obtained based on its header format.

**Table 1 Header format of the NT\_OBJECT\_CREATION event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_OBJECT_CREATION.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_OBJECT\\_CREATION Event](#)

## **9.2.7.1.2 Format of the NT\_OBJECT\_CREATION Event (filterable\_data)**

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This topic describes the format of the filterable\_data of an object creation event (NT\_OBJECT\_CREATION). The object and time of the NT\_OBJECT\_CREATION event can be obtained from the format of its filterable\_data.

**Table 1 Format of the fiterrable\_data in the structure of the NT\_OBJECT\_CREATION event**

Name	Type	Description
notificationId	String	Unique ID of the notification event.
objectName	globaldefs::NamingAttributes_T	Name of the object created.
objectType	notifications::ObjectType_T	Type of the object created.
objectTypeQualifier	String	Type of the reported event. This field is applicable to only the object types added in TMF V3.0.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
edgePointRelated	boolean	If the event relates to a PTP that is an edge point or to a protection group containing a PTP that is an edge point, the value is true. Otherwise, the value is false.

**Parent topic:** [Format of the NT\\_OBJECT\\_CREATION Event](#)

### **9.2.7.1.3 Format of the NT\_OBJECT\_CREATION Event (remainder\_of\_body)**

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This topic describes the format of the remainder\_of\_body of an object creation event (NT\_OBJECT\_CREATION). Detailed object information of the NT\_OBJECT\_CREATION event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_OBJECT\_CREATION event is the information model for creating an object. For details, see "Information Model".

**Parent topic:** [Format of the NT\\_OBJECT\\_CREATION Event](#)

## 9.2.7.2 Format of the NT\_OBJECT\_DELETION Event

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This topic describes the format of notification events upon the deletion of the following objects: inventories, subnet connections, and services.

- [Header Format of the NT\\_OBJECT\\_DELETION Event](#)

This topic describes the header format of an object deletion event (NT\_OBJECT\_DELETION). The type of the NT\_OBJECT\_DELETION event can be obtained from its header format.

- [Format of the NT\\_OBJECT\\_DELETION Event \(filterable\\_data\)](#)

This topic describes the format of the filterable\_data of an object deletion event (NT\_OBJECT\_DELETION). The object and time of the NT\_OBJECT\_DELETION event can be obtained from the format of its filterable\_data.

- [Format of the NT\\_OBJECT\\_DELETION Event \(remainder\\_of\\_body\)](#)

This topic describes the format of the remainder\_of\_body of an object deletion event (NT\_OBJECT\_DELETION). Detailed object information of the NT\_OBJECT\_DELETION event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

### 9.2.7.2.1 Header Format of the NT\_OBJECT\_DELETION Event

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This topic describes the header format of an object deletion event (NT\_OBJECT\_DELETION). The type of the NT\_OBJECT\_DELETION event can be obtained from its header format.

**Table 1 Header format of the NT\_OBJECT\_DELETION event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_OBJECT_DELETION.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_OBJECT\\_DELETION Event](#)

## 9.2.7.2.2 Format of the NT\_OBJECT\_DELETION Event (filterable\_data)

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This topic describes the format of the filterable\_data of an object deletion event (NT\_OBJECT\_DELETION). The object and time of the NT\_OBJECT\_DELETION event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_OBJECT\_DELETION event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
objectName	globaldefs::NamingAttributes_T	Name of the deleted object.
objectType	notifications::ObjectType_T	Type of the deleted object. This field is used for only the object

**Table 1 Format of filterable\_data in structure of the NT\_OBJECT\_DELETION event**

Name	Type	Description
		types defined in TMF V2.1 and the earlier versions.
objectTypeQualifier	string	Type of the reported event. This field is applicable to only the object types added in TMF V3.0.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
edgePointRelated	boolean	If the event relates to a PTP that is an edge point or to a protection group containing a PTP that is an edge point, the value is true. Otherwise, the value is false.

**Parent topic:** [Format of the NT\\_OBJECT\\_DELETION Event](#)

### **9.2.7.2.3 Format of the NT\_OBJECT\_DELETION Event (remainder\_of\_body)**

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This topic describes the format of the remainder\_of\_body of an object deletion event (NT\_OBJECT\_DELETION). Detailed object information of the NT\_OBJECT\_DELETION event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of an NT\_OBJECT\_DELETION event is always blank. When you delete a cross-connection object, you need to fill in the details of the cross-connection.

**Parent topic:** [Format of the NT\\_OBJECT\\_DELETION Event](#)

## **9.2.7.3 Format of the NT\_ATTRIBUTE\_VALUE\_CHANGE Event**

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This topic describes the format of notification events that are reported when the attributes of the following objects are changed: inventory, subnet connections, and services.

- [Header Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event](#)

This topic describes the header format of an object attribute change notification event (NT\_ATTRIBUTE\_VALUE\_CHANGE). The type of the NT\_ATTRIBUTE\_VALUE\_CHANGE event can be obtained from its header format.

- [Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event \(filterable\\_data\)](#)

This topic describes the format of the filterable\_data of an object attribute change notification event (NT\_ATTRIBUTE\_VALUE\_CHANGE). The object and time of the NT\_ATTRIBUTE\_VALUE\_CHANGE event can be obtained from the format of its filterable\_data.

- [Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event \(remainder\\_of\\_body\)](#)

This topic describes the format of the remainder\_of\_body of an object attribute change notification event (NT\_ATTRIBUTE\_VALUE\_CHANGE). Detailed object information of the NT\_ATTRIBUTE\_VALUE\_CHANGE event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

### **9.2.7.3.1 Header Format of the NT\_ATTRIBUTE\_VALUE\_CHANGE Event**

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This topic describes the header format of an object attribute change notification event (NT\_ATTRIBUTE\_VALUE\_CHANGE). The type of the NT\_ATTRIBUTE\_VALUE\_CHANGE event can be obtained from its header format.

**Table 1 Header format of the NT\_ATTRIBUTE\_VALUE\_CHANGE event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_ATTRIBUTE_VALUE_CHANGE.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event](#)

### **9.2.7.3.2 Format of the NT\_ATTRIBUTE\_VALUE\_CHANGE Event (filterable\_data)**

This topic describes the format of the filterable\_data of an object attribute change notification event (NT\_ATTRIBUTE\_VALUE\_CHANGE). The object and time of the NT\_ATTRIBUTE\_VALUE\_CHANGE event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_ATTRIBUTE\_VALUE\_CHANGE event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.

**Table 1 Format of filterable\_data in structure of the NT\_ATTRIBUTE\_VALUE\_CHANGE event**

Name	Type	Description
objectName	globaldefs::NamingAttributes_T	Name of the object of which attributes change.
objectType	notifications::ObjectType_T	Type of the object of which attributes change. This parameter is used for only the object types defined in TMF V2.1 and the earlier versions.
objectTypeQualifier	string	Type of the reported event. This field is applicable to only the object types added in TMF V3.0.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
edgePointRelated	boolean	If the event relates to a PTP that is an edge point or to a protection group containing a PTP that is an edge point, the value is true. Otherwise, the value is false.
attributeList	notifications::NVList_T	List of changed attributes.

**Parent topic:** [Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event](#)

### **9.2.7.3.3 Format of the NT\_ATTRIBUTE\_VALUE\_CHANGE Event (remainder\_of\_body)**

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This topic describes the format of the remainder\_of\_body of an object attribute change notification event (NT\_ATTRIBUTE\_VALUE\_CHANGE). Detailed object information of the

NT\_ATTRIBUTE\_VALUE\_CHANGE event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_ATTRIBUTE\_VALUE\_CHANGE event is always null.

**Parent topic:** [Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event](#)

## 9.2.7.4 Format of the NT\_STATE\_CHANGE Event

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This topic describes the formats of notification events reported when the status of the following objects are changed: inventories, subnet connections, and services.

- [Header Format of the NT\\_STATE\\_CHANGE Event](#)

This topic describes the header format of an object status change notification event (NT\_STATE\_CHANGE). The type of the NT\_STATE\_CHANGE event can be obtained according to its header format.

- [Format of the NT\\_STATE\\_CHANGE Event \(filterable\\_data\)](#)

This topic describes the format of the filterable\_data of an object status change notification event (NT\_STATE\_CHANGE). The object and time of the NT\_STATE\_CHANGE event can be obtained from the format of its filterable\_data.

- [Format of the NT\\_STATE\\_CHANGE Event \(remainder\\_of\\_body\)](#)

This topic describes the format of the remainder\_of\_body of an object status change notification event (NT\_STATE\_CHANGE). Detailed object information of the NT\_STATE\_CHANGE event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

### 9.2.7.4.1 Header Format of the NT\_STATE\_CHANGE Event

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This topic describes the header format of an object status change notification event (NT\_STATE\_CHANGE). The type of the NT\_STATE\_CHANGE event can be obtained according to its header format.

**Table 1 Header format of the NT\_STATE\_CHANGE event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_STATE_CHANGE.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_STATE\\_CHANGE Event](#)

## **9.2.7.4.2 Format of the NT\_STATE\_CHANGE Event (filterable\_data)**

This topic describes the format of the filterable\_data of an object status change notification event (NT\_STATE\_CHANGE). The object and time of the NT\_STATE\_CHANGE event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_STATE\_CHANGE event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
objectName	globaldefs::NamingAttributes_T	Name of the object of which the state changes.

**Table 1 Format of filterable\_data in structure of the NT\_STATE\_CHANGE event**

Name	Type	Description
objectType	notifications::ObjectType_T	Type of the object of which the state changes. This parameter is used for only the object types defined in TMF V2.1 and the earlier versions.
objectTypeQualifier	string	Type of the reported event. This field is applicable to only the object types added in TMF V3.0.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
edgePointRelated	boolean	If the event relates to a PTP that is an edge point or to a protection group containing a PTP that is an edge point, the value is true. Otherwise, the value is false.
attributeList	notifications::NVList_T	List of the values of changed states.

**Parent topic:** [Format of the NT\\_STATE\\_CHANGE Event](#)

## **9.2.7.4.3 Format of the NT\_STATE\_CHANGE Event (remainder\_of\_body)**

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This topic describes the format of the remainder\_of\_body of an object status change notification event (NT\_STATE\_CHANGE). Detailed object information of the NT\_STATE\_CHANGE event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_STATE\_CHANGE event is always null. When you delete a cross-connection object, you need to fill in the details of the cross-connection. For details of the cross-connection, see "Information Model".

**Parent topic:** [Format of the NT\\_STATE\\_CHANGE Event](#)

## 9.2.7.5 Format of the NT\_PROTECTION\_SWITCH Event

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This topic describes the format of notifications on switching of the following objects: linear SDH protection groups, ring SDH protection groups, and OTN subnetwork connection protection (SNCP) groups.

- [\*\*Header Format of the NT\\_PROTECTION\\_SWITCH Event\*\*](#)

This topic describes the header format of an object protection switching notification event (NT\_PROTECTION\_SWITCH). The type of the NT\_PROTECTION\_SWITCH event can be obtained from its header format.

- [\*\*Format of the NT\\_PROTECTION\\_SWITCH Event \(filterable\\_data\)\*\*](#)

This topic describes the format of the filterable\_data of an NT\_PROTECTION\_SWITCH event. The object and time of the NT\_PROTECTION\_SWITCH event can be obtained according to the format of its filterable\_data.

- [\*\*Format of the NT\\_PROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)\*\*](#)

This topic describes the format of the remainder\_of\_body of an NT\_PROTECTION\_SWITCH event. Detailed object information of the NT\_PROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

### 9.2.7.5.1 Header Format of the NT\_PROTECTION\_SWITCH Event

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This topic describes the header format of an object protection switching notification event (NT\_PROTECTION\_SWITCH). The type of the NT\_PROTECTION\_SWITCH event can be obtained from its header format.

**Table 1 Header format of the NT\_PROTECTION\_SWITCH event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_PROTECTION_SWITCH.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_PROTECTION\\_SWITCH Event](#)

## **9.2.7.5.2 Format of the NT\_PROTECTION\_SWITCH Event (filterable\_data)**

This topic describes the format of the filterable\_data of an NT\_PROTECTION\_SWITCH event. The object and time of the NT\_PROTECTION\_SWITCH event can be obtained according to the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_PROTECTION\_SWITCH event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.

**Table 1 Format of filterable\_data in structure of the NT\_PROTECTION\_SWITCH event**

Name	Type	Description
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
ProtectionType	protection::ProtectionType_T	Protection type.
switchReason	protection::switchReason_T	Reason why the switching occurs.
layerRate	transmissionParameters::LayerRate_T	Layer rate that the switching is associated to.
groupName	globaldefs::NamingAttributes_T	Name of the protection group where the switching occurs. If the protection type is SNCP, this field is an empty name can be reported.
protectedTP	globaldefs::NamingAttributes_T	Protected TP when the switching occurs. For SNCP, the value is always the reliable TP. For a notification of two-fiber BLSR switching, the value is the TP that is inactive during the switching. For a notification of four-fiber MSP ring switching, the value is the working TP that is inactive during the switching. For a notification of 1:N MSP switching, the value is the working TP for which the protection switching occurs. For a notification of revertive 1+1 MSP switching, the value is the working TP. For a notification of non-revertive 1+1 MSP switching, the value is the TP that was active before the switching (After the switching, the protected TP changes).
switchAwayFromTP	globaldefs::NamingAttributes_T	Source TP that is switched away from. For two-fiber MSP

**Table 1 Format of filterable\_data in structure of the NT\_PROTECTION\_SWITCH event**

Name	Type	Description
		switching, the value is the TP that is switched. For four-fiber MSP ring switching, the value is one of the TPs in the MSP 1:N protection groups (working or protection). For four-fiber ring switching, the value is the working TP of the span that is switched. For example, if the east span switches to the west span, the value is the east working TP.
switchToTP	globaldefs::NamingAttributes_T	Destination TP that is switched to. This TP is the source TP that is activated after the switching or the current active TP if no protection switching occurs
nativeEMSName	string	Name of the protection group where the protection switching occurs.
additionalInfo	notifications::NVList_T	Additional information about the protection switching event, For details, see "NT_PROTECTION_SWITCH" in "AdditionalInfo Description".

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**NOTE:**

additionalInfo in the NT\_PROTECTION\_SWITCH event structure of the CORBA interface is an extended field. This field stores the type of the equipment where the protection switching occurs.

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**Parent topic:** [Format of the NT\\_PROTECTION\\_SWITCH Event](#)

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## 9.2.7.5.3 Format of the NT\_PROTECTION\_SWITCH Event (remainder\_of\_body)

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This topic describes the format of the remainder\_of\_body of an NT\_PROTECTION\_SWITCH event. Detailed object information of the NT\_PROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_PROTECTION\_SWITCH event is always null.

**Parent topic:** [Format of the NT\\_PROTECTION\\_SWITCH Event](#)

## 9.2.7.6 Format of the NT\_ATMPROTECTION\_SWITCH Event

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This topic describes the formats of notification events reported upon the switching of an ATM protection group.

- [Header Format of the NT\\_ATMPROTECTION\\_SWITCH Event](#)

This topic describes the header format of an ATM protection group switching notification event (NT\_ATMPROTECTION\_SWITCH). The type of the NT\_ATMPROTECTION\_SWITCH event can be obtained from its header format.

- [Format of the NT\\_ATMPROTECTION\\_SWITCH Event \(filterable\\_data\)](#)

This topic describes the format of the filterable\_data of an NT\_ATMPROTECTION\_SWITCH event. The object and time of the NT\_ATMPROTECTION\_SWITCH event can be obtained from the format of its filterable\_data.

- [Format of the NT\\_ATMPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)](#)

This topic describes the format of the remainder\_of\_body of an NT\_ATMPROTECTION\_SWITCH event. Detailed object information of the NT\_ATMPROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

## 9.2.7.6.1 Header Format of the NT\_ATMPROTECTION\_SWITCH Event

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This topic describes the header format of an ATM protection group switching notification event (NT\_ATMPROTECTION\_SWITCH). The type of the NT\_ATMPROTECTION\_SWITCH event can be obtained from its header format.

**Table 1 Header format of the NT\_ATMPROTECTION\_SWITCH event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_ATMPROTECTION_SWITCH.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_ATMPROTECTION\\_SWITCH Event](#)

## **9.2.7.6.2 Format of the NT\_ATMPROTECTION\_SWITCH Event (filterable\_data)**

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This topic describes the format of the filterable\_data of an NT\_ATMPROTECTION\_SWITCH event. The object and time of the NT\_ATMPROTECTION\_SWITCH event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_ATMPROTECTION\_SWITCH event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.

**Table 1 Format of filterable\_data in structure of the NT\_ATMPROTECTION\_SWITCH event**

Name	Type	Description
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
pgName	globaldefs::NamingAttributes_T	Name of the ATM protection group where the switching occurs.
switchMode	SwitchMode_T	Switching mode.
protectType	HW_mstpProtection::HW_AtmProtectType_T	Protection type.
srcEndSwitchPara	HW_mstpProtection::HW_AtmPGSingleEndSwitchPara_T	Parameters of the source-end switching. This field describes the reason, the state and other information about the source-end switching.
snkEndSwitchPara	HW_mstpProtection::HW_AtmPGSingleEndSwitchPara_T	Parameters of the sink-end switching. This field describes the reason, the state and other information about the sink-end switching.

**Parent topic:** [Format of the NT\\_ATMPROTECTION\\_SWITCH Event](#)

## **9.2.7.6.3 Format of the NT\_ATMPROTECTION\_SWITCH Event (remainder\_of\_body)**

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This topic describes the format of the remainder\_of\_body of an NT\_ATMPROTECTION\_SWITCH event. Detailed object information of the NT\_ATMPROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_ATMPROTECTION\_SWITCH event is always null.

**Parent topic:** [Format of the NT\\_ATMPROTECTION\\_SWITCH Event](#)

## **9.2.7.7 Format of the NT\_WDMPROTECTION\_SWITCH Event**

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This topic describes the format of notifications on switching of WDM protection groups and OTN subnetwork connection protection (SNCP) groups (SW or ODUk type).

- [\*\*Header Format of the NT\\_WDMPROTECTION\\_SWITCH Event\*\*](#)

This topic describes the header format of notifications on switching of WDM protection groups and OTN subnetwork connection protection (SNCP) groups (SW or ODUk type). You can learn about the notification type.

- [\*\*Format of the NT\\_WDMPROTECTION\\_SWITCH Event \(filterable\\_data\)\*\*](#)

This topic describes the format of data in the notifications on switching of WDM protection groups and OTN subnetwork connection protection (SNCP) groups. You can get information about a protection switching from the data, such as object that generates the event and the event time.

- [\*\*Format of the NT\\_WDMPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)\*\*](#)

This topic describes the format of the remainder\_of\_body of an NT\_WDMPROTECTION\_SWITCH event. Detailed object information of the NT\_WDMPROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

## **9.2.7.7.1 Header Format of the NT\_WDMPROTECTION\_SWITCH Event**

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This topic describes the header format of notifications on switching of WDM protection groups and OTN subnetwork connection protection (SNCP) groups (SW or ODUk type). You can learn about the notification type.

**Table 1 Header format of the NT\_WDMPROTECTION\_SWITCH event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Indicates the domain of a notification event. The value is always tmf_mtnm.
		type_name	string	Indicates the type of a notification event. The value is fixed as NT_WDMPROTECTION_SWITCH.
	event_name		string	Indicates the name of a notification event. This parameter is always left blank.
variable_header	Timeout		string	Indicates the timeout period of a notification event.

**Parent topic:** [Format of the NT\\_WDMPROTECTION\\_SWITCH Event](#)

## **9.2.7.7.2 Format of the NT\_WDMPROTECTION\_SWITCH Event (filterable\_data)**

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This topic describes the format of data in the notifications on switching of WDM protection groups and OTN subnetwork connection protection (SNCP) groups. You can get information about a protection switching from the data, such as object that generates the event and the event time.

**Table 1 Format of filterable\_data in structure of the NT\_WDMPROTECTION\_SWITCH event**

Parameter	Type	Description
notificationId	string	Indicates the unique ID of the notification.
emsTime	globaldefs::Time_T	Indicates the time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Indicates the time (UTC) of the event reported by the NE. If the NE does not report the time, this parameter is blank.
ProtectionType	protection::WDMProtectionGroup_T	Indicates the type of the protection group.
layerRate	layerRate::LayerRateType	Indicates the layer rate.
switchReason	protection::switchReason_T	Indicates the cause for the switching.
groupName	globaldefs::NamingAttributes_T	Indicates the name of the protection group where the switching occurs.
protectedTP	globaldefs::NamingAttributes_T	Name of the protected TP during the switching.
switchAwayFromTP	globaldefs::NamingAttributes_T	Indicates the name of the source TP that is switched away from.
switchToTP	globaldefs::NamingAttributes_T	Indicates the name of the destination TP that is switched to.
nativeEMSName	string	Indicates the information about the WDM protection group where the switching occurs.
additionalInfo	notifications::NVList_T	Indicates the additional information about the protection switching event. For details, see "NT_WDMPROTECTION_SWITCH" in "AdditionalInfo Description".

---

 **NOTE:**

"additionalInfo" in the NT\_WDMPROTECTION\_SWITCH event structure of the CORBA interface is an extended parameter. This parameter stores the type of the equipment where the WDM/OTN protection switching occurs.

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**Parent topic:** [Format of the NT\\_WDMPROTECTION\\_SWITCH Event](#)

## **9.2.7.7.3 Format of the NT\_WDMPROTECTION\_SWITCH Event (remainder\_of\_body)**

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This topic describes the format of the remainder\_of\_body of an NT\_WDMPROTECTION\_SWITCH event. Detailed object information of the NT\_WDMPROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_WDMPROTECTION\_SWITCH event is always null.

**Parent topic:** [Format of the NT\\_WDMPROTECTION\\_SWITCH Event](#)

## **9.2.7.8 Format of the NT\_RPRPROTECTION\_SWITCH Event**

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This topic describes the formats of notification events reported upon the switching of an RPR protection group.

- [\*\*Header Format of the NT\\_RPRPROTECTION\\_SWITCH Event\*\*](#)

This topic describes the header format of an RPR protection group switching notification event (NT\_RPRPROTECTION\_SWITCH). The type of the NT\_RPRPROTECTION\_SWITCH event can be obtained from its header format.

- [\*\*Format of the NT\\_RPRPROTECTION\\_SWITCH Event \(filterable\\_data\)\*\*](#)

This topic describes the format of the filterable\_data of an NT\_RPRPROTECTION\_SWITCH event. The object and time of the NT\_RPRPROTECTION\_SWITCH event can be obtained from the format of its filterable\_data.

- [\*\*Format of the NT\\_RPRPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)\*\*](#)

This topic describes the format of the remainder\_of\_body of an NT\_RPRPROTECTION\_SWITCH event. Detailed object information of the NT\_RPRPROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

## **9.2.7.8.1 Header Format of the NT\_RPRPROTECTION\_SWITCH Event**

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This topic describes the header format of an RPR protection group switching notification event (NT\_RPRPROTECTION\_SWITCH). The type of the NT\_RPRPROTECTION\_SWITCH event can be obtained from its header format.

**Table 1 Header format of the NT\_RPRPROTECTION\_SWITCH event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_RPRPROTECTION_SWITCH.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_RPRPROTECTION\\_SWITCH Event](#)

## **9.2.7.8.2 Format of the NT\_RPRPROTECTION\_SWITCH Event (filterable\_data)**

---

This topic describes the format of the filterable\_data of an NT\_RPRPROTECTION\_SWITCH event. The object and time of the NT\_RPRPROTECTION\_SWITCH event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_RPRPROTECTION\_SWITCH event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
nodeName	globaldefs::NamingAttributes_T	Name of the node.
switchState	HW_SwitchState_T	Switching state.
switchReason	protection::SwitchReason_T	Switching cause.
switchPosition	HW_SwitchPosition_T	Switching position.
switchParameters	globaldefs::NVSLList_T	switchParameters supports the following parameters: switchPosition switchState protectType SwitchCountTimes ProtectCountTime LastSwitchCommand The parameters for switchParameters in a HW_RPRSwitchData_T structure contain east and west switching parameters.

**Parent topic:** [Format of the NT\\_RPRPROTECTION\\_SWITCH Event](#)

## **9.2.7.8.3 Format of the NT\_RPRPROTECTION\_SWITCH Event (remainder\_of\_body)**

---

This topic describes the format of the remainder\_of\_body of an NT\_RPRPROTECTION\_SWITCH event. Detailed object information of the NT\_RPRPROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_RPRPROTECTION\_SWITCH event is always null.

**Parent topic:** [Format of the NT\\_RPRPROTECTION\\_SWITCH Event](#)

## **9.2.7.9 Format of the NT\_EPROTECTION\_SWITCH Event**

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This topic describes the formats of notification events reported upon equipment protection switching.

- [\*\*Header Format of the NT\\_EPROTECTION\\_SWITCH Event\*\*](#)

This topic describes the header format of the equipment protection switch notification events (NT\_EPROTECTION\_SWITCH). The type of the NT\_EPROTECTION\_SWITCH event can be obtained from its header format.

- [\*\*Format of the NT\\_EPROTECTION\\_SWITCH Event \(filterable\\_data\)\*\*](#)

This topic describes the format of the filterable\_data of the equipment protection switching. The object and time of an NT\_EPROTECTION\_SWITCH event can be obtained according to the format of its filterable\_data.

- [\*\*Format of the NT\\_EPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)\*\*](#)

This topic describes the format of the remainder\_of\_body of notification events of equipment protection switching. Detailed object information of the NT\_EPROTECTION\_SWITCH event can be obtained according to the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

## **9.2.7.9.1 Header Format of the NT\_EPROTECTION\_SWITCH Event**

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This topic describes the header format of the equipment protection switch notification events (NT\_EPROTECTION\_SWITCH). The type of the NT\_EPROTECTION\_SWITCH event can be obtained from its header format.

**Table 1 Header format of the NT\_EPROTECTION\_SWITCH event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_EPROTECTION_SWITCH.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_EPROTECTION\\_SWITCH Event](#)

## **9.2.7.9.2 Format of the NT\_EPROTECTION\_SWITCH Event (filterable\_data)**

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This topic describes the format of the filterable\_data of the equipment protection switching. The object and time of an NT\_EPROTECTION\_SWITCH event can be obtained according to the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_EPROTECTION\_SWITCH event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
eProtectionGroupType	protection::EProtectionGroupType_T	Type of the reported equipment protection group.
eSwitchReason	protection::ESwitchReason_T	Reason why the switching occurs.
groupName	globaldefs::NamingAttributes_T	Name of the equipment group where the switching occurs.
protectedE	globaldefs::NamingAttributes_T	Protected equipment during the switching. For an m:n protection group, the protected equipment is the working equipment during the switching.
switchAwayFromE	globaldefs::NamingAttributes_T	Source equipment that is switched away from.
switchToE	globaldefs::NamingAttributes_T	Destination equipment that is switched to.
nativeEMSNName	string	Detailed information about the equipment protection group where the switching occurs.
additionalInfo	globaldefs::NVSLlist_T	Additional information, For details, see "NT_EPROTECTION_SWITCH" in "AdditionalInfo Description".

 **NOTE:**

additionalInfo in the NT\_EPROTECTION\_SWITCH event structure of the CORBA interface is an extended field. This field stores the information about the type of equipment where the protection switching occurs.

**Parent topic:** [Format of the NT\\_EPROTECTION\\_SWITCH Event](#)

## **9.2.7.9.3 Format of the NT\_EPROTECTION\_SWITCH Event (remainder\_of\_body)**

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This topic describes the format of the remainder\_of\_body of notification events of equipment protection switching. Detailed object information of the NT\_EPROTECTION\_SWITCH event can be obtained according to the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_EPROTECTION\_SWITCH event is always null.

**Parent topic:** [Format of the NT\\_EPROTECTION\\_SWITCH Event](#)

## **9.2.7.10 Format of the NT\_ROUTE\_CHANGE Event**

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This topic describes the format of notification events reported when routes of the following objects are changed: subnet connections (SNCs).

- [\*\*Header Format of the NT\\_ROUTE\\_CHANGE Event\*\*](#)  
This topic describes the header format of an object route change notification event (NT\_ROUTE\_CHANGE). The type of the NT\_ROUTE\_CHANGE event can be obtained from its header format.
- [\*\*Format of the NT\\_ROUTE\\_CHANGE Event \(filterable\\_data\)\*\*](#)  
This topic describes the format of the filterable\_data of a route change notification event. The object and time of the NT\_ROUTE\_CHANGE event can be obtained from the format of its filterable\_data.
- [\*\*Format of the NT\\_ROUTE\\_CHANGE Event \(remainder\\_of\\_body\)\*\*](#)  
This topic describes the format of the remainder\_of\_body of a route change notification event. Detailed object information of the NT\_ROUTE\_CHANGE event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

## **9.2.7.10.1 Header Format of the NT\_ROUTE\_CHANGE Event**

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This topic describes the header format of an object route change notification event (NT\_ROUTE\_CHANGE). The type of the NT\_ROUTE\_CHANGE event can be obtained from its header format.

**Table 1 Header format of the NT\_ROUTE\_CHANGE event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_ROUTE_CHANGE.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_ROUTE\\_CHANGE Event](#)

## **9.2.7.10.2 Format of the NT\_ROUTE\_CHANGE Event (filterable\_data)**

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This topic describes the format of the filterable\_data of a route change notification event. The object and time of the NT\_ROUTE\_CHANGE event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_ROUTE\_CHANGE event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
objectName	globaldefs::NamingAttributes_T	Name of the object that reports the event.
objectType	notifications::ObjectType_T	Type of the object that reports the event.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
routeChangeEvent	subnetworkConnection::RerouteChangeEvent_T	Status information during the route change. The value is RerouteStarted, RerouteCompleted or RerouteFailed.
route	subnetworkConnection::Route_T	Detailed information about the new route.

**Parent topic:** [Format of the NT\\_ROUTE\\_CHANGE Event](#)

## **9.2.7.10.3 Format of the NT\_ROUTE\_CHANGE Event (remainder\_of\_body)**

---

This topic describes the format of the remainder\_of\_body of a route change notification event. Detailed object information of the NT\_ROUTE\_CHANGE event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_ROUTE\_CHANGE event is always null.

**Parent topic:** [Format of the NT\\_ROUTE\\_CHANGE Event](#)

## 9.2.7.11 Format of the NT\_ASON\_RESOURCE\_CHANGE Event

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This topic describes the format of notification events reported when simple network paging protocol (SNPP) links are changed.

- [Header Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event](#)

This topic describes the header format of a resource change notification event (NT\_ASON\_RESOURCE\_CHANGE). The type of the NT\_ASON\_RESOURCE\_CHANGE event can be obtained from its header format.

- [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event \(filterable\\_data\)](#)

This topic describes the format of the filterable\_data of a resource notification event. The object and time of the NT\_ASON\_RESOURCE\_CHANGE event can be obtained from the format of its filterable\_data.

- [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event \(remainder\\_of\\_body\)](#)

This topic describes the format of the remainder\_of\_body of a resource notification event. Detailed object information of the NT\_ASON\_RESOURCE\_CHANGE event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

### 9.2.7.11.1 Header Format of the NT\_ASON\_RESOURCE\_CHANGE Event

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This topic describes the header format of a resource change notification event (NT\_ASON\_RESOURCE\_CHANGE). The type of the NT\_ASON\_RESOURCE\_CHANGE event can be obtained from its header format.

**Table 1 Header format of the NT\_ASON\_RESOURCE\_CHANGE event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_ASON_RESOURCE_CHANGE.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event](#)

## **9.2.7.11.2 Format of the NT\_ASON\_RESOURCE\_CHANGE Event (filterable\_data)**

This topic describes the format of the filterable\_data of a resource notification event. The object and time of the NT\_ASON\_RESOURCE\_CHANGE event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_ASON\_RESOURCE\_CHANGE event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
objectName	globaldefs::NamingAttributes_T	Name of the object that reports the event.

**Table 1 Format of filterable\_data in structure of the NT\_ASON\_RESOURCE\_CHANGE event**

Name	Type	Description
objectTypeQualifier	string	Object (ASON domain or ASON node) of the reported event. The value is ROUTING_AREA or ROUTING_NODE.
notifyType	string	Type (creation or deletion) of the reported event. The value is OBJECT_CREATE or OBJECT_DELETE.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
edgePointRelated	boolean	If the event relates to a PTP that is an edge point or to a protection group containing a PTP that is an edge point, the value is true. Otherwise, the value is false.

**Parent topic:** [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event](#)

### **9.2.7.11.3 Format of the NT\_ASON\_RESOURCE\_CHANGE Event (remainder\_of\_body)**

---

This topic describes the format of the remainder\_of\_body of a resource notification event. Detailed object information of the NT\_ASON\_RESOURCE\_CHANGE event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_ASON\_RESOURCE\_CHANGE event is always null.

**Parent topic:** [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event](#)

## 9.2.7.12 Format of the NT\_FILE\_TRANSFER\_STATUS Event

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This topic describes the formats of notification events reported when the file transfer status is changed.

- [\*\*Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(header\)\*\*](#)

This topic describes the header format of an file transfer status change notification event (NT\_FILE\_TRANSFER\_STATUS). The type of the NT\_FILE\_TRANSFER\_STATUS event can be obtained from its header format.

- [\*\*Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(filterable\\_data\)\*\*](#)

This topic describes the format of the filterable\_data of an file transfer status change notification event (NT\_FILE\_TRANSFER\_STATUS). The object and time of the NT\_FILE\_TRANSFER\_STATUS event can be obtained from the format of its filterable\_data.

- [\*\*Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(remainder\\_of\\_body\)\*\*](#)

This topic describes the format of the remainder\_of\_body of an file transfer status event (NT\_FILE\_TRANSFER\_STATUS). Detailed object information of the NT\_FILE\_TRANSFER\_STATUS event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

### 9.2.7.12.1 Format of the NT\_FILE\_TRANSFER\_STATUS Event (header)

---

This topic describes the header format of an file transfer status change notification event (NT\_FILE\_TRANSFER\_STATUS). The type of the NT\_FILE\_TRANSFER\_STATUS event can be obtained from its header format.

**Table 1 Header format of the NT\_FILE\_TRANSFER\_STATUS event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_FILE_TRANSFER_STATUS.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event](#)

## **9.2.7.12.2 Format of the NT\_FILE\_TRANSFER\_STATUS Event (filterable\_data)**

This topic describes the format of the filterable\_data of an file transfer status change notification event (NT\_FILE\_TRANSFER\_STATUS). The object and time of the NT\_FILE\_TRANSFER\_STATUS event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_FILE\_TRANSFER\_STATUS event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
filename	string	File directory and file name that are entered. For example, /tmp/alarm4.txt.

**Table 1 Format of filterable\_data in structure of the NT\_FILE\_TRANSFER\_STATUS event**

Name	Type	Description
transferStatus	FileTransferStatus_T	Transfer status. When transfer fails, the value is FT_FAILED. When transfer is completed, the value is FT_COMPLETED. When transfer is in process, the value is FT_IN_PROGRESS.
percentComplete	short	Progress of the transfer expressed in percentage. The value ranges from 0 to 100. For example, 100 percent.
failureReason	string	Cause of the file transfer failure. When the transfer succeeds, the value is null. When the transfer fails, details of the failure are described. For example, when the IP address is incorrect, the message "connection to 10.71.227.26 failed" is displayed. When the user name or password is incorrect, the message "530 Login incorrect" is displayed.

**Parent topic:** [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event](#)

### **9.2.7.12.3 Format of the NT\_FILE\_TRANSFER\_STATUS Event (remainder\_of\_body)**

---

This topic describes the format of the remainder\_of\_body of an file transfer status event (NT\_FILE\_TRANSFER\_STATUS). Detailed object information of the

NT\_FILE\_TRANSFER\_STATUS event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_FILE\_TRANSFER\_STATUS event is always null.

**Parent topic:** [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event](#)

## 9.2.7.13 Format of the NT\_PRBTEST\_STATUS Event

---

This topic describes the format of notification events reported when the pseudo random binary sequence (PRBS) test status is changed.

- [Header Format of the NT\\_PRBTEST\\_STATUS Event](#)

This topic describes the header format of an PRBS test enable status change notification event (NT\_PRBTEST\_STATUS). The type of the NT\_PRBTEST\_STATUS event can be obtained from its header format.

- [Format of the NT\\_PRBTEST\\_STATUS Event \(filterable\\_data\)](#)

This topic describes the filterable\_data format of a notification event of PRBS test status. The object and time of the NT\_PRBTEST\_STATUS event can be obtained from the format of its filterable\_data.

**Parent topic:** [Format of Notification Events](#)

### 9.2.7.13.1 Header Format of the NT\_PRBTEST\_STATUS Event

---

This topic describes the header format of an PRBS test enable status change notification event (NT\_PRBTEST\_STATUS). The type of the NT\_PRBTEST\_STATUS event can be obtained from its header format.

**Table 1 Header format of the NT\_PRBTEST\_STATUS event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_PRBTEST_STATUS.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_PRBTEST\\_STATUS Event](#)

## **9.2.7.13.2 Format of the NT\_PRBTEST\_STATUS Event (filterable\_data)**

This topic describes the filterable\_data format of a notification event of PRBS test status. The object and time of the NT\_PRBTEST\_STATUS event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_PRBTEST\_STATUS event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
TPName	globaldefs::NamingAttributes_T	Name of the TP for which a 2 Mbit/s PRBS test is performed.
TestStatus	notifications::FileTransferStatus_T	Status of the 2 Mbit/s PRBS test.

**Table 1 Format of filterable\_data in structure of the NT\_PRBTEST\_STATUS event**

Name	Type	Description
		The value is FT_COMPLETED or FT_IN_PROGRESS.
percentComplete	short	Progress of the test. The value ranges from 0 to 100.

**Parent topic:** [Format of the NT\\_PRBTEST\\_STATUS Event](#)

## **9.2.7.14 Format of the NT\_HEARTBEAT Event**

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This topic describes the format of heartbeat status change notification events. This notification indicates the network connectivity status.

- [\*\*Header Format of the NT\\_HEARTBEAT Event\*\*](#)

This topic describes the header format of a heartbeat status change notification event (NT\_HEARTBEAT). The type of the NT\_HEARTBEAT event can be obtained from its header format.

- [\*\*Format of the NT\\_HEARTBEAT Event \(filterable\\_data\)\*\*](#)

This topic describes the format of the filterable\_data of a heartbeat notification event. The object and time of the NT\_HEARTBEAT event can be obtained from the format of its filterable\_data.

**Parent topic:** [Format of Notification Events](#)

### **9.2.7.14.1 Header Format of the NT\_HEARTBEAT Event**

---

This topic describes the header format of a heartbeat status change notification event (NT\_HEARTBEAT). The type of the NT\_HEARTBEAT event can be obtained from its header format.

**Table 1 Header format of the NT\_HEARTBEAT event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_HEARTBEAT.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_HEARTBEAT Event](#)

## **9.2.7.14.2 Format of the NT\_HEARTBEAT Event (filterable\_data)**

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This topic describes the format of the filterable\_data of a heartbeat notification event. The object and time of the NT\_HEARTBEAT event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_HEARTBEAT event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.

**Table 1 Format of filterable\_data in structure of the NT\_HEARTBEAT event**

Name	Type	Description
objectName	globaldefs::NamingAttributes_T	Name of the object that reports the event.
objectType	notifications:: ObjectType_T	Type of the object that reports the event.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.

**Parent topic:** [Format of the NT\\_HEARTBEAT Event](#)

## **9.2.7.15 Format of the NT\_IPPROTECTION\_SWITCH Event**

---

This topic describes the format of notification events reported upon the switching of an IP protection group of the following objects: linear tunnel protection groups.

- [\*\*Header Format of the NT\\_IPPROTECTION\\_SWITCH Event\*\*](#)

This topic describes the header format of an IP protection group switching notification event (NT\_IPPROTECTION\_SWITCH). The type of the NT\_IPPROTECTION\_SWITCH event can be obtained from its header format.

- [\*\*Format of the NT\\_IPPROTECTION\\_SWITCH Event \(filterable\\_data\)\*\*](#)

This topic describes the format of the filterable\_data of an NT\_IPPROTECTION\_SWITCH event. The object and time of the NT\_IPPROTECTION\_SWITCH event can be obtained according to the format of its filterable\_data.

- [\*\*Format of the NT\\_IPPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)\*\*](#)

This topic describes the format of the remainder\_of\_body of an NT\_IPPROTECTION\_SWITCH event. Detailed object information of the NT\_IPPROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

## **9.2.7.15.1 Header Format of the NT\_IPPROTECTION\_SWITCH Event**

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This topic describes the header format of an IP protection group switching notification event (NT\_IPPROTECTION\_SWITCH). The type of the NT\_IPPROTECTION\_SWITCH event can be obtained from its header format.

**Table 1 Header format of the NT\_IPPROTECTION\_SWITCH event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_IPPROTECTION_SWITCH.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_IPPROTECTION\\_SWITCH Event](#)

## **9.2.7.15.2 Format of the NT\_IPPROTECTION\_SWITCH Event (filterable\_data)**

---

This topic describes the format of the filterable\_data of an NT\_IPPROTECTION\_SWITCH event. The object and time of the NT\_IPPROTECTION\_SWITCH event can be obtained according to the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_IPPROTECTION\_SWITCH event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
protectionType	string	Type of a tunnel APS protection group.
switchReason	SwitchReason_T	Cause of the switching.
layerRate	transmissionParameters::LayerRate_T	layer rate
groupName	globaldefs::NamingAttributes_T	Name of a tunnel APS protection group where the switching occurs.
protectedList	globaldefs::NamingAttributesList_T	List of tunnels under protection where the switching occurs.
switchAwayFromList	globaldefs::NamingAttributesList_T	List of source tunnels where the switching occurs.
switchToList	globaldefs::NamingAttributesList_T	List of destination tunnels where the switching occurs.
nativeEMSNName	string	Details about a tunnel APS protection group where the switching occurs.
additionalInfo	globaldefs::NVSLList_T	Additional information. Currently, this field is null.

**Parent topic:** [Format of the NT\\_IPPROTECTION\\_SWITCH Event](#)

## **9.2.7.15.3 Format of the NT\_IPPROTECTION\_SWITCH Event (remainder\_of\_body)**

---

This topic describes the format of the remainder\_of\_body of an NT\_IPPROTECTION\_SWITCH event. Detailed object information of the NT\_IPPROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_IPPROTECTION\_SWITCH event is always null.

**Parent topic:** [Format of the NT\\_IPPROTECTION\\_SWITCH Event](#)

## **9.2.8 Notification Event Samples**

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This topic describes samples of notification events that the CORBA NBI supports.

- [\*\*NT\\_OBJECT\\_CREATION Event Sample\*\*](#)

This topic provides a sample notification of creating an object.

- [\*\*NT\\_OBJECT\\_DELETION Event Sample\*\*](#)

This topic provides a sample notification of deleting an object.

- [\*\*NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event Sample\*\*](#)

This topic provides a sample notification of changing object attributes.

- [\*\*NT\\_STATE\\_CHANGE Event Sample\*\*](#)

This topic provides a sample notification of changing object status.

- [\*\*NT\\_PROTECTION\\_SWITCH Event Sample\*\*](#)

This topic provides a sample notification of switching protection.

- [\*\*NT\\_ATMPROTECTION\\_SWITCH Event Sample\*\*](#)

This topic provides a sample notification of switching ATM protection groups.

- [\*\*NT\\_WDMPROTECTION\\_SWITCH Event Sample\*\*](#)

This topic provides a sample notification of switching WDM protection groups.

- [\*\*NT\\_RPRPROTECTION\\_SWITCH Event Sample\*\*](#)

This topic provides a sample notification of switching RPR protection groups.

- [\*\*NT\\_EPROTECTION\\_SWITCH Event Sample\*\*](#)

This topic provides a sample notification of switching equipment protection groups.

- [\*\*NT\\_ASON\\_RESOURCE\\_CHANGE Event Sample\*\*](#)  
This topic provides a sample notification on changing object resources.

- [\*\*NT\\_PRBTEST\\_STATUS Event Sample\*\*](#)  
This topic provides a sample notification of the PRBS test.

- [\*\*NT\\_ROUTE\\_CHANGE Event Sample\*\*](#)  
This topic provides a sample notification of changing the routing.

- [\*\*NT\\_HEARTBEAT Event Sample\*\*](#)  
This topic provides a sample notification of a heartbeat event.

- [\*\*NT\\_IPPROTECTION\\_SWITCH Event Sample\*\*](#)  
This topic provides a sample notification of switching IP protection groups.

**Parent topic:** [CORBA NBI Developer Guide \(Configuration\)](#)

## 9.2.8.1 NT\_OBJECT\_CREATION Event Sample

---

This topic provides a sample notification of creating an object.

**Table 1 NT\_OBJECT\_CREATION event sample**

Sample contents				Remarks	
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	N/A	
			Type_name: "NT_OBJECT_CREATION"	N/A	
		Event_name	""	N/A	
	variable_header	name Timeout value 864000000000		N/A	
filterable_data	notificationId	0315155247167		N/A	
	objectName	name EMS value Huawei/U2000		N/A	
		name ManagedElement value 589895			
		name EquipmentHolder value /rack=1/shelf=1/slot=5			

**Table 1 NT\_OBJECT\_CREATION event sample**

Sample contents		Remarks
	name Equipment value 1	
	objectType OT_EQUIPMENT	N/A
	objectTypeQualifier ""	Null
	emsTime 20060315091345.0Z	N/A
	neTime 20060315091343.0Z	N/A
	edgePointRelated false	N/A
remainder_of_body	name name EMS value Huawei/U2000	N/A
	name ManagedElement value 589895	
	name EquipmentHolder value /rack=1/shelf=1/slot=5	
	name Equipment value 1	
	userLabel ""	N/A
	nativeEMSName S16	N/A
	owner ""	N/A
	alarmReportingIndicator true	N/A
	serviceState OUT_OF_SERVICE	N/A
	expectedEquipmentObjectType S16(160)	N/A
	installedEquipmentObjectType S16(160)	N/A
	installedPartNumber ""	N/A
	installedVersion 4.02	N/A
	installedSerialNumber ""	N/A
	additionalInfo name AlarmSeverity value ""	N/A

**Parent topic:** [Notification Event Samples](#)

## 9.2.8.2 NT\_OBJECT\_DELETION Event Sample

This topic provides a sample notification of deleting an object.

**Table 1 NT\_OBJECT\_DELETION event sample**

Sample contents				Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	N/A
			Type_name: "NT_OBJECT_DELETION"	N/A
		Event_name	""	N/A
	variable_header	name Timeout value 864000000000		N/A
filterable_data	notificationId	0315155247223		N/A
	objectName	name EMS value Huawei/U2000		N/A
		name ManagedElement value 589895		N/A
		name EquipmentHolder value /rack=1/shelf=1/slot=5		N/A
		name Equipment value 1		N/A
	objectType	OT_EQUIPMENT		N/A
	objectTypeQualifier	""		Null
	emsTime	20060315094047.0Z		N/A
	neTime	20060315094047.0Z		N/A
	edgePointRelated	false		N/A

**Parent topic:** [Notification Event Samples](#)

## 9.2.8.3 NT\_ATTRIBUTE\_VALUE\_CHANGE Event Sample

---

This topic provides a sample notification of changing object attributes.

**Table 1 NT\_ATTRIBUTE\_VALUE\_CHANGE event sample**

Sample contents				Remarks	
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	N/A	
			Type_name: "NT_ATTRIBUTE_VALUE_CHANGE"	N/A	
		Event_name	""	N/A	
	variable_header	name Timeout value 864000000000		N/A	
<hr/>					
filterable_data	notificationId	0315155247477		N/A	
	objectName	name EMS value Huawei/U2000		N/A	
		name ManagedElement value 590174			
		name PTP value /rack=1/shelf=1/slot=2/domain=eth/type=mp/port=1			
	objectType	OT_PHYSICAL_TERMINATION_POINT		N/A	
	objectTypeQualifier	OT_MSTP_END_POINT		N/A	
	emsTime	20060315114900.0Z		N/A	
	neTime	20060315114900.0Z		N/A	
	edgePointRelated	false		N/A	
attributeList	transmissionParams	layer 96 transmissionParams	name EntranceDetect value Disable	N/A	
		layer 98 transmissionParams	NULL		

**Table 1 NT\_ATTRIBUTE\_VALUE\_CHANGE event sample**

Sample contents				Remarks
		layer 99 transmissionParams	NULL	

**Parent topic:** [Notification Event Samples](#)

## 9.2.8.4 NT\_STATE\_CHANGE Event Sample

---

This topic provides a sample notification of changing object status.

**Table 1 NT\_STATE\_CHANGE event sample**

Sample contents				Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	N/A
			Type_name: "NT_STATE_CHANGE"	N/A
		Event_name	""	N/A
	variable_header	name Timeout value 864000000000		N/A
filterable_data	notificationId	0315155247536		N/A
	objectName	name EMS value Huawei/U2000		N/A
		name ManagedElement value 590174		
	objectType	OT_MANAGED_ELEMENT		
	objectTypeQualifier	""		Null
	emsTime	20060315121151.0Z		N/A
neTime		20060315121151.0Z		N/A

**Table 1 NT\_STATE\_CHANGE event sample**

Sample contents		Remarks
	edgePointRelated	false
	attributeList	name communicationState value CS_UNAVAILABLE

**Parent topic:** [Notification Event Samples](#)

## 9.2.8.5 NT\_PROTECTION\_SWITCH Event Sample

---

This topic provides a sample notification of switching protection.

**Table 1 NT\_PROTECTION\_SWITCH event sample**

Sample contents		Remarks
header	fixed_header	Domain_name: "tmf_mtnm"
		Type_name: "NT_PROTECTION_SWITCH"
	Event_name	""
	variable_header	name Timeout value 864000000000
filterable_data	notificationId	0224131047672
	emsTime	20060224152815.0
	neTime	""
	ProtectionType	PT_MSP_APS
	switchReason	SR_RESTORED

**Table 1 NT\_PROTECTION\_SWITCH event sample**

Sample contents		Remarks
layerRate	26	N/A
groupName	name EMS value Huawei/U2000	N/A
	name ManagedElement value 589965	
	name PGP value 1/1/17	
protectedTP	name EMS value Huawei/U2000	N/A
	name ManagedElement value 589965	
	name PTP value /rack=1/shelf=1/slot=5/domain=sdh/port=2	
switchAwayFromTP	name EMS value Huawei/U2000	N/A
	name ManagedElement value 589965	
	name PTP value /rack=1/shelf=1/slot=5/domain=sdh/port=1	
switchToTP	name EMS value Huawei/U2000	N/A
	name ManagedElement value 589965	
	name PTP value /rack=1/shelf=1/slot=5/domain=sdh/port=2	
nativeEMSName	Huawei/U2000;NE141;1/1/17	N/A
	additionalInfo	name ProductName value OptiX Metro 1000V3

**Parent topic:** [Notification Event Samples](#)

## 9.2.8.6 NT\_ATMPROTECTION\_SWITCH Event Sample

This topic provides a sample notification of switching ATM protection groups.

**Table 1 NT\_ATMPROTECTION\_SWITCH event sample**

Sample contents				Remarks	
Header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	N/A	
			Type_name: "NT_ATMPROTECTION_SWITCH"	N/A	
		Event_name	""	N/A	
	variable_header	name Timeout value 864000000000		N/A	
filterable_data	notificationId	0315155247622		N/A	
	emsTime	20060315123300.0Z		N/A	
	neTime	20060315123300.0Z		N/A	
	pgName	name EMS value Huawei/U2000		N/A	
		name ManagedElement value 589895			
		name AtmPG value 1			
	switchMode	SingleEnded		N/A	
	protectType	HW_APT_1PLUS1		N/A	
	snkEndSwitchPara	switchReason SR_MANUAL		N/A	
		switchState HW_SS_SWITCH			
		additionalInfo ""			

**Parent topic:** [Notification Event Samples](#)

## 9.2.8.7 NT\_WDMPROTECTION\_SWITCH Event Sample

This topic provides a sample notification of switching WDM protection groups.

**Table 1 NT\_WDMPROTECTION\_SWITCH event sample**

Sample contents				Remarks	
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	N/A	
			Type_name: "NT_WDMPROTECTION_SWITCH"	N/A	
			Event_name ""	N/A	
variable_header		name Timeout value 864000000000		N/A	
<hr/>					
filterable_data	notificationId	0223112118245		N/A	
	emsTime	20060223043554.0Z		N/A	
	neTime	20060223043554.0Z		N/A	
	protectionGroupType	1P1		N/A	
	switchReason	"SR_MANUAL"		N/A	
	groupName	name EMS value Huawei/U2000		N/A	
		name ManagedElement value 33554438		N/A	
		name WDMPG value /pgtype=1/shelf=589847/pgID=1		N/A	
	protectedTP	name EMS value Huawei/U2000		N/A	
		name ManagedElement value 33554438		N/A	
		name PTP value /rack=1/shelf=589847/slot=10/domain=wdm/port=1		N/A	
	switchAwayFromTP	name EMS value Huawei/U2000		N/A	
		name ManagedElement value 33554438		N/A	
		name PTP value /rack=1/shelf=589847/slot=11/domain=wdm/port=1		N/A	
	switchToTP	name EMS value Huawei/U2000		N/A	
		name ManagedElement value 33554438		N/A	

**Table 1 NT\_WDMPROTECTION\_SWITCH event sample**

Sample contents		Remarks
	name PTP value /rack=1/shelf=589847/slot=10/domain=wdm/port=1	N/A
nativeEMSName	Huawei/U2000;otm;/pgtype=1/shelf=NE23/pgID=1	N/A
additionalInfo	name ProductName value OptiX BWS1600G	N/A

**Parent topic:** [Notification Event Samples](#)

## 9.2.8.8 NT\_RPRPROTECTION\_SWITCH Event Sample

---

This topic provides a sample notification of switching RPR protection groups.

**Table 1 NT\_RPRPROTECTION\_SWITCH event sample**

Sample contents			Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"
			Type_name: "NT_RPRPROTECTION_SWITCH"
		Event_name	""
	variable_header	name Timeout value	864000000000
filterable_data	notificationId	0317124742222	N/A
	emsTime	20060317051751.0Z	N/A
	neTime	20060317051751.0Z	N/A
	nodeName	name EMS value	Huawei/U2000

**Table 1 NT\_RPRPROTECTION\_SWITCH event sample**

Sample contents		Remarks
	name ManagedElement value 590070	N/A
	name RPRNode value /rack=1/shelf=1/slot=8/node=1	N/A
switchState	HW_SS_NA	N/A
switchReason	SR_NA	N/A
switchPosition	HW_SP_NA	N/A
switchParameters	name switchPosition value east	N/A
	name switchState value switch	
	name protectType value 5	
	name SwitchCountTimes value 1	
	name ProtectCountTime value 00:00:00	
	name LastSwitchCommand value protection::PC_FORCED_SWITCH	
	name switchPosition value west	
	name switchState value switch	
	name protectType value 4	
	name SwitchCountTimes value 1	
	name ProtectCountTime value 00:00:00	
	name LastSwitchCommand value protection::PC_CLEAR	

**Parent topic:** [Notification Event Samples](#)

## 9.2.8.9 NT\_EPROTECTION\_SWITCH Event Sample

This topic provides a sample notification of switching equipment protection groups.

**Table 1 NT\_EPROTECTION\_SWITCH event sample**

Sample contents				Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	N/A
		Type_name: "NT_EPROTECTION_SWITCH"		N/A
		Event_name	""	N/A
	variable_header	name Timeout value	864000000000	N/A
filterable_data	notificationId	0317093205535		N/A
	emsTime	20060317032501.0Z		N/A
	neTime	""		N/A
	eProtectionGroupType	1_PLUS_1		N/A
	eSwitchReason	SR_NA		N/A
	groupName	name EMS value Huawei/U2000		N/A
		name ManagedElement value 589936		N/A
		name EPGP value 589936/1/1/1		N/A
	protectedE	name EMS value Huawei/U2000		N/A
		name ManagedElement value 589936		N/A
		name EquipmentHolder value /rack=1/shelf=1/slot=8		N/A
		name Equipment value 1		N/A
	switchAwayFromE	name EMS value Huawei/U2000		N/A

**Table 1 NT\_EPROTECTION\_SWITCH event sample**

Sample contents		Remarks
	name ManagedElement value 589936	N/A
	name EquipmentHolder value /rack=1/shelf=1/slot=8	N/A
	name Equipment value 1	N/A
switchToE	name EMS value Huawei/U2000	N/A
	name ManagedElement value 589936	N/A
	name EquipmentHolder value /rack=1/shelf=1/slot=7	N/A
	name Equipment value 1	N/A
nativeEMSName	Huawei/U2000;NE112;589936/1/1/1	N/A
additionalInfo	name ProductName value OptiX 2500+	N/A

**Parent topic:** [Notification Event Samples](#)

## 9.2.8.10 NT\_ASON\_RESOURCE\_CHANGE Event Sample

---

This topic provides a sample notification on changing object resources.

**Table 1 NT\_ASON\_RESOURCE\_CHANGE event sample**

Sample contents				Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	N/A
			Type_name:"NT_ASON_RESOURCE_CHANGE"	N/A
		Event_name	""	N/A

**Table 1 NT\_ASON\_RESOURCE\_CHANGE event sample**

Sample contents			Remarks
	variable_header	name Timeout value 864000000000	N/A
filterable_data	notificationId	031717054427	N/A
	objectName	name EMS value Huawei/U2000	N/A
		name ManagedElement value 589835	N/A
	objectTypeQualifier	OT_ROUTING_NODE	N/A
	notifyType	OBJECT_CREATE	N/A
	emsTime	20060317091722.0Z	N/A
	neTime	20060317091722.0Z	N/A
	edgePointRelated	false	N/A

**Parent topic:** [Notification Event Samples](#)

## 9.2.8.11 NT\_PRBTEST\_STATUS Event Sample

This topic provides a sample notification of the PRBS test.

**Table 1 NT\_PRBTEST\_STATUS event sample**

Sample contents			Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"
			Type_name:"NT_PRBTEST_STATUS"
		Event_name	""
	variable_header	name Timeout value 864000000000	N/A

**Table 1 NT\_PRBTEST\_STATUS event sample**

Sample contents			Remarks
filterable_data	notificationId TPName	0318140108344	N/A
		name EMS value Huawei/U2000	N/A
		name ManagedElement value 589849	N/A
		name PTP value /rack=1/shelf=1/slot=3/domain=sdh/port=1	N/A
	TestStatus	FT_COMPLETED	N/A
	percentComplete	100	N/A

**Parent topic:** [Notification Event Samples](#)

## **9.2.8.12 NT\_ROUTE\_CHANGE Event Sample**

This topic provides a sample notification of changing the routing.

**Table 1 NT\_ROUTE\_CHANGE event sample**

Sample contents			Remark
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"
			Type_name: "NT_ROUTE_CHANGE"
		Event_name	""
	variable_header	name Timeout value 864000000000	
filterable_data	notificationId	0316135944420	
	objectName	name EMS value Huawei/U2000	

**Table 1 NT\_ROUTE\_CHANGE event sample**

Sample contents			Remark						
		name MultiLayerSubnetwork value 1	N/A						
		name SubnetworkConnection value 2006-03-16 14:07:23-47	N/A						
objectType	OT_SUBNETWORK_CONNECTION		N/A						
emsTime	20060316061019.0Z		N/A						
neTime	""		N/A						
routeChangeEvent	RerouteCompleted		N/A						
route	0	active:true	N/A						
		direction: CD_UNI	N/A						
		cctype: ST_SIMPLE	N/A						
		aEndNameList	<table border="1"> <tr> <td>name EMS value Huawei/U2000</td><td>N/A</td></tr> <tr> <td>name ManagedElement value 589844</td><td>N/A</td></tr> <tr> <td>name PTP value /rack=1/shelf=1/slot=12/domain=sdh/port=1</td><td>N/A</td></tr> <tr> <td>name CTP value /sts3c_au4-j=4</td><td>N/A</td></tr> </table>	name EMS value Huawei/U2000	N/A	name ManagedElement value 589844	N/A	name PTP value /rack=1/shelf=1/slot=12/domain=sdh/port=1	N/A
name EMS value Huawei/U2000	N/A								
name ManagedElement value 589844	N/A								
name PTP value /rack=1/shelf=1/slot=12/domain=sdh/port=1	N/A								
name CTP value /sts3c_au4-j=4	N/A								
zEndNameList	<table border="1"> <tr> <td>name EMS value Huawei/U2000</td><td>N/A</td></tr> <tr> <td>name ManagedElement value 589844</td><td>N/A</td></tr> <tr> <td>name PTP value /rack=1/shelf=1/slot=8/domain=sdh/port=1</td><td></td></tr> <tr> <td>name CTP value /sts3c_au4-j=16</td><td>N/A</td></tr> </table>	name EMS value Huawei/U2000	N/A	name ManagedElement value 589844	N/A	name PTP value /rack=1/shelf=1/slot=8/domain=sdh/port=1		name CTP value /sts3c_au4-j=16	N/A
name EMS value Huawei/U2000	N/A								
name ManagedElement value 589844	N/A								
name PTP value /rack=1/shelf=1/slot=8/domain=sdh/port=1									
name CTP value /sts3c_au4-j=16	N/A								
<table border="1"> <tr> <td>additionalInfo</td><td>name Direction value Obverse</td><td>N/A</td></tr> </table>	additionalInfo	name Direction value Obverse	N/A						
additionalInfo	name Direction value Obverse	N/A							
1	<table border="1"> <tr> <td>active:true</td><td>N/A</td></tr> <tr> <td>direction: CD_UNI</td><td>N/A</td></tr> <tr> <td>cctype: ST_SIMPLE</td><td>N/A</td></tr> </table>	active:true	N/A	direction: CD_UNI	N/A	cctype: ST_SIMPLE	N/A		
active:true	N/A								
direction: CD_UNI	N/A								
cctype: ST_SIMPLE	N/A								

**Table 1 NT\_ROUTE\_CHANGE event sample**

Sample contents			Remark
	aEndNameList	name EMS value Huawei/U2000	N/A
		name ManagedElement value 589845	N/A
		name PTP value /rack=1/shelf=1/slot=7/domain=sdh/port=1	N/A
		name CTP value /sts3c_au4-j=16	N/A
	zEndNameList	name EMS value Huawei/U2000	N/A
		name ManagedElement value 589845	N/A
		name PTP value /rack=1/shelf=1/slot=8/domain=sdh/port=1	N/A
		name CTP value /sts3c_au4-j=4	N/A
	additionalInfo	name Direction value Obverse	N/A

**Parent topic:** [Notification Event Samples](#)

## 9.2.8.13 NT\_HEARTBEAT Event Sample

This topic provides a sample notification of a heartbeat event.

**Table 1 NT\_HEARTBEAT event sample**

Sample contents			Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"
			Type_name:"NT_HEARTBEAT"
	Event_name	""	N/A
	variable_header	name Timeout value 300000000	N/A

**Table 1 NT\_HEARTBEAT event sample**

Sample contents			Remarks
filterable_data	notificationId	03160939255	N/A
	objectName	name EMS value Huawei/U2000	N/A
	objectType	OT_EMS	N/A
	emsTime	20060316014052.0Z	N/A

**Parent topic:** [Notification Event Samples](#)

## 9.2.8.14 NT\_IPPROTECTION\_SWITCH Event Sample

---

This topic provides a sample notification of switching IP protection groups.

**Table 1 NT\_IPPROTECTION\_SWITCH event sample**

Sample contents			Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mttnm"
			Type_name: "NT_IPPROTECTION_SWITCH"
		Event_name	""
	variable_header	name Timeout value	864000000000
filterable_data	notificationId	0317093205535	
	emsTime	20100117032501.0Z	
	neTime	""	

**Table 1 NT\_IPPROTECTION\_SWITCH event sample**

	Sample contents	Remarks
IPProtectionGroupType	PGT_MSP_1_PLUS_1 PGT_MSP_1_FOR_1 PGT_MSP_1_FOR_N	
groupName	name EMS value Huawei/U2000	
	name ManagedElement value 589936	
	name TunnelPG value /pgType=PT_MSPAPS/pgID=128	
switchReason	SR_NA	
reversionMode	RM_UNKNOWN RM_NON_REVERTIVE RM_REVERTIVE	
protectedList	name EMS value Huawei/U2000	
	name ManagedElement value 589936	
	name IPCrossConnection value TUNNEL=1 1 10.10.8.51 2.2.2.2 2000  1	
switchAwayFromList	name EMS value Huawei/U2000	
	name ManagedElement value 589936	
	name IPCrossConnection value TUNNEL=1 1 2.2.2.2 10.10.8.51 2000  3	
switchToList	name EMS value Huawei/U2000	
	name ManagedElement value 589936	
	name IPCrossConnection value TUNNEL=1 1 10.17.8.51 2.2.2.6 201  1	

**Parent topic:** [Notification Event Samples](#)

## **9.2.9 Object Naming Rules**

---

This chapter lists the naming rules for various objects in the U2000 CORBA interface. The naming rules are in accordance with the TMF recommendations.

The objects contain the following:

- [\*\*AID\*\*](#)  
AID indicates an object that is not managed by the CORBA NBI.
- [\*\*AtmPG\*\*](#)  
This topic describes the naming rule for an asynchronous transfer mode (ATM) protection group.
- [\*\*AtmService\*\*](#)  
This topic describes the naming rule for an ATM service.
- [\*\*CTP\*\*](#)  
This topic describes the naming rule for a connection termination point (CTP). A CTP is a port of a PTP or an FTP.
- [\*\*EMS\*\*](#)  
This topic describes the naming rule for an element management system (EMS), including the managed subnets and the EMS itself.
- [\*\*EncapsulationLayerLink\*\*](#)  
This topic describes the naming rule for an encapsulation layer link (ELL).
- [\*\*EProtectionGroup\*\*](#)  
This topic describes the naming rule of a equipment protection group.
- [\*\*Equipment\*\*](#)  
This topic describes the naming rule for a device. A device represents a manageable physical component of an NE, such as a circuit board or a fan.
- [\*\*EquipmentHolder\*\*](#)  
This topic describes the naming rule for the equipment holder. Equipment holder is a resource that can hold other physical components. Currently, equipment holders supported by the CORBA NBI include racks, shelves, slots, and subslots.
- [\*\*ERPSPG\*\*](#)  
This topic describes the naming rule for an Ethernet ring protection switching (ERPS) protection group.
- [\*\*EthService\*\*](#)  
This topic describes the naming rule for an Ethernet service.
- [\*\*Flow\*\*](#)  
This topic describes the naming rule for a flow.

- [\*\*Flowdomain\*\*](#)  
This topic describes the naming rule for a flow domain.
- [\*\*FlowDomainFragment\*\*](#)  
This topic describes the naming rule for a flow domain fragment (FDFr).
- [\*\*FTP\*\*](#)  
This topic describes the naming rule for a floating termination point (FTP). An FTP is a logical port.
- [\*\*IFProtectionGroup\*\*](#)  
This topic describes the naming rule for an intermediate frequency (IF) protection group.
- [\*\*IPCrossConnection\*\*](#)  
This topic describes the naming rule for a static tunnel. A static tunnel can be a static MPLS tunnel or PW Switch service.
- [\*\*LinkAggregationGroup\*\*](#)  
This topic describes the naming rule for a link aggregation group.
- [\*\*MaintenanceAssociation\*\*](#)  
This topic describes the naming rule for a maintenance association (MA).
- [\*\*MaintenanceDomain\*\*](#)  
This topic describes the naming rule for a maintenance domain.
- [\*\*ManagedElement\*\*](#)  
This topic describes the naming rule for a managed element. A managed element is an NE managed by the EMS.
- [\*\*MatrixFlowDomainFragment\*\*](#)  
This topic describes the naming rule for a matrix FDFr (MFDFr). An MFDFr can correspond to a PWE3, VPLS or NativeETH service.
- [\*\*MEP\*\*](#)  
This topic describes the naming rule for a maintenance end point (MEP).
- [\*\*MIP\*\*](#)  
This topic describes the naming rule for a maintenance intermediate point (MIP).
- [\*\*ProtectionGroup\*\*](#)  
This topic describes the naming rule for a protection group.
- [\*\*ProtectionSubnetwork\*\*](#)  
This topic describes the naming rule for a protection subnet.
- [\*\*PTP\*\*](#)  
This topic describes the naming rule for a physical termination point (PTP). A PTP is a physical port.

- [\*\*QosRule\*\*](#)  
This topic describes the naming rule for a QoS rule.
- [\*\*RMEP\*\*](#)  
This topic describes the naming rule for a remote maintenance end point (REMP).
- [\*\*Routing Area\*\*](#)  
This topic describes the naming rule for a routing area.
- [\*\*RPRNode\*\*](#)  
This topic describes the naming rule for an resilient racket ring RPR node.
- [\*\*SNPPLink\*\*](#)  
This topic describes the naming rule for an Subnetwork Point Pool (SNPP) link.
- [\*\*Subnetwork\*\*](#)  
This topic describes the naming rule for a subnet. A subnet is a topology managed by the EMS.
- [\*\*SubnetworkConnection\*\*](#)  
This topic describes the naming rule of a subnet connection (SNC). An SNC can be a connection between two ports within a subnet, or between subnets.
- [\*\*TCProfile\*\*](#)  
This topic describes the naming rule for a traffic control policy.
- [\*\*TopologicalLink\*\*](#)  
This topic describes the naming rule for a topological link. A topological link can be a physical connection between two ports or a logical link between two logical ports.
- [\*\*TopoSubnetwork\*\*](#)  
This topic describes the naming rule for a topology object in a subnet.
- [\*\*TrafficDescriptor\*\*](#)  
This topic describes the naming rule for a traffic descriptor. A traffic descriptor is used to describe a series of features, such as bandwidth or QoS features.
- [\*\*TrafficTrunk\*\*](#)  
This topic provides an example for naming a traffic trunk. A traffic trunk can be a dynamic MPLS tunnel, an IP tunnel, or a PW.
- [\*\*TunnelPG\*\*](#)  
This topic describes the naming rule for an IP protection group.
- [\*\*VirtualBridge\*\*](#)  
This topic describes the naming rule for a virtual bridge.
- [\*\*WDMPG\*\*](#)  
This topic describes the naming rule for a WDM protection group.
- [\*\*VLAN\*\*](#)  
This topic describes the naming rule for a virtual local area network (VLAN).

- [XPICGroup](#)  
This topic describes the naming rule for a cross polarization interference cancellation (XPIC) group.
- [TrailNtwProtection](#)  
This topic describes the naming rule for a tunnel APS protection group.

**Parent topic:** [CORBA NBI Developer Guide \(Configuration\)](#)

## 9.2.9.1 AID

---

AID indicates an object that is not managed by the CORBA NBI.

**Table 1 CTP**

Object name	AID
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145736" 3.name="AID"; value="/shelf=1/slot=4294967295/fb=0/domain=UNKNOWN/port=123/highPath=0/lowPath=0"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.2 AtmPG

---

This topic describes the naming rule for an asynchronous transfer mode (ATM) protection group.

**Table 1 ATM ProtectGroup**

Object name	ATM ProtectGroup
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="AtmPG"; value="ATMPGName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="AtmPG"; value="1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

### 9.2.9.3 AtmService

---

This topic describes the naming rule for an ATM service.

**Table 1 AtmService**

Object name	ATM Service
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="AtmService"; value="ATMServicename"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="AtmService"; value="1"
Remarks	The OSS cannot directly parse the name example in the object name but can only read it as an entire character string.

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.4 CTP

This topic describes the naming rule for a connection termination point (CTP). A CTP is a port of a PTP or an FTP.

**Table 1 CTP**

Object Name	CTP		
Naming rule in TMF	1.name="EMS"; value="CompanyName/EMSname" 2.name="ManagedElement"; value="ManagedElementName" 3.name="PTP"; value="PTPName" or name="FTP"; value="FTPName" 4.name="CTP"; value="CTPName"		
Name example in theU2000 CORBA NBI	SDH	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="589825" 3.name="PTP"; value="/rack=1/shelf=1/slot=5/domain=sdh/port=2" 4.name="CTP"; value="/sts3c_au4-j=1/vt2_tu12-k=1-l=3-m=2"	
	WDM	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="33554433" 3.name="PTP"; value="/rack=1/shelf=590224/slot=2/domain=wdm/port=1" 4.name="CTP"; value="/och=1/dsr=2"	
OTN	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="33554433" 3.name="PTP"; value="/rack=1/shelf=590224/slot=2/domain=wdm/port=1" 4.name="CTP"; value="/och=1/dsr=1"		
MSTP	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="590174" 3.name="PTP"; value="/rack=1/shelf=1/slot=4/domain=eth/type=mac/port=1" 4.name="CTP"; value="/tunnellabel=16/vclabel=0"		
PTN	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145766" 3.name="PTP"; value="/rack=1/shelf=1/slot=1/domain=ptn/type=physical/port=15" 4.name="CTP"; value="/outLabel=41"		

**Table 1 CTP**

Object Name	CTP	
Remarks	SDH	<p>According to the actual scenario, the SDH CTP has the following several formats.</p> <ol style="list-style-type: none"><li>1. name="CTP"; value="/sts3c_au4-j=1/vt2_tu12-k=2-l=1-m=1" Scenario: VC12 CTP</li><li>2. name="CTP"; value="/sts3c_au4-j=1/tu3_vc3-k=2" Scenario: VC3 CTP</li><li>3. name="CTP"; value="/sts3c_au4-j=3" Scenario: VC4 CTP</li><li>4. name="CTP"; value="/sts3c_au4=1" Scenario: E4 level CTP included in PDH port</li><li>5. name="CTP"; value="/tu3_vc3=1" Scenario: E3 level CTP included in PDH port</li><li>6. name="CTP"; value="/vt2_tu12=1" Scenario: E1 level CTP included in PDH port</li><li>7. name="CTP"; value="/vt15_tu11=1" Scenario: T1 level CTP included in PDH port</li></ol>
	WDM	<p>According to the actual scenario, the WDM CTP has the following several formats.</p> <ol style="list-style-type: none"><li>1. name="CTP"; value="/dsr=1" Scenario: the client-side interface of the service convergence board and bidirectional wavelength conversion board</li><li>2. name="CTP"; value="/dsr=1/och=1" Scenario: unidirectional wavelength conversion board only</li><li>3. name="CTP"; value="/och=1/dsr=1" Scenario: line-side interface of the service convergence board</li><li>4. name="CTP"; value="/och=1" Scenario: line-side interface of the service convergence board and bidirectional wavelength conversion board</li><li>5. name="CTP"; value="/oms=1" Scenario: line-side interface of the multiplexer board, demultiplexer board and add/drop multiplexing board</li><li>6. name="CTP"; value="/os=1" Scenario: optical amplifier board, optical attenuation board and optical line protection (OLP) board</li></ol>
	OTN	<p>According to the actual scenario, OTN CTP has the following several formats:</p> <ol style="list-style-type: none"><li>1. name="CTP"; value="/odu1=1"</li></ol>

**Table 1 CTP**

Object Name	CTP
	<p>Scenario: internal logical port</p> <p>2. name="CTP"; value="/otu1=1"</p> <p>Scenario: client-side interface of an OTU board that receives colorless OTN signals</p> <p>3. name="CTP"; value="/och=1/otu1=1"</p> <p>Scenario: Scenario: client-side interface of an OTU board that receives color OTN signals</p> <p>4. name="CTP"; value="/och=1/dsr=1"</p> <p>Scenario: line-side interface of a service-convergence board</p> <p>5. name="CTP"; value="/fragment=1/odu1=1"</p> <p>Scenario: inverse-multiplexing virtual concatenation on an OTN board</p>
MSTP	<p>The Ethernet CTP is divided by adding labels of flow points to the PTP. The labels are in the following several formats.</p> <p>1. name="CTP"; value="/tunnellabel=16/vclabel=0"</p> <p>Scenario: MPLS ports and the tunnel label cannot be "0"</p> <p>2. name="CTP"; value="/ethvid=0"</p> <p>Scenario: general ports, ethvid=0 indicates exclusive, ethvid&gt;0 indicates VLAN shared</p> <p>3. name="CTP"; value="/ethcvid=2/ethsvid=1"</p> <p>Scenario: QinQ ports</p> <p>4. name="CTP"; value="/eth=1"</p> <p>Scenario: QinQ services based on port transparent transmission</p>
PTN	<p>According to the actual scenario, there are the following several formats:</p> <p>1. name="CTP"; value="/outLabel=16"</p> <p>Scenario: source end of Tunnel</p> <p>2. name="CTP"; value="/inLabel=16"</p> <p>Scenario: sink end of Tunnel</p> <p>3. name="CTP"; value="AP=2 74 1"</p> <p>Scenario: service access point of PWE3</p>

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.5 EMS

---

This topic describes the naming rule for an element management system (EMS), including the managed subnets and the EMS itself.

**Table 1 EMS**

Object name	EMS
Naming rule in TMF	name="EMS"; value="CompanyName/EMSname"
Name example in theU2000 CORBA NBI	name="EMS"; value="Huawei/U2000"
Remarks	If it is necessary to manage several iManager U2000s at the same time, modify the U2000 names through the Msuite to ensure that each U2000 name is unique in the NMS management domain. For the details, refer to "Deploying and Configuring the CORBA NBI" in "CORBA NBI User Guide".

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.6 EncapsulationLayerLink

---

This topic describes the naming rule for an encapsulation layer link (ELL).

**Table 1 EncapsulationLayerLink**

Object name	EncapsulationLayerLink
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="EncapsulationLayerLink "; value="EncapsulationLayerLinkName "
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="EncapsulationLayerLink"; value="2005-12-22 16:59:35 - 1770 - eth"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.7 EProtectionGroup

---

This topic describes the naming rule of a equipment protection group.

**Table 1 EP GP**

Object name	EP ProtectionGroup
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="EPGP"; value="EPGPName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="EPGP"; value="589825/1/2/1"
Remarks	As for the EPGP value "589825/1/2/1", "589825" represents NE ID. The following "1" represents the Subrack ID. "2" represents the EPGP ID. The last "1" represents the extended ID.

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.8 Equipment

---

This topic describes the naming rule for a device. A device represents a manageable physical component of an NE, such as a circuit board or a fan.

**Table 1 Equipment**

Object name	Equipment
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="EquipmentHolder"; value="EquipmentHolderName" 4. name="Equipment"; value="EquipmentName"

**Table 1 Equipment**

Object name	Equipment
Name example in theU2000 CORBA NBI	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="EquipmentHolder"; value="/rack=1/shelf=1/slot=5" 4. name="Equipment"; value="1"
Remarks	N/A

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.9 EquipmentHolder

---

This topic describes the naming rule for the equipment holder. Equipment holder is a resource that can hold other physical components. Currently, equipment holders supported by the CORBA NBI include racks, shelves, slots, and subslots.

**Table 1 EquipmentHolder**

Object Name	EquipmentHolder	
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="EquipmentHolder"; value="EquipmentHolderName"	
Name example in theU2000 CORBA NBI	SDH NE	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="EquipmentHolder"; value="/rack=1/shelf=1/slot=5"
	WDM NE	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="33554433" 3. name="EquipmentHolder"; value="/rack=1/shelf=590225/slot=1"
Remarks	Currently, the U2000 CORBA interface supports four types of EquipmentHolder objects: rack, shelf, slot, and subslot.	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.10 ERPSPG

---

This topic describes the naming rule for an Ethernet ring protection switching (ERPS) protection group.

**Table 1 ERPSPG**

Object Name	ERPSPG
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145729" 4.name="ERPSPG"; value="1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.11 EthService

---

This topic describes the naming rule for an Ethernet service.

**Table 1 Ethernet Service**

Object name	ETH Service
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="EthService"; value="EthServiceName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="EthService"; value="1/4/1/2"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.12 Flow

---

This topic describes the naming rule for a flow.

**Table 1 Flow**

Object name	Flow
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="Flow"; value="FlowName "
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="Flow"; value="/rack=1/shelf=1/slot=1/flow=1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.13 Flowdomain

---

This topic describes the naming rule for a flow domain.

**Table 1 Flow Domain**

Object name	FlowDomain
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="Flowdomain"; value="FlowDomainName "
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="Flowdomain"; value="1"
Remarks	Currently there is only one flow domain in the U2000.

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.14 FlowDomainFragment

---

This topic describes the naming rule for a flow domain fragment (FDFr).

**Table 1 FlowDomainFragment**

Object name	FlowDomainFragment
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="Flowdomain"; value=" FlowdomainName" 3. name="FlowdomainFragment "; value="FlowdomainFragmentName "
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="Flowdomain"; value="1" 3. name="FlowdomainFragment"; value="2005-12-22 16:46:07 - 54 -eth"
Remarks	The OSS cannot directly parse the name example in the object name but can only read it as an entire character string.

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.15 FTP

---

This topic describes the naming rule for a floating termination point (FTP). An FTP is a logical port.

**Table 1 FTP**

Object name	FTP
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="FTP"; value="FTPName"
Name example in	WDM 1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="33554433" 3. name="FTP"; value="/rack=1/shelf=590225/slot=8/domain=wdm/port=201"

**Table 1 FTP**

Object name	FTP	
theU2000 CORBA NBI	PTN	<p>1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145433" 3. name="FTP"; value="/rack=1/shelf=1/domain=ptn/type=mp/port=1"</p> <p>PTN6900 Tunnel: 1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145728" 3.name="FTP"; value="/rack=1/shelf=1/slot=0/sub_slot=0/type=tunnelif/port=1/cli_name=Tunnel0/0/1"</p> <p>PTN6900 Eth-Trunk: 1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145728" 3.name="FTP"; value="/rack=1/shelf=1/type=ethtrunk/port=10/cli_name=Eth-Trunk10"</p> <p>FTP of PW: 1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145766" 3.name="FTP"; value="PW=26 5   "</p>
	PTN	In the case of the FTP in the PTN domain, the port type can be any of the following: mp: MP group ethtrunk: link aggregation group (LAG) EoVLAN: VLAN subport EoATM: virtual Ethernet port based on the DSL port (ATM bound group) EoEFM: virtual Ethernet port based on the DSL port (EFM bound group) serial: logical serial port ima: ATM IMA group eth: virtual Ethernet port
Remarks	For naming rules for the rack, shelf in an FTP name, refer to section <a href="#">EquipmentHolder</a> .	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.16 IFProtectionGroup

This topic describes the naming rule for an intermediate frequency (IF) protection group.

**Table 1 IFProtectionGroup**

Object Name	IFProtectionGroup
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145729" 4.name="PGP"; value="1/1/7"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.17 IPCrossConnection

---

This topic describes the naming rule for a static tunnel. A static tunnel can be a static MPLS tunnel or PW Switch service.

**Table 1 IPCrossConnection**

Object Name	IPCrossConnection		
Naming rule in TMF	N/A		
Naming example of parameters in U2000 CORBA interface	PW	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145787" 3.name="IPCrossConnection"; value="PWSW=120      "	
	Tunnel	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145787" 3. name="IPCrossConnection"; value="TUNNEL=1 4 1.0.0.1 1.1.4.8 3  1  "	
Remarks			

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.18 LinkAggregationGroup

---

This topic describes the naming rule for a link aggregation group.

**Table 1 LinkAggregationGroup**

Object name	LinkAggregationGroup
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="LAG"; value="LAGName"
Naming example of parameters in U2000 CORBA interface	1. name "EMS"; value="Huawei/U2000" 2. name " ManagedElement"; value="590174" 3. name "LAG"; value="262145"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.19 MaintenanceAssociation

---

This topic describes the naming rule for a maintenance association (MA).

**Table 1 MaintenanceAssociation**

Object Name	MaintenanceAssociation
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145787" 3.name="MaintenanceDomain"; value="5" 4.name=" MaintenanceAssociation"; value="1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.20 MaintenanceDomain

---

This topic describes the naming rule for a maintenance domain.

**Table 1 MaintenanceDomain**

Object Name	MaintenanceDomain
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145787" 3.name=" MaintenanceDomain"; value="1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.21 ManagedElement

---

This topic describes the naming rule for a managed element. A managed element is an NE managed by the EMS.

**Table 1 ManagedElement**

Object Name	ManagedElement
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName"
Name example in theU2000 CORBA NBI	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825"
Remarks	N/A

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.22 MatrixFlowDomainFragment

---

This topic describes the naming rule for a matrix FDFr (MFDFr). An MFDFr can correspond to a PWE3, VPLS or NativeETH service.

**Table 1 MatrixFlowDomainFragment**

Object Name	MatrixFlowDomainFragment
Naming rule in TMF	1.name="EMS"; value="CompanyName/EMSname" 2.name="Flowdomain"; value=" FlowdomainName" 3.name="MatrixFlowdomainFragment "; value="MatrixFlowdomainFragmentName "
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145734" 3.name="MatrixFlowdomainFragment"; value="PWE3=2 8910 "
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145734" 3.name="MatrixFlowdomainFragment"; value="VSI=348 "
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145734" 3.name="MatrixFlowdomainFragment"; value="NETH=1111"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.23 MEP

---

This topic describes the naming rule for a maintenance end point (MEP).

**Table 1 MEP**

Object Name	MEP
Naming rule in TMF	None.

**Table 1 MEP**

Object Name	MEP
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145787" 3.name="MaintenanceDomain"; value="3" 4.name="MaintenanceAssociation"; value="2" 5.name="MEP"; value="234"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.24 MIP

---

This topic describes the naming rule for a maintenance intermediate point (MIP).

**Table 1 MIP**

Object Name	MIP
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145787" 3.name="MaintenanceDomain"; value="4" 4.name="MIP"; value="322"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.25 ProtectionGroup

---

This topic describes the naming rule for a protection group.

**Table 1 ProtectionGroup**

Object name	ProtectionGroup
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="PGP"; value="ProtectionGroupName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="PGP"; value="1/5/2"
Remarks	The OSS cannot directly parse the name example in the object name but can only read it as an entire character string.

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.26 ProtectionSubnetwork

---

This topic describes the naming rule for a protection subnet.

**Table 1 ProtectionSubnetwork**

Object name	ProtectionSubnetwork
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ProtectionSubnetwork"; value="ProtectionSubnetworkName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ProtectionSubnetwork "; value="48"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.27 PTP

---

This topic describes the naming rule for a physical termination point (PTP). A PTP is a physical port.

**Table 1 PTP**

Object Name	PTP	
Naming rule in TMF		1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="PTP"; value="PTPName"
Name example in theU2000 CORBA NBI	SDH	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="PTP"; value="/rack=1/shelf=1/slot=5/domain=sdh/port=2"
	WDM	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="33554433" 3. name="PTP"; value="/rack=1/shelf=590225/slot=8/domain=wdm/port=3"
	MSTP	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="PTP"; value="/rack=1/shelf=1/slot=5/domain=eth/type=mp/port=1"
	RTN	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3554433" 3. name="PTP"; value="/rack=1/shelf=1/slot=8/domain=rtn/port=1"
	PTN	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145433" 3. name="PTP"; value="/rack=1/shelf=1/slot=5/domain=ptn/type=physical/port=1" PTN6900 Ethernet: 1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145728" 3. name="PTP"; value="/rack=1/shelf=1/slot=1/sub_slot=0/type=eth/port=0/cli_name=GigabitEthernet1/0/0" PTN6900 E1: 1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145728" 3. name="PTP"; value="/rack=1/shelf=1/slot=12/sub_slot=0/type=pdh/port=0/cli_name=E1 12/0/0" PTN6900 Cpos: 1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145728"

**Table 1 PTP**

Object Name	PTP	
		3. name="PTP"; value="/rack=1/shelf=1/slot=1/sub_slot=3/type=pos/port=0/cli_name=Cpos1/3/0"
ROUTE		Main logical interface: 1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145728" 3.name="FTP"; value="/rack=1/shelf=1/type=ethtrunk/port=1/cli_name=port" Logical subinterface: 1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145728" 3.name="FTP"; value="/rack=1/shelf=1/type=ethtrunk/port=1/cli_name=port" 4.name="CTP"; value="/sub_port=1" Physical ports: 1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145728" 3.name="PTP"; value="/rack=1/shelf=1/slot=3/sub_slot=0/type=eth/port=1/cli_name=GigabitEthernet3/0/1"
DDN		1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145733" 3.name="PTP"; value="/rack=1/shelf=1/slot=3/domain=ddn/port=10"
Remarks	For the rules of naming the rack or shelf in a PTP name, see <a href="#">EquipmentHolder</a> .	
MSTP	<p>In the case of the PTP in the MSTP domain, the port type can be:</p> <ol style="list-style-type: none"><li>1. Ethernet domain (in this case, domain=eth) <b>mac</b>: external Ethernet port. <b>mp</b>: internal Ethernet port (VCTRUNK port). <b>rpr</b>: resilient packet ring (RPR) Ethernet port. <b>lp</b>: VB logical port. For example, value="/rack=1/shelf=1/slot=5/domain=eth/type=lp/vb=1/port=1" for a PTP.</li><li>2. ATM domain (in this case, domain=atm) <b>atm</b>: external ATM port. <b>atmtrunk</b>: internal ATM port.</li></ol>	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.28 QosRule

---

This topic describes the naming rule for a QoS rule.

**Table 1 QosRule**

Object name	QoS
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="QosRule"; value="QosName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="QosRule"; value="/rack=1/shelf=1/slot=1/qostype=car/qos=1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.29 RMEP

---

This topic describes the naming rule for a remote maintenance end point (REMP).

**Table 1 RMEP**

Object Name	RMEP
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145787" 3.name="MaintenanceDomain"; value="4" 4.name="MaintenanceAssociation"; value="1" 5.name="RMEP"; value="3"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.30 Routing Area

---

This topic describes the naming rule for a routing area.

**Table 1 Routing Area**

Object name	RoutingArea
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="RoutingArea"; value="RoutingAreaName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="RoutingArea"; value="1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.31 RPRNode

---

This topic describes the naming rule for an resilient racket ring RPR node.

**Table 1 RPRNode**

Object name	RPRNode
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="RPRNode"; value="RPRNodeName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="590174" 3. name="RPRNode"; value="/rack=1/shelf=1/slot=5/node=1"

**Table 1 RPRNode**

Object name	RPRNode
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.32 SNPPLink

---

This topic describes the naming rule for an Subnetwork Point Pool (SNPP) link.

**Table 1 SNPPLink**

Object name	SNPPLink
Naming rule in TMF	<ol style="list-style-type: none"><li>1. name="EMS"; value="CompanyName/EMSname"</li><li>2. name="RoutingArea"; value="RoutingAreaName"</li><li>3. name="SnppLink"; value="SnppLinkName "</li></ol>
Naming example of parameters in U2000 CORBA interface	<ol style="list-style-type: none"><li>1. name="EMS"; value="Huawei/U2000"</li><li>2. name="RoutingArea"; value="1"</li><li>3. name="SnppLink"; value="3145745-1811939330-3145747-1811939329"</li></ol>
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.33 Subnetwork

---

This topic describes the naming rule for a subnet. A subnet is a topology managed by the EMS.

**Table 1 Subnetwork**

Object name	Subnetwork
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="MultiLayerSubnetwork"; value="SubnetworkName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="MultiLayerSubnetwork"; value="1"
Remarks	Currently the <b>MultiLayerSubnetwork</b> value is always 1.

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.34 SubnetworkConnection

---

This topic describes the naming rule of a subnet connection (SNC). An SNC can be a connection between two ports within a subnet, or between subnets.

**Table 1 SubnetworkConnection**

Object name	SubnetworkConnection
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="MultiLayerSubnetwork"; value="SubnetworkName" 3. name="SubnetworkConnection"; value="SubnetworkConnectionName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="MultiLayerSubnetwork"; value="1" 3. name="SubnetworkConnection"; value="2008-10-12 02:17:58 - 286 -wdm"
Remarks	Currently the <b>MultiLayerSubnetwork</b> value is always 1.

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.35 TCProfile

---

This topic describes the naming rule for a traffic control policy.

**Table 1 TCProfile**

Object Name	TCProfile
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="TCP PROFILE"; value="/type=ATM/devtype=0/name=10"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.36 TopologicalLink

---

This topic describes the naming rule for a topological link. A topological link can be a physical connection between two ports or a logical link between two logical ports.

**Table 1 TopologicalLink**

Object name	TopologicalLink
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="TopologicalLink"; value="TopologicalLinkName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="TopologicalLink"; value="2008-10-17 19:02:47 - 9"
Remarks	More description for the value of TopologicalLinkName: If a topological link is created on the U2000 earlier than V200R014C50, the value of TopologicalLinkName adopts a format similar to "2008-10-17 19:02:47 - 9". Otherwise, the value of TopologicalLinkName adopts a format similar to "1399864452-2-3145734-3145737".

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.37 TopoSubnetwork

---

This topic describes the naming rule for a topology object in a subnet.

**Table 1 TopoSubnetwork**

Object name	TopoSubnetwork
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="TopoSubnetwork"; value=" TopoSubnetwork Name"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="TopoSubnetwork"; value="1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.38 TrafficDescriptor

---

This topic describes the naming rule for a traffic descriptor. A traffic descriptor is used to describe a series of features, such as bandwidth or QoS features.

**Table 1 TrafficDescriptor**

Object name	TrafficDescriptor
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="TrafficDescriptor"; value="TrafficDescriptorName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei /U2000" 2. name="ManagedElement"; value="589825" 3. name="TrafficDescriptor"; value="101"

**Table 1 TrafficDescriptor**

Object name	TrafficDescriptor
Remarks	According to the name of a TrafficDescriptor, you can locate the next traffic descriptor in an NE.

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.39 TrafficTrunk

---

This topic provides an example for naming a traffic trunk. A traffic trunk can be a dynamic MPLS tunnel, an IP tunnel, or a PW.

**Table 1 TrafficTrunk**

Object Name	TrafficTrunk
Naming rule in TMF	N/A
Naming example of parameters in U2000 CORBA interface	<ol style="list-style-type: none"><li>1. name="EMS"; value="Huawei/U2000"</li><li>2. name="ManagedElement"; value="3145763"</li><li>3. name="TrafficTrunk"; value="TUNNEL=1 4 1.0.0.1 1.1.4.8 3  1  "</li></ol>
Remarks	N/A

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.40 TunnelPG

---

This topic describes the naming rule for an IP protection group.

**Table 1 TunnelPG**

Object name	TunnelPG
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="TunnelPG"; value="TunnelPGName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145749" 3. name="TunnelPG"; value="/pgType=PT_MSPAPS/pgID=128"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## **9.2.9.41 VirtualBridge**

---

This topic describes the naming rule for a virtual bridge.

**Table 1 VirtualBridge**

Object name	VirtualBridge
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="vb"; value="VBName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="vb"; value="/rack=1/shelf=1/slot=2/vb=1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.42 WDMPG

---

This topic describes the naming rule for a WDM protection group.

**Table 1 WDMPG**

Object name	WDM ProtectionGroup
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="WDMPG"; value="WDMPGName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="33554433" 3. name="WDMPG"; value="/pgtype=1/shelf=590004/pgID=1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.43 VLAN

---

This topic describes the naming rule for a virtual local area network (VLAN).

**Table 1 VLAN**

Object name	VLAN
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="vlan"; value="VlanName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="vlan"; value="/rack=1/shelf=1/slot=2/vb=1/vlan=1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.44 XPICGroup

---

This topic describes the naming rule for a cross polarization interference cancellation (XPIC) group.

**Table 1 XPICGroup**

Object Name	XPICGroup
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145729" 4.name="XPICGroup"; value="1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.9.45 TrailNtwProtection

---

This topic describes the naming rule for a tunnel APS protection group.

**Table 1 TrailNtwProtection**

Object	TrailNtwProtection
Naming rule in TMF	N/A
U2000Naming example	1.name="EMS"; value="Huawei/U2000" 2.name="TUNNELPGTRAIL"; value="1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.2.10 AdditionalInfo Description

---

This chapter describes the usage of additional fields in each functional module of the CORBA NBI. The additional fields, consisting of additionalInfo and additionalCreationInfo.

- [CrossConnect\\_T](#)

This topic provides information about the additional fields for the cross-connection data type.

- [CurrentMaintenanceOperation\\_T](#)

This topic describes the additional information about maintenance operations.

- [ELLLinkCreateData\\_T](#)

This topic provides information about the additional fields for the ELL creation data type.

- [EMS\\_T](#)

This topic provides information about the additional fields for the EMS object data type.

- [Equipment\\_T](#)

This topic provides information about the additional parameters for the board data type.

- [EquipmentHolder\\_T](#)

This topic provides information about the additional fields for the equipment holder data type.

- [EthernetOAMOperation\\_T](#)

This topic provides information about the additional fields for the Ethernet OAM data type.

- [FDFrCreateData\\_T](#)

This topic provides information about the additional fields for the flow domain fragment and VPN creation data type.

- [HW\\_EthService\\_T](#)

This topic provides information about the additional fields for the Ethernet service data type.

- [HW\\_SnppLink\\_T](#)

This topic describes the additional field for SNPP links of data type.

- [HW\\_VirtualBridge\\_T](#)

This topic describes additional fields of the data structure of a virtual bridge.

- [ManagedElement\\_T](#)

This topic provides information about the additional fields for the NE data type.

- [NT\\_EPROTECTION\\_SWITCH](#)

This topic provides information about the additional fields for a notification about equipment protection switchover event.

- [NT\\_PROTECTION\\_SWITCH](#)

This topic provides information about the additional fields for a notification about a protection switchover event.

- [NT\\_WDMPROTECTION\\_SWITCH](#)

This topic provides information about the additional fields for a notification about a WDM protection switchover event.

- [ProtectionSubnetwork\\_T](#)

This topic provides information about the additional field for the protection subnet data type.

- [SNCCreateData\\_T](#)

This topic provides information about the additional fields for the SNC creation data type.

- [SNCModifyData\\_T](#)

This topic provides information about the additional fields for the SNC modification data type.

- [SplitHorizonGroup\\_T](#)

This topic provides information about the additional fields for the horizontal splitter group data type.

- [StaticMacAddress\\_T](#)

This topic provides information about the additional field for the static MAC address data type.

- [SubnetworkConnection\\_T](#)

This topic provides the information about the additional fields for the SNC data type.

- [TerminationPoint\\_T](#)

This topic provides information about the additional field for the termination point data type.

- [TopologicalLink\\_T](#)

This topic describes additional fields of the data structure of a topological link.

- [FTPCreateData\\_T](#)

This topic provides information about the additional fields for the FTP data type.

- [HW\\_STCurrentPort\\_T](#)

This topic provides information about the additional field for the HW\_STCurrentPort\_T data type.

- [TrafficDescriptor\\_T](#)

This topic provides information about the additional field for the traffic descriptor data type.

- [STInfo\\_T](#)

This topic describes the additional information of the VB data types.

- [TrafficConditioningProfileAssign\\_T](#)

This topic describes additional fields for the data structure of traffic policy profile assignment, including DS policy, ATM policy and PW policy.

- [TrafficTrunk\\_T](#)

This topic describes additional fields of the data structure of traffic trunks, E2E static tunnels.

- [STCurrentBridge\\_T](#)

This topic describes the additional information of the bridge data types.

**Parent topic:** [CORBA NBI Developer Guide \(Configuration\)](#)

## 9.2.10.1 CrossConnect\_T

---

This topic provides information about the additional fields for the cross-connection data type.

Field Name	Value	Meaning	Remarks
Direction	FIXED STRING Value range: Reverse: used for the negative SDH trail Obverse: used for the positive SDH trail	Indicates the direction of a cross-connection in routing information.	Used to query routing information about trails.
ProtectionRole	FIXED STRING Value range: Work: working cross-connection Protection: protecting cross-connection	Indicates the role of the cross-connection.	Mainly used to distinguish the working route and protection route when creating an all route trail.
Fixed	FIXED STRING Value range: True: static cross-connection False: dynamic cross-connection	Indicates the cross-connection type.	N/A
ClientType	FIXED STRING Value range: SDH SONET GBE(GFP-T) GBE 10GBE(LAN) 10GBE(WAN) 10GBE FC FC(Slice) ESCON FICON FICON(Slice) ODU	Indicates the service type of WDM electrical cross-connection.	Used in WDM electrical cross-connection.

Field Name	Value	Meaning	Remarks
	OTU OTU(5G) FE HDTV DVB DVB-SDI FDDI HYBRID ISC INFINIBAND CPRI ETR Value range for ODUflex cross-connection types: FC_400 FC_800 InfiniBand 2_5G 3GSDI CPRI4 PACKET Custom		
ClientRate	<b>FIXED STRING</b> Value range (Integer values outside brackets are the returned values and character strings inside brackets are used to identify cross-connection types.) (STM1)155 (STM2)311 (STM4)622 (STM8)1250 (STM16)2500 (STM64)10000 (STM256)40000 (OC3)155 (OC12)622 (OC48)2500 (OC192)10000 (OC768)40000 (GEGFPT)1250	Indicates the service rate of WDM electrical cross-connection.	Used in WDM electrical cross-connection. The integer entered represents the service rate.

Field Name	Value	Meaning	Remarks
	(GE)1250 (10GE_LAN)10000 (10GE_WAN)10000 (10GE)10000 (FC_25)266 (FC_50)531 (FC_100)1062 (FC_200)2124 (FC_400)4248 (FC_800)8500 (FC_1000)10000 (FC_1200)10625 (FC_100_SLICE)1062 (FC_200_SLICE)2124 (ESCON)200 (FICON)1062 (FICON_Express)2124 (FICON4G)4000 (FICON8G)8500 (FICONEXPRESS_SLICE)2124 The service rate for ODUflex cross-connections is an integer.		
Frequency	FIXED STRING For example, 196.000.	Indicates the frequency of WDM optical cross-connection.	Used in WDM optical cross-connection.
ODUk_TimeSlot	FIXED STRING The value is an integer.	The timeslot of ODUFlex cross-connections.	Used only when ClientType is ODUflex service.
Label	FREE STRING	Indicates the label of the cross-connection.	Used to query or modify the label of the SDH cross-connection.
SwitchingCondition	FIXED STRING Value range: TIM EXC SD UNEQ	Indicates the switching condition.	Used to create the switching condition of the SDH cross-connection. Only SDH cross-connections of the

Field Name	Value	Meaning	Remarks
	SLM BIPOVER		add_drop_A or add_drop_z type are supported. Multiple values can be entered and are separated by commas (,).
ErrorReason	FREE STRING	Indicates the failure cause.	Used to return the failure cause when SDH cross-connections fail to be created or activated.
RevertiveMode	Non-Revertive Revertive, default: Non-Revertive	Revertive mode of the ODUk SNCP CC.	Only use for ODUk SNCP CC
WTRTime	Second, 300-720, Caretdefault: 600	Wait to Revertive time of the ODUk SNCP CC.	Only use for ODUk SNCP CC, valid only RevertiveMode = Revertive
holdofftime	100Ms, 0-100, default: 0	Hold off time of the ODUk SNCP CC.	Only use for ODUk SNCP CC
switchDetectionTime	10 Ms, 0-1000	switchDetectionTime of the ODUk SNCP CC.	Only use for ODUk SNCP CC
SNCPType	SNC/I,SNC/N(PM),SNC/N(TCM1), SNC/N(TCM2), SNC/N(TCM3), SNC/N(TCM4), SNC/N(TCM5), SNC/N(TCM6), SNC/S(TCM1), SNC/S(TCM2), SNC/S(TCM3), SNC/S(TCM4), SNC/S(TCM5), SNC/S(TCM6)	SNCP type of ODUk SNCP CC.	Only use for ODUk SNCP CC

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.2 CurrentMaintenanceOperation\_T

---

This topic describes the additional information about maintenance operations.

Field Name	Value	Meaning	Remarks
<b>OAM_PW_CC</b>			
Interval	1000, 3.3, 10, 20, 50, 100, 200, 500	Indicates the packet detection interval.	N/A
<b>OAM_PW_LT</b>			
FrameSize	Number[84, 1400]	Indicates the packet length.	N/A
TTL	Number[1, 255]	Indicates the time to live (TTL).	N/A
ReplyTimeout	Number[1, 60000]	Indicates the response timeout period.	N/A
EXP	Number[0, 7]	Indicates the experimental bits (EXP).	N/A
ReplyMode	IPv4_UDP, No_Responsion, Channels_Control	Indicates the response mode.	Currently only value IPv4_UDP is supported.
<b>OAM_PW_LB</b>			
FrameCount	Number[1, 4294967295]	Indicates the number of packets.	N/A
FrameSize	Number[64, 1400]	Indicates the packet length.	N/A
TTL	Number[1, 255]	Indicates the TTL.	N/A
ReplyTimeout	Number[1, 60000]	Indicates the response timeout period.	N/A
EXP	Number[0, 7]	Indicates the EXP.	N/A
TransmitInterval	Number[100, 10000]	Indicates the packet transmission interval.	N/A
PeerPwID	N/A	The peer end PW ID	This parameter is needed only by PTN NEs.

Field Name	Value	Meaning	Remarks
DestinationIP	N/A	Indicates the peer IP address.	This parameter is needed only by PTN NEs.
ReplyMode	IPv4_UDP, No_Responsion, Channels_Control	Indicates the response mode.	Currently only value IPv4_UDP is supported.
<b>OAM_LSP_CC</b>			
Interval	1000, 3.3, 10, 20, 50, 100, 200, 500	Indicates the packet detection interval.	N/A
OAMState	Enabled, Disabled	Indicates the OAM status.	N/A
DetectionMode	Manual, Adaptive	Indicates the detection mode.	N/A
BackwardTunnel	N/A	Indicates the reverse tunnel.	N/A
<b>OAM_LSP_LT</b>			
FrameSize	Number[84, 1400]	Indicates the packet length.	N/A
TTL	Number[1, 255]	Indicates the TTL.	N/A
ReplyTimeout	Number[1, 60000]	Indicates the response timeout period.	N/A
EXP	Number[0, 7]	Indicates the EXP.	N/A
ReplyMode	IPv4_UDP, No_Responsion, Channels_Control	Indicates the response mode.	Currently only value Channels_Control is not supported.
<b>OAM_LSP_LB</b>			
FrameCount	Number[1, 4294967295]	Indicates the number of packets.	N/A
FrameSize	Number[64, 1400]	Indicates the packet length.	N/A
TTL	Number[1, 255]	Indicates the TTL.	N/A

Field Name	Value	Meaning	Remarks
ReplyTimeout	Number[1, 60000]	Indicates the response timeout period.	N/A
EXP	Number[0, 7]	Indicates the EXP.	N/A
TransmitInterval	Number[100, 10000]	Indicates the packet transmission interval.	N/A
ReplyMode	IPv4_UDP, No_Response, Channels_Control	Indicates the response mode.	Currently only value Channels_Control is not supported.
<b>OAM_ETHSVR_CC</b>			
CCInterval	3.33, 10, 100, 1000, 10000, 60000, 600000	Indicates the CC test packet transmission interval.	N/A
<b>OAM_ETHSVR_LT</b>			
MAC	N/A	Indicates the MAC address.	N/A
RMEPID	Number[1, 8191]	Indicates the RMEP ID.	N/A
<b>OAM_ETHSVR_LB</b>			
MAC	N/A	Indicates the MAC address.	N/A
FrameCount	Number[1, 255]	Indicates the number of packets.	N/A
FrameSize	Number[64, 65535]	Indicates the packet length.	N/A
EXP	Number[0, 7]	Indicates the EXP.	N/A
RMEPID	Number[1, 8191]	Indicates the RMEP ID.	N/A

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.3 ELLinkCreateData\_T

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This topic provides information about the additional fields for the ELL creation data type.

Field Name	Value	Meaning	Remarks
ActivateStatus	FIXED STRING Value range: ACTIVE: ELL activated DEACTIVE: ELL inactivated	Indicates the activate status of an ELL.	Used to specify the activate status of an ELL when it is being created.
Direction	FIXED STRING Value range: CD_UNI: unidirectional ELL CD_BI: bidirectional ELL	Indicates the direction of an ELL.	Used to specify the direction of an ELL when it is being created.
ReuseSnc	FIXED STRING Value range: Yes: ELL reuse SNC No: ELL does not reuse SNC	Indicates the reuse flag.	Specifies whether the ELL can reuse an SNC when the ELL is created.
SncUniqueID	FREE STRING	Indicates the SNC ID.	Specifies the ID of the SNC that can be reused by the ELL when the ELL is created.

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.4 EMS\_T

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This topic provides information about the additional fields for the EMS object data type.

Field Name	Value	Meaning	Remarks
AlarmSeverity	Null by default.	Indicates the alarm of the currently highest severity on the U2000.	
Location	FREE STRING Default value: local	Indicates the location of the U2000.	

Field Name	Value	Meaning	Remarks
CommuAddress	FIXED STRING For example, 127.0.0.1:12003 127.0.0.1 is the communication IP address of CORBA Agent, 12003 is the communication port of CORBA Agent.	Indicates the information of communication IP address and communication port of CORBA Agent.	
EmsTime	FIXED STRING For example, 20071102110027.0Z Indicates UTC 2007-11- 02 11:00:27.	Indicates the current time (UTC) of the network management system.	
InterfaceVersion	FIXED STRING For example, 2.0	Indicates the interface version.	
EmsState	FIXED STRING For example, normal	Indicates the current status of the U2000.	
AdministrativeState	FIXED STRING Unlocked	Indicates the administrative state of the U2000.	
HardwareVersion	FREE STRING	Indicates the hardware version.	
SoftWareInfo	FREE STRING	Indicates the software information.	
CurrentMENumber	Number	Indicates the current number of physical NEs	
CreateDate	FIXED STRING For example, 20071102110027.0Z Indicates UTC 2007-11- 02 11:00:27.	Indicates the create date of the network management system.	
Creator	FREE STRING	Indicates the creator.	
MaxSupportNE	Default value: 60000	Indicates the maximum number of physical NEs	This parameter is customized and is

Field Name	Value	Meaning	Remarks
		that can be managed by the U2000.	controlled by a configuration item.

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.5 Equipment\_T

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This topic provides information about the additional parameters for the board data type.

Field Name	Value	Meaning	
AlarmSeverity	Fixed string Value range: PS_CRITICAL PS_MAJOR PS_MINOR PS_WARNING PS_INDETERMINATE PS_CLEARED	Indicates the alarm of the currently highest severity on the equipment.	This field is left blank in configuration item instances. By default, the path is %IMAP_ROOT%\etc\on the Windows OS or \$IMAP_ROOT/etc/on the Solaris or Linux OS.
HardwareVersion	Fixed string	Indicates the information about the version of the hardware.	This parameter is available in the configuration item instances.
Port_XX_SFP	Free string	Indicates the SFP information of a port. XX indicates the port ID, for example, Port2_SFP.	This parameter is only available in the configuration item instances.
Port_X_SFP_BarCode	Free string	Indicates the SFP information of a port on a board. X indicates the port ID, for example, port2_SFP_BarCode.	N/A
Manufactured	Free string	Indicates the board manufacture date.	
CLEI	Free string	The board CLEI code.	

Field Name	Value	Meaning	
Port_X_SFP_CLEI	Free string	Indicates the SFP CLEI code of a board. X indicates the port ID, for example, Port2_SFP_CLEI.	N/A
Port_X_SFP_Item	Free string	Indicates the SFP item information. X indicates the port ID, for example, Port2_SFP_Item.	N/A
Port_X_SFP_Manufactured	Free string	Indicates the SFP manufacturer date of a board. X indicates the port ID, for example, Port2_SFP_Manufactured.	N/A
WorkState	Fixed string Value range: master standby	Indicates the working state. This parameter is optional for non-key boards.	This parameter is on
freqLockMode	Fixed string Value range: track hold lock fast-catch free	Indicates the frequency lockout status of BITS NEs.	This parameter is on only for clock cards.
spType	Fixed string Value range: GPS BEIDOU GLONASS	Indicates the type of the positioning system.	This parameter is on
ssrStSsrCardType	Fixed string Value range: NONE GPS GPS/GLONASS	Indicates the type of the satellite card.	This parameter is on
ssrStBuiltIn	Fixed string Value range: true	Specifies whether the BITS satellite card is built in.	This parameter is on

Field Name	Value	Meaning	
	false		
ssrStSN	Free string	Indicates the satellite SNR.	This parameter is on 0 0 0 0 0 0 0 0 0 0
ssrStSatNumDetail	Fixed string Value range: track, hold, lock, fast-catch, free	Indicates the number of observed or traced satellites.	This parameter is on returned for non-satellites.
ssrStSatTime	Free string	Indicates the satellite time.	This parameter is on UTC format (zero time invalid value).
ssrStPositionInfo	Free string/Free string/Free string	Indicates the positioning information (longitude/latitude/altitude).	This parameter is on returned for non-satellites.
WorkModel	FIXED STRING Value Range: SDH SONET NonODU0 ODU0 AP8 2LQM SupportELOMOfACrossConnection NotSupportELOMOfACrossConnection OpticalElectricalSeparate Common OADM Bandpass OTN 10GE 1AP8ODU1 1AP4ODU1 EXPAND 1AP1ODU2 1AP1ODUflex 1AP2ODU2 1AP8ODU0ODU1 1AP2ODU0 2AP2ODU0	Indicates the work mode of the board.	This parameter is on

Field Name	Value	Meaning	
	2AP3ODU1 2AP1ODU2 2AP2ODU1 1AP2Relay 2AP4ODU1 1AP8General OTNExtended 1AP1ODU1 Service HUB Cascading NonCascading NS1 LQM VOA ITL Line ElectricalRelay OpticalRelay MPO		

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.6 EquipmentHolder\_T

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This topic provides information about the additional fields for the equipment holder data type.

Field Name	Value	Meaning	Remarks
AlarmSeverity	FIXED STRING Value range: PS_CRITICAL PS_MAJOR PS_MINOR PS_WARNING PS_INDETERMINATE PS_CLEARED	Indicates the alarm of the currently highest severity on the WDM subrack.	Only supported by the WDM subrack.

Field Name	Value	Meaning	Remarks
PhyInfo	FREE STRING For example, 590175/127.0.0.1 590175 means the NE-related GNE ID and 127.0.0.1 means the NE-related gateway IP address.	Indicates the telecommunications room that the WDM subrack resides.	Only supported by the WDM subrack.
GateWay	FIXED STRING For example, 590175/127.0.0.1 590175 means the NE-related GNE ID and 127.0.0.1 means the NE-related gateway IP address.	Indicates the WDM subrack-related gateway IP address.	Only supported by the WDM subrack.
Version	FIXED STRING For example, 5.8.3.10	Indicates the version of WDM subrack.	Only supported by the WDM subrack.
ProductName	FREE STRING	Indicates the type of WDM subrack.	Only supported by the WDM subrack; For BITS NE, ProductName is BITS.
ShelfType	FIXED STRING For example, ST_TYPE1	Indicates the type of the shelf.	
PreConfig	FIXED STRING Value range: 0: not pre-configured 1: pre-configured	Indicates the pre-config information of NE.	Only supported by the WDM subrack.

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.7 EthernetOAMOperation\_T

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This topic provides information about the additional fields for the Ethernet OAM data type.

Field Name	Value	Meaning	Remarks
srcCCActive	FIXED STRING Value range: on: the detection enabled off: the detection disabled	Indicates the enable flag of the source CC detection.	Only supported by the CC detection.
snkCCActive	FIXED STRING Value range: on: the detection enabled off: the detection disabled	Indicates the enable flag of the sink CC detection.	Only supported by the CC detection.

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.8 FDFrCreateData\_T

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This topic provides information about the additional fields for the flow domain fragment and VPN creation data type.

Field Name	Value	Meaning	Remarks
ActivateStatus	FIXED STRING Value range: ACTIVE: FDFr activated DEACTIVE: FDFr inactivated	Indicates the activate status of FDFr.	This field applies only to the flow domain fragmen creation.Used to specify the activate status of an FDFr when it is being created.
Direction	FIXED STRING Value range: CD_UNI: unidirectional FDFr CD_BI: bidirectional FDFr	Indicates the direction of FDFr.	This field applies only to the flow domain fragmen creation.Used to specify the direction of an FDFr when it is being created.
EPLan	FIXED STRING Value range:	Specifies whether to create an EPLan.	This field applies only to the flow domain

Field Name	Value	Meaning	Remarks
	0: Not to create an EPLan 1: To create an EPLan		fragmen creation. Only applied when two MAC ports are specified.
autopickSapID	FIXED STRING Value range: Enabled: Automatically assign a subinterface ID. Disabled: Specify the VLAN ID as a subinterface ID preferentially.	Specifies whether to automatically assign a subinterface ID.	This field applies only to VPN creation. Specify the VLAN ID as a subinterface ID preferentially. If the ID has been occupied, another ID is automatically assigned.

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.9 HW\_EthService\_T

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This topic provides information about the additional fields for the Ethernet service data type.

Field Name	Value	Meaning	Remarks
snkNodeNo	FREE STRING	Indicates the number of sink node.	Only required when the RPR-related EVPL service, which cannot be created successfully without this field specified
svlan	FIXED STRING The value is an integer.	Indicates the QinQ service label.	Used by the QinQ service to flag the labels of multiple levels
userLabel	FREE STRING	Indicates the name of the service.	This field takes effect only when services are created.

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.10 HW\_SnppLink\_T

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This topic describes the additional field for SNPP links of data type.

Field Name	Value	Meaning	Remarks
customCost	Fixed string Value range: [0,100]	Indicates the customization cost.	N/A
maintenanceStatus	Fixed string Value: normal, maintenance	Indicates the maintenance status of ASON TE links.	A user can query and configure this parameter only for WDM ASON TE links. No value is returned for TE links that do not support this parameter.

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.11 HW\_VirtualBridge\_T

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This topic describes additional fields of the data structure of a virtual bridge.

Field Name	Value	Meaning	Remarks
LearnMode	FIXED STRING Value Range: SHARE INDEPENDENCE	Indicates the learning mode.	N/A
FilterEnable	FIXED STRING Value Range: Disable Enable	Specifies whether to enable the function of filter.	N/A
MacLearnEnable	FIXED STRING Value Range: Disable Enable	Specifies whether the MAC address learning function is enabled or not.	N/A

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.12 ManagedElement\_T

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This topic provides information about the additional fields for the NE data type.

Field Name	Value	Meaning	Remarks
PreConfig	FIXED STRING Value: 0: not pre-configured 1: pre-configured	Indicates the pre-configure information of an NE.	An ONE does not have this field, and the corresponding information will be reported to the additional field of equipment holder.
ShelfType	FIXED STRING For example, ST_TYPE1	Indicates the type of the shelf.	An ONE does not have this field, and the corresponding information will be reported to the additional field of equipment holder.
MaxTransferRate	FIXED STRING Value: 155M 622M 2.5G 10G 40G 160G	Indicates the maximum transmission rate.	An ONE does not have this field, and the corresponding information will be reported to the additional field of equipment holder. PTN NEs are not supported.
Subnetwork	FIXED STRING The value is SubnetWork_1	Indicates the identifier of the affiliated subnet.	An ONE does not have this field, and the corresponding information will be reported to the additional field of equipment holder.
IPAddress	FREE STRING	Indicates the IP address of the NE	

Field Name	Value	Meaning	Remarks
CommunicationIPAddress	FREE STRING	Indicates the communication IP address of the NE	Communication IP address of the transport NE.
GateWay	FIXED STRING For example: 590175/127.0.0.1 The first field is the NE-related GNE ID and the second field is the NE-related gateway IP address	Indicates the NE-related gateway IP address.	An ONE does not have this field, and the corresponding information will be reported to the additional field of equipment holder.
PSNName	FREE STRING	Indicates the protection subnet that an NE belongs to.	This field is unavailable for an optical NE. This field is not returned if an NE does not belong to any protection subnet.
PhyInfo	FREE STRING	Indicates the equipment room where the NE resides.	An optical NE (ONE) does not have this field, and the corresponding information will be reported to the additional field of equipment holder.
AlarmSeverity	FIXED STRING Value range PS_CRITICAL PS_MAJOR PS_MINOR PS_WARNING PS_INDETERMINATE PS_CLEARED	Indicates the alarm of the current highest severity on the NE.	
LSRID	FREE STRING	Indicates the ID of a label switched router (LSR).	This field is applicable only to PTN, Hybrid MSTP and RTN900 series NEs.

Field Name	Value	Meaning	Remarks
WaveNumber	FIXED STRING Value: 32 40 80 96 160 176 192 272	Indicates the number of wavelengths of an ONE.	This field applies only to ONEs.
OperationalState	FIXED STRING Value: track (default) hold lock fast-catch free	Indicates the NE running status.	This field is applicable only to BITS NEs.
ManagementIpAdress	FREE STRING	Indicates the NE IP address.	This field is applicable only to BITS NEs.
role	FIXED STRING Value: PRC LPR BITS (default)	Indicates the role of the BITS NE.	This field is applicable only to BITS NEs.
containsSatellitePositioningName	FREE STRING	Indicates the name of the satellite positioning module.	This field is applicable only to BITS NEs.
sysCfgMasterSrc	FREE STRING	Indicates the master source of system configuration.	This field is applicable only to BITS NEs.
sysRealMasterSrc	FREE STRING	Indicates the master reference source used in practice.	This field is applicable only to BITS NEs.

Field Name	Value	Meaning	Remarks
sysCfgSsmCtrl	FIXED STRING Value: true false (default)	Specifies whether SSM control is enabled.	This field is applicable only to BITS NEs.
sysCfgSsmb	FREE STRING	Indicates the SSM bit that the system E1 outputs.	This field is applicable only to BITS NEs.
sysCfgFrmType	FIXED STRING Value: CCS CAS	Indicates the frame format that the system E1 outputs.	This field is applicable only to BITS NEs.
sysCfgRef	FIXED STRING Value: 1M 2M (default) 5M 10M E1	Indicates the system phase discrimination signal.	This field is applicable only to BITS NEs.
leapSecMode	FIXED STRING Value: NoLeapSec (default) PosLeapSec NegLeapSec	Indicates the leap second mode.	This field is applicable only to BITS NEs. This field is not required in automatic adjustment mode.
leapSecDate	FREE STRING	Indicates the leap second time.	This field is applicable only to BITS NEs. This field is not required in automatic adjustment mode.

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.13 NT\_EPROTECTION\_SWITCH

---

This topic provides information about the additional fields for a notification about equipment protection switchover event.

Field Name	Value	Meaning	Remarks
ProductName	FREE STRING For example, OptiX OSN 3500	Indicates the type of switched equipment.	N/A
protectedEquipmentName	FREE STRING For example, LWF	Indicates the name of the protection board.	N/A
switchAwayFromEquipmentName	FREE STRING For example, LWF	Indicates the name of the source board where switching occurs.	N/A
switchToEquipmentName	FREE STRING For example, LWF	Indicates the name of the sink board where switching occurs.	N/A

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.14 NT\_PROTECTION\_SWITCH

---

This topic provides information about the additional fields for a notification about a protection switchover event.

Field Name	Value	Meaning	Remarks
ProductName	FREE STRING For example, OptiX Metro 1000V3	Indicates the type of switched equipment.	N/A
protectedEquipmentName	FREE STRING For example, N1SL16	Indicates the name of the protection board.	N/A
switchAwayFromEquipmentName	FREE STRING For example, N1SL16	Indicates the name of the source board where switching occurs.	N/A

Field Name	Value	Meaning	Remarks
switchToEquipmentName	FREE STRING For example, N1SL16	Indicates the name of the sink board where switching occurs.	N/A

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.15 NT\_WDMPROTECTION\_SWITCH

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This topic provides information about the additional fields for a notification about a WDM protection switchover event.

Field Name	Value	Meaning	Remarks
ProductName	FREE STRING For example, OptiX BWS1600G	Indicates the type of switched equipment.	N/A
protectedEquipmentName	FREE STRING For example, LWF	Indicates the name of the protection board.	N/A
switchAwayFromEquipmentName	FREE STRING For example, LWF	Indicates the name of the source board where switching occurs.	N/A
switchToEquipmentName	FREE STRING For example, LWF	Indicates the name of the sink board where switching occurs.	N/A

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.16 ProtectionSubnetwork\_T

---

This topic provides information about the additional field for the protection subnet data type.

Field Name	Value	Meaning	Remarks
VC4Number	FREE STRING	Indicates the VC4 path number.	Used to describe the VC4 paths occupied by the protection subnet.

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.17 SNCCreateData\_T

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This topic provides information about the additional fields for the SNC creation data type.

Field Name	Value	Meaning	Remarks
BundledSNC	FREE STRING When a preconfigured trail is being created, this field is to flag the active trail.	Indicates the Flag of the active trail.	Required when creating preconfigured trails
Prefab	FIXED STRING Value range: true: preconfigured trail false: non-preconfigured trail	Specifies whether the trail is preconfigured.	
LSPType	FIXED STRING Value range: LSP: normal LSP FA_LSP: server LSP	Indicates the LSP type.	
A1_Timeslot	FREE STRING The value is the specified timeslot number [1-63] when creating trails.	Indicates the source timeslot.	Only applied when creating an SNC that is not all-route converged and the lower order timeslots are not specified in the CTP information.
Z1_Timeslot	FREE STRING The value is the specified timeslot number [1-63] when creating trails.	Indicates the sink timeslot.	Only applied when creating an SNC that is not all-route converged and the lower order

Field Name	Value	Meaning	Remarks
			timeslots are not specified in the CTP information.
Region	FIXED STRING The value is fixed as SONET. That is, the trail to be created is of the OC type.	Indicates the specified type of the trail to be created.	This field is required when trails of the OC3, OC-12, OC-48, OC-192, and OC-768 types are created. The rate of a Client WDM trail of the OC type is the same as the rate of a trail of the STM type. Therefore, this field is used to identify that the trail to be created is of the OC type.
ODU2Rate	FIXED STRING Value range: ODU2E: speedup mode ODU2: standard mode	Specifies the rate level of the ODU2 trail to be created.	This field is required only when the ODU2 trail is created, because there are ODU2 trails of two rate levels in Huawei. Default value: ODU2
ClientType	FIXED STRING Value range: FC_400 FC_800 InfiniBand 2_5G 3GSDI CPRI4 PACKET	Specifies the service type of the ODU trail to be created.	This field is required only when ODUflex trails are created.
ODUk_TimeSlot	FREE STRING Value range: [1,32]	Indicates the timeslots bound to the port.	This field is required only when ClientType is set to PACKET.
ServiceMappingMode	FIXED STRING Value range: SDH Ethernet	Indicates the service type carried by the WDM trail.	This field is required only when a user creates WDM trails for hybrid line boards.
SNCPType	FIXED STRING Value range: SNC/N(PM)	Indicates the SNCP type of the ASON trail.	This field takes effect only when a user creates a diamond OTN ASON trail.

Field Name	Value	Meaning	Remarks
	SNC/S(TCM1) SNC/S(TCM2) SNC/S(TCM3) SNC/S(TCM4) SNC/S(TCM5) SNC/S(TCM6)		Default value: SNC/N(PM)
TriggerPolicy	FIXED STRING Value range: Never Reroute RerouteWithOneTrailsFail RerouteWithTwoTrailsFail Flex P&R	Indicates the initiation condition of ASON trail rerouting.	This field takes effect only when a user creates a diamond OTN ASON trail.  Default value: RerouteWithOneTrailsFail
RevertiveMode	FIXED STRING Value range: Revertive: revertive service Non-Revertive: non-revertive service ScheduledRevertive: scheduled revertive service	Indicates the revertive mode of the ASON trail.	This field takes effect only for the ASON SNC when the SNC is not a non-protective service or additional service.  Default value: Revertive
Priority	FIXED STRING Value range: High Low	Indicates the priority of the ASON trail.	
WTRTime	FREE STRING	Indicates the WTR time of the ASON trail.	This field is available only when the reversion mode of the ASON trail is Revertive.  The value is in seconds, and the default value is 600.
Policy	FIXED STRING Fixed string. The options are as follows: Overlapping: tries to use the existing trail resources Separating: tries not to use the existing trail resources	Indicates the route selection policy when the specified ASON trail reroutes.	This field is available only for OTN ASON trail creation.  Default value: Separating

Field Name	Value	Meaning	Remarks
	BestRoute: not consider cost factors SimulatedSpanRestoration: implements simulated span restoration PresetRestoration: implements preset restoration		
ProtectionSwithovers	FIXED STRING Value range: an integer ranging from 1 to 10	Indicates the protection times of the ASON trail.	This field takes effect only when the initiation conditionsCaret of ASON trail rerouting is set to Flex P&R. Default value: 2
RestorationTimes	FIXED STRING Value range: an integer ranging from 0 to 100 or 255	Indicates the restoration times of the ASON trail.	This field takes effect only when the initiation condition of rerouting is set to Flex P&R. The default value of this field is 255 for a diamond trail.

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.18 SNCModifyData\_T

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This topic provides information about the additional fields for the SNC modification data type.

Field Name	Value	Meaning	Remarks
RevertiveMode	FIXED STRING Value range: Revertive: revertive reroute Non-Revertive: non-revertive reroute ScheduledRevertive: scheduled revertive service	Indicates the revertive mode.	Only supported by the intelligent SNC which is not unprotected or additional service.

Field Name	Value	Meaning	Remarks
ReroutePriority	FIXED STRING Value range: Low: low priority of reroute High: high priority of reroute	Indicates the priority of rerouting LSP.	Only supported by intelligent SNCs.
WTRTime	FREE STRING	Indicates the wait-to-revert (WTR) time.Caret	This field takes effect only for ASON SNCs when the RevertiveMode is set to Revertive. The unit is s. The default value is 600.
Policy	FIXED STRING Value range: Overlapping: tries to use the existing trail resources Separating: tries not to use the existing trail resources BestRoute: not considered SimulatedSpanRestoration: implements simulated span restoration PresetRestoration: implements preset restoration	Indicates the routing policy when the ASON trail reroutes.	This field takes effect only for ASON SNCs.
TriggerPolicy	FIXED STRING Value range: Never Reroute RerouteWithOneTrailsFail RerouteWithTwoTrailsFail Flex P&R	Indicates the initiation condition of ASON trail rerouting.	This field takes effect only for diamond OTN ASON SNCs.
ScheduledTime	FIXED STRING Value range: Time in UTC format. Example: 20140821065608.0Z	Indicates the scheduled revertive time.	This field takes effect only for ASON SNCs when the RevertiveMode is set to ScheduledRevertive.

**Parent topic:** [AdditionalInfo Description](#)

## **9.2.10.19 SplitHorizonGroup\_T**

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This topic provides information about the additional fields for the horizontal splitter group data type.

Field Name	Value	Meaning	Remarks
OperationMode	FIXED STRING Value range: Add: Indicates add the split horizon group. Remove: Indicates delete the split horizon group.	Adds or deletes the split horizon group.	This parameter is used only when a split horizon group is modified through the modifyMFDFr interface.

**Parent topic:** [AdditionalInfo Description](#)

## **9.2.10.20 StaticMacAddress\_T**

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This topic provides information about the additional field for the static MAC address data type.

Field Name	Value	Meaning	Remarks
OperationMode	FIXED STRING Value range: Add: indicates add the MAC address. Remove: indicates delete the MAC address.	Adds or deletes the MAC address.	This parameter is used only when a static MAC address is changed through the modifyMFDFr interface.

**Parent topic:** [AdditionalInfo Description](#)

## **9.2.10.21 SubnetworkConnection\_T**

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This topic provides the information about the additional fields for the SNC data type.

Field Name	Value	Meaning	Remarks
LSPType	FIXED STRING Value range: LSP: normal LSP Caret FA_LSP: server LSP	Indicates the LSP type.	This field is only for ASON trails.
RelatedLsp	FIXED STRING	Indicates the associated LSP.	This field is only for ASON trails.
RevertiveMode	FIXED STRING Value range: Revertive: revertive rerouting Non-Revertive: non-revertive rerouting ScheduledRevertive: scheduled revertive service	Indicates the revertive mode.	This field is only for ASON trails with protection or without extra services.
OVPNCustomer	FREE STRING	Indicates customer information of the ASON trail.	This field is only for ASON trails.
Customer	FIXED STRING	Indicates customer information of the trail.	This field is only for SDH and WDM trails.
Remark1	FIXED STRING	Indicates information about the customized attribute 1 of the trail.	This field is only for SDH and WDM trails.
Remark2	FIXED STRING	Indicates information about the customized attribute 2 of the trail.	This field is only for SDH and WDM trails.
ClientType	FIXED STRING Value range: FICON(Slice) FICON FC(Slice) FC GBE(GFP-T) GBE(Slice) GBE 10GBE(LAN) 10GBE(WAN) 10GBE	Indicates the service type.	This field is only for WDM trails.

Field Name	Value	Meaning	Remarks
	FC_400 FC_800 InfiniBand 2_5G 3GSDI CPRI4 STM-64		
ClientRate	FIXED STRING Value range: 2124 1062 10625 4248 4000 1250 10000	Indicates the service rate.	This field is only for WDM trails.
priority	FIXED STRING The value range is 1-8.	Indicates the priority for rerouting.	This field is only for ASON trails in OTN.
ODUk_TimeSlot	FIXED STRING The value range is 3-7.	Indicates the number of ODUk timeslots.	This field is only for ODUflex trails in OTN.
OPCISState	FIXED STRING Value range: True False Blank: This field is not supported.	Indicates the function of enabling and disabling optical parameter constraints.	This field is only for ASON trails in OTN.
Route<n>	FIXED STRING Value range: Positive Working: working in the positive direction Negative Working: working in the negative direction Positive Protection: protected in the positive direction Negative Protection: protected in the negative direction	Indicates route parameters (n=1-4).	This field is only for ASON trails in OTN.

Field Name	Value	Meaning	Remarks
OSNR<n>	This field is blank if the value is invalid.	Indicates ONSR parameters (n=1-4)	This field is only for ASON trails in OTN.
CDPara<n>	This field is blank if the value is invalid.	Indicates dispersion parameters (n=1-4)	This field is only for ASON trails in OTN.
PMD<n>	This field is blank if the value is invalid.	Indicates PMD parameters (n=1-4)	This field is only for ASON trails in OTN.
SNCID	FREE STRING	Indicates the unique SNC index ID.	
ServerType	FIXED STRING LinkServer	Indicates the server trail type.	This field is only for server trails of SDH links.
A1_Timeslot	FREE STRING	Indicates the channels of source TP.	This field is only for ASON trails in OTN.
Z1_Timeslot	FREE STRING	Indicates the channels of sink TP.	This field is only for ASON trails in OTN.
ServiceMappingMode	FIXED STRING Value range: SDH Ethernet	Indicates the service type carried by the WDM trail.	This field takes effect only for WDM SNCs of hybrid line boards.
WTRTime	FREE STRING	Indicates the wait-to-revert (WTR) time.	This field takes effect only for ASON SNCs when the RevertiveMode is set to Revertive. The unit is s.
Policy	FIXED STRING Value range: Overlapping: tries to use the existing trail resources Separating: tries not to use the existing trail resources BestRoute: not considered SimulatedSpanRestoration: implements simulated span restoration	Indicates the routing policy when the ASON trail reroutes.	This field takes effect only for ASON SNCs.

Field Name	Value	Meaning	Remarks
	PresetRestoration: implements preset restoration		
OptimizationStatus	FIXED STRING Value range: Optimized Unoptimized	Indicates the optimization status of the ASON trail.	This field takes effect only for OTN ASON SNCs.
ODU2Rate	FIXED STRING Value range: ODU2: standard mode ODU2E: speed-up mode	Indicates the rate level of the ODU2 trail.	This field takes effect only for ODU2 OTN ASON SNCs.
SNCPType	FIXED STRING Value range: SNC/N(PM) SNC/S(TCM1) SNC/S(TCM2) SNC/S(TCM3) SNC/S(TCM4) SNC/S(TCM5) SNC/S(TCM6)	Indicates the SNCP type.	This field takes effect only for diamond OTN ASON SNCs.
TriggerPolicy	FIXED STRING Value range: Never Reroute RerouteWithOneTrailsFail RerouteWithTwoTrailsFail Flex P&R	Indicates the initiation condition of ASON trail rerouting.	This field takes effect only for diamond OTN ASON SNCs.
ScheduledTime	FIXED STRING Value range: Time in UTC format. Example: 20140821065608.0Z	Indicates the scheduled revertive time.	This field takes effect only for ASON SNCs when the RevertiveMode is set to ScheduledRevertive.
ProtectionSwithovers	FREE STRING Value range: an integer ranging from 1 to 10	Indicates the protection times of the ASON trail.	This field takes effect only when the initiation condition of ASON trail rerouting is set to Flex P&R.

Field Name	Value	Meaning	Remarks
RestorationTimes	FREE STRING Value range: an integer ranging from 0 to 100 or 255	Indicates the restoration times of the ASON trail.	This field takes effect only when the initiation condition of ASON trail rerouting is set to Flex P&R.
WorkPath	FIXED STRING Value range: Work Protection	Specifies whether the ASON trail is a working route or a protection route.	This field takes effect only for diamond OTN ASON SNCs.
ServiceID	FREE STRING	Indicates the service ID.	This parameter is available only for SDH and WDM trails.
Activated Time	FREE STRING	Indicates the service activation time.	This parameter is available only for SDH and WDM trails.
Creator	FREE STRING	Indicates the creator.	This parameter is available only for SDH and WDM trails.
Remarks	FREE STRING	Indicates the remarks.	This parameter is available only for SDH and WDM trails.

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.22 TerminationPoint\_T

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This topic provides information about the additional field for the termination point data type.

Field Name	Value	Meaning	Remarks
ServiceLoadFlag	FIXED STRING Value Range: 0: unloaded 1: loaded	Indicates the service loading flag.	This field is applicable to tributary ports.

Field Name	Value	Meaning	Remarks
SupportFEC	FIXED STRING Value Range: TRUE: supports FEC. FALSE: not support FEC.	Specifies whether a port supports forward error correction (FEC).	This field is applicable only to WDM ports.
AdministrativeState	FIXED STRING Value Range: Locked Unlocked ShuttingDown	Indicates the administrative status.	This field is applicable only to BITS NEs.
OperationalState	FIXED STRING Value Range: Enabled Disabled	Indicates the running status.	This field is applicable only to BITS NEs.
ChanType	FIXED STRING Value Range: E1 1M 2M 5M 10M PPS PTP TOD SYNC T1 J1 DCLS RS232 CC 64K 1M5 NOSIGNAL	Indicates the channel type.	This field is applicable only to BITS NEs.
ChanTimePri	FREE STRING	Indicates the input channel time priority. This parameter is valid for time synchronization NEs.	This field is applicable only to BITS NEs.

Field Name	Value	Meaning	Remarks
ChanFreqPri	FREE STRING	Indicates the input channel frequency priority. This parameter is valid for frequency synchronization NEs.	This field is applicable only to BITS NEs.
DelayReqFreq	FREE STRING	Indicates the input channel DelayReq packet frequency. This parameter is valid for PTP input channels.	This field is applicable only to BITS NEs.
ChanName	FREE STRING	Indicates the channel name.	This field is applicable only to BITS NEs.
ais	FIXED STRING Value Range: True False	Indicates the system alarm indication signal. This parameter is valid for E1 input channels.	This field is applicable only to BITS NEs.
crc	FIXED STRING Value Range: True False	Indicates the CRC check. This parameter is valid for E1 input channels.	This field is applicable only to BITS NEs.
SyncFreq	FREE STRING	Indicates the SYNC packet frequency. This parameter is valid for PTP input channels.	This field is applicable only to BITS NEs.
AnnounceFreq	FREE STRING	Indicates the ANNOUNCE packet frequency. This parameter is valid for PTP output channels.	This field is applicable only to BITS NEs.
TCProfileName	FREE STRING	Indicates the name of the QoS profile bound to the port.	This attribute belongs to RTN 900 series NEs only.

**Parent topic:** [AdditionalInfo Description](#)

## **9.2.10.23 TopologicalLink\_T**

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This topic describes additional fields of the data structure of a topological link.

Field Name	Value	Meaning	Remarks
Memo	FREE STRING	Indicates the remarks of links.	
LinkType	FREE STRING Value range: VirtualFiber: virtual fiber Fiber: fiber Cable: cable Microwave: microwave link	Indicates the link type.	

**Parent topic:** [AdditionalInfo Description](#)

## **9.2.10.24 FTPCreateData\_T**

---

This topic provides information about the additional fields for the FTP data type.

Field Name	Value	Meaning	Remarks
PortID	Number	LAG No.	
PortName	FIXED STRING	LAG Name	

**Parent topic:** [AdditionalInfo Description](#)

## **9.2.10.25 HW\_STCurrentPort\_T**

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This topic provides information about the additional field for the HW\_STCurrentPort\_T data type.

Field Name	Value	Meaning	Remarks
PortID	FREE STRING	Port No.	
PortStatus	FREE STRING Value range: Blocking Listening Learning Forwarding Disable Discarding NA	Status of HW_STCurrentPort_T	
PortPathCost	FREE STRING	Cost of Port Path	
DesignatedPortID	FREE STRING	ID of Designated Port	
DesignatedRootBridgePriority	FREE STRING	Priority of Designated Root Bridge	
DesignatedPathCost	FREE STRING	Cost of Designated Path	
DesignatedBridgePriority	FREE STRING	Priority of Designated Bridge	
TopologyDetection	FREE STRING Value range: Disabled Enabled NA	Topology Detection	
EdgePortStatus	FREE STRING Value range: Disabled Enabled NA	Admin Edge Attribute	

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.26 TrafficDescriptor\_T

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This topic provides information about the additional field for the traffic descriptor data type.

Field Name	Value	Meaning	Remarks
SvcType	FREE STRING The value is fixed as SC_UBR+.	Indicates the TD type flag.	The serviceCategory field of the TD type flag of the UBR+ type is SC_NA. Therefore, this parameter is added for further explanation of the detailed type.

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.10.27 STInfo\_T

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This topic describes the additional information of the VB data types.

Field Name	Value	Meaning	Remarks
EquipmentName	FREE STRING	Indicates the equipment name.	
VBName	FREE STRING	Indicates the VB name.	
VBID	FREE STRING	Indicates the VB ID.	
ProtocolEnabled	FREE STRING Value range: Disable Enable NA	Specifies whether to enable the protocol.	
ProtocolType	FREE STRING Value range: STP RSTP NA	Indicates the protocol type.	

**Parent topic:** [AdditionalInfo Description](#)

## **9.2.10.28 TrafficConditioningProfileAssign\_T**

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This topic describes additional fields for the data structure of traffic policy profile assignment, including DS policy, ATM policy and PW policy.

Field Name	Value	Meaning	Remarks
DS			
PackageType	CVLAN, SVLAN, IP_DSCP, MPLS_EXP	Indicates the packet type.	N/A
ATM			
ConnectionID	Number	Indicates the connection ID.	N/A
PW			
PWDirection	CD_BI, CD_UNI	Indicates the PW direction.	N/A
SignalType	Static, Dynamic	Indicates the PW signaling type.	N/A

**Parent topic:** [AdditionalInfo Description](#)

## **9.2.10.29 TrafficTrunk\_T**

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This topic describes additional fields of the data structure of traffic trunks, E2E static tunnels.

Field Name	Value	Meaning	Remarks
CreatedTime	FREE STRING	Indicates the creation time.	N/A

**Parent topic:** [AdditionalInfo Description](#)

## **9.2.10.30 STCurrentBridge\_T**

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This topic describes the additional information of the bridge data types.

Field Name	Value	Meaning	Remarks
Priority	FREE STRING	Indicates the priority of the bridge.	
MACAddress	FREE STRING	Indicates the MAC address of the bridge.	
RootPort	FREE STRING	Indicates the root port.	
DesignatedRootBridgePriority	FREE STRING	Indicates the priority of the designated root bridge.	
DesignatedRootBridgeMACAddress	FREE STRING	Indicates the MAC address of the designated root bridge.	
RootPathCost	FREE STRING	Indicates the cost of the root path.	
MaxAge	FREE STRING Value range: [6, 40]	Indicates the maximum life cycle of configuration messages.	
HelloTime	FREE STRING Value range: [1, 10]	Indicates the send cycle of configuration messages.	
ForwardDelay	FREE STRING Value range: [4, 30]	Indicates the transition delay of port state configuration.	
HoldCount	FREE STRING Value range: [1, 10]	Indicates the number of BPDUs that the VB port can send per second.	

**Parent topic:** [AdditionalInfo Description](#)

## 9.2.11 IDL Description

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This topic describes the IDL defined in the CORBA NBI.

Refer to the version document *iManager U2000 V200R015C60 CORBA NBI IDL File.zip*.



### NOTE:

The version document *iManager U2000 V200R015C60 CORBA NBI IDL File.zip* is in the package file *NBI Documents* and it is available on the Huawei technical support website. To obtain this document, contact the local technical support engineers.

Access <http://support.huawei.com/> and choose **Support > Software > Fixed Network > SingleOSS-FBB > SingleOSS-FBB > U2000 Common > iManager U2000**. Then select the software version and download the package *NBI Documents*.

Select the corresponding base version if the patch version does not contain the preceding documents.

**Parent topic:** [CORBA NBI Developer Guide \(Configuration\)](#)

## 9.2.12 Description of Unimplemented and Customized Interfaces

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**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
CircuitCutMgr_I	createPrefabSNCsAndDelCutSNCs	Issues a cutover task.	This interface is customized. The detailed developer guide is provided with a special document.
	checkPrefabAndCutSNCs	Verifies a cutover task.	This interface is customized. The detailed developer guide is provided with a special document.
	calcuPrefabSNCRoute	Calculates routes for a preset trail.	This interface is customized. The detailed developer guide is provided with a special document.
	setPrefabSNC	Creates a preset trail.	This interface is customized. The detailed developer guide is provided with a special document.

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
EMSMgr_I	deletePrefabSNCs	Deletes a preset trail.	This interface is customized. The detailed developer guide is provided with a special document.
	setEMSHeartbeatInterval	Sets the interval for sending EMS heartbeat packets.	This interface is customized. The detailed developer guide is provided with a special document.
	setEMSTime	Sets the EMS time.	This interface is customized. The detailed developer guide is provided with a special document.
EncapsulationLayerLinkMgr_I	modifyELLink	Modifies an ELL.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
FlowDomainMgr_I	createFlowDomain	Creates a flow domain.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	deleteFlowDomain	Deletes a flow domain.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	modifyFlowDomain	Modifies a flow domain.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	associateMFDsWithFlowDomain	Assigns an MFD to a flow domain.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	deAssociateMFDsFromFlowDomain	Deletes a specified MFD from a flow domain.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
	associateCPTPsWithFlowDomain	Assigns a specified port to a flow domain.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	deAssociateCPTPsFromFlowDomain	Deletes a specified port from a flow domain.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	createMFD	Creates an MFD.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	deleteMFD	Deletes an MFD.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	modifyMFD	Modifies an MFD.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	assignCPTPsToMFD	Assigns CPTPs to an MFD.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	unassignCPTPsFromMFD	Deletes a specified CPTP from an MFD.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	createFTP	Creates a floating termination point (FTP).	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	deleteFTP	Deletes an FTP.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
FDFr_I	modifyFDFr	Modifies an FDFr.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	addFPsToFDFr	Assigns flow points to an FDFr.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	removeFPsFromFDFr	Removes flow points from an FDFr.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	validateTMDAssignmentToMFD	Checks TMDs contained in an MFD.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
GuiCutThroughMgr_I	launchGCT	Activates GUI cut-through (GCT).	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	destroyGCT	Closes GCT.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
HW_VPNMgr_I	modifyFDFr	Modifies an FDFr.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
MaintenanceMgr_I	performMaintenanceOperationEx	Executes maintenance commands.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	createATMMaintenanceEntity	Creates an ATM maintenance entity.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
ManagedElementMgr_I	checkActiveAlarms	Acknowledges active alarms.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	setADCInfo	Sets dispersion compensation information.	This interface is customized. The detailed developer guide is provided with a special document.
	setAPRInfo	Sets APR information.	This interface is customized. The detailed developer guide is provided with a special document.
	setAPEInfo	Sets automatic power equilibrium (APE) information.	This interface is customized. The detailed developer guide is provided with a special document.
	setwdmALCInfo	Sets automatic level control (ALC) information for WDM NEs.	This interface is customized. The detailed developer guide is provided with a special document.
	setotnALCInfo	Sets ALC information for OTN NEs.	This interface is customized. The detailed developer guide is provided with a special document.
TCProfileMgr_I	createTCProfile	Creates a traffic policy profile.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	modifyTCProfile	Modifies a traffic policy profile.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
TrafficDescriptorMgr_I	createTrafficDescriptor	Creates an ATM traffic descriptor.	This interface does not implement any specific service functions and

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
			returns the error message "EXCPT_NOT_IMPLEMENTED".
TrailNtwProtMgr_I	modifyTrailNtwProtection	Modifies a tunnel network protection group.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	performTrailNtwProtectionCommand	Switches over the tunnel protection group.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
FlowDomainMgr_cmcc_I	createFDFr	Create E2E Ethernet trails.	This interface is customized. The detailed developer guide is provided with a special document.
	activateFDFr	Activate E2E Ethernet services.	This interface is customized. The detailed developer guide is provided with a special document.
	deleteFDFr	Delete E2E Ethernet services.	This interface is customized. The detailed developer guide is provided with a special document.
	deactivateFDFr	Deactivate E2E Ethernet services.	This interface is customized. The detailed developer guide is provided with a special document.
	createFlowDomain	Create flow domains.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	deleteFlowDomain	Delete flow domains.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	modifyFlowDomain	Modify flow domains.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
	associateMFDsWithFlowDomain	Associate MFDs with flow domains.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	deAssociateMFDsFromFlowDomain	Disassociate MFDs from flow domains.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	associateCPTPsWithFlowDomain	Associate CPTPs with flow domains.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	deAssociateCPTPsFromFlowDomain	Disassociate CPTPs from flow domains.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	createMFD	Create MFDs.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	deleteMFD	Delete MFDs.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	modifyMFD	Modify MFDs.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	assignCPTPsToMFD	Assign CPTPs to an MFD.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	unassignCPTPsFromMFD	Unassign CPTPs from an MFD.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
	createFTP	Create FTPs.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	deleteFTP	Delete FTPs.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	deactivateAndDeleteFDFr	Deactivate and delete FDFrs.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	modifyFDFr	Modify FDFrs.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	createFDFr	Create FDFrs.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
HW_MSTPPProtectionMgr_I	modifyRPRNodePara	Modify the RPR node information.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".

**Parent topic:** [CORBA NBI Developer Guide \(Configuration\)](#)

## 9.2.13 Layer Rate Description

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**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
1	LR_Not_Applicable	Irrelevant layer
2	LR_T1_and_DS1_1_5M	1.5 Mbit/s async/PDH signal
3	LR_T2_and_DS2_6M	6 Mbit/s async/PDH signal
4	LR_T3_and_DS3_45M	45 Mbit/s async/PDH signal
5	LR_E1_2M	2 Mbit/s PDH signal
6	LR_E2_8M	8 Mbit/s PDH signal
7	LR_E3_34M	34 Mbit/s PDH signal
8	LR_E4_140M	140 Mbit/s PDH signal
9	LR_E5_565M	565 Mbit/s PDH signal
10	LR_VT1_5_and_TU11_VC11	VC11 SONET/SDH path signal
11	LR_VT2_and_TU12_VC12	VC12 SONET/SDH path signal
12	LR_VT6_and_TU2_VC2	VC2 SONET/SDH path signal
13	LR_Low_Order_TU3_VC3	VC3 SONET/SDH path signal
14	LR_STS1_and_AU3_High_Order_VC3	AU3 SONET/SDH path signal
15	LR_STS3c_and_AU4_VC4	VC4 SONET/SDH path signal
16	LR_STS12c_and_VC4_4c	12xSTS-1/4xVC4 contiguous concatenation
17	LR_STS48c_and_VC4_16c	48xSTS-1/16xVC4 contiguous concatenation

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
18	LR_STS192c_and_VC4_64c	192xSTS-1/64xVC4 contiguous concatenation
19	LR_Section_OC1_STS1_and_RS_STM0	STM-0 regenerator section
20	LR_Section_OC3_STS3_and_RS_STM1	STM-1 regenerator section
21	LR_Section_OC12_STS12_and_RS_STM4	STM-4 regenerator section
22	LR_Section_OC48_STS48_and_RS_STM16	STM-16 regenerator section
23	LR_Section_OC192_STS192_and_RS_STM64	STM-64 regenerator section
24	LR_Line_OC1_STS1_and_MS_STM0	STM-0 multiplex section
25	LR_Line_OC3_STS3_and_MS_STM1	STM-1 multiplex section
26	LR_Line_OC12_STS12_and_MS_STM4	STM-4 multiplex section
27	LR_Line_OC48_STS48_and_MS_STM16	STM-16 multiplex section
28	LR_Line_OC192_STS192_and_MS_STM64	STM-64 multiplex section
40	LR_Optical_Channel	For WDM wavelength
41	LR_Optical_Multiplex_Section	For WDM wavelength bands
42	LR_Optical_Transmission_Section	For WDM entire optical signal, that is, used for OTS and OMS layers of OTM-n.m (n>=1)
43	LR_ATM_NI	For ATM network interfaces (UNI and NNI)
44	LR_ATM_VP	For ATM virtual paths

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
45	LR_ATM_VC	For ATM virtual channels
46	LR_PHYSICAL_ELECTRICAL	Analog signal on electrical physical media
47	LR_PHYSICAL_OPTICAL	Analog signal on optical physical media
48	LR_PHYSICAL_MEDIALESS	Physical media for technologies, such as radio
49	LR_OPTICAL_SECTION	Wavelength termination for a non DWDM system, that is, used for all kinds of single-lambda ports
50	LR_DIGITAL_SIGNAL_RATE	Raw binary electrical signal of unspecified rate
58	LR_D1_Video	Video capable port
59	LR_ESCON	IBM protocol for mainframes
61	LR_Fast_Ethernet	Not supported by the TMF
62	LR_FC_12_133M	133 Mbit/s Fibre Channel protocol
63	LR_FC_25_266M	266 Mbit/s Fibre Channel protocol
64	LR_FC_50_531M	531 Mbit/s Fibre Channel protocol
65	LR_FC_100_1063M	1063 Mbit/s Fibre Channel protocol
66	LR_FDDI	N/A

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
67	LR_FICON	IBM protocol for mainframes
68	LR_Gigabit_Ethernet	Not supported by the TMF
72	LR_DSR_OC1_STM0	STM-0 digital signal rate
73	LR_DSR_OC3_STM1	STM-1 digital signal rate
74	LR_DSR_OC12_STM4	STM-4 digital signal rate
75	LR_DSR_OC24_STM8	STM-8 digital signal rate
76	LR_DSR_OC48_and_STM16	STM-16 digital signal rate
77	LR_DSR_OC192_and_STM64	STM-64 digital signal rate
78	LR_DSR_OC768_and_STM256	STM-256 digital signal rate
110	LR_DSR_OTU1	DSR of optical channel transport unit 1
111	LR_DSR_OTU2	DSR of optical channel transport unit 2
79	LR_DSR_1_5M	1.5 Mbit/s digital signal rate
80	LR_DSR_2M	2 Mbit/s digital signal rate
81	LR_DSR_6M	4 Mbit/s digital signal rate
82	LR_DSR_8M	8 Mbit/s digital signal rate
83	LR_DSR_34M	34 Mbit/s digital signal rate

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
84	LR_DSR_45M	45 Mbit/s digital signal rate
85	LR_DSR_140M	140 Mbit/s digital signal rate
86	LR_DSR_565M	565 Mbit/s digital signal rate
87	LR_DSR_Gigabit_Ethernet	Gigabit_Ethernet digital signal rate
88	LR_Section_OC24_STS24_and_RS_STM8	STM-8 regenerator section
89	LR_Line_OC24_STS24_and_MS_STM8	STM-8 multiplex section
90	LR_Section_OC768_STS768_and_RS_STM256	STM-256 regenerator section
91	LR_Line_OC768_STS768_and_MS_STM256	STM-256 multiplex section
93	LR_DSR_2xSTM1	2 x STM-1 radio multiplexing
96	LR_Ethernet	All Ethernet rates
97	LR_DSR_Fast_Ethernet	10/100 Mbit/s Ethernet
98	LR_Encapsulation	For Ethernet, the following encapsulation protocols can be applied: HDLC/PPP, HDLC/LAPS, ML/PPP, and GFP Transparent or Frame Mapped types
99	LR_Fragment	Used for inverse multiplexing modeling (virtual concatenation for SONET/SDH and IMA)

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
100	LR_STS6c_and_VC4_2c	6xSTS-1/2xVC4 contiguous concatenation
101	LR_STS9c_and_VC4_3c	9xSTS-1/3xVC4 contiguous concatenation
103	LR_STS24c_and_VC4_8c	24xSTS-1/8xVC4 Contiguous concatenation
113	LR_DSR_10Gigabit_Ethernet	10 Gbit/s Ethernet
115	LR_DSR_40Gigabit_Ethernet	Extended by HUAWEI
8001	LR_Section_and_RS	Extended by HUAWEI
8002	LR_Line_and_MS	Extended by HUAWEI
8003	LR_ATM	ATM layer rate (extended by HUAWEI)
8004	LR_Optical_Supervision_Channel	Rate of optical monitor layer (extended by HUAWEI)
8005	LR_FC_200_2125M	2125 Mbit/s Fibre Channel protocol (extended by HUAWEI)
104	LR_OCH_Data_Unit_1	Trail and tandem connection monitoring/termination
105	LR_OCH_Data_Unit_2	Trail and tandem connection monitoring/termination
106	LR_OCH_Data_Unit_3	Trail and tandem connection monitoring/termination
8041	LR_OCH_Data_Unit_4	Trail and tandem connection monitoring/termination

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
107	LR_OCH_Transport_Unit_1	Optical channel transport unit 1 (trail termination)
108	LR_OCH_Transport_Unit_2	Optical channel transport unit 2 (trail termination)
109	LR_OCH_Transport_Unit_3	Optical channel transport unit 3 (trail termination)
8042	LR_OCH_Transport_Unit_4	Optical channel transport unit 4 (trail termination)
8006	LR_OCH_Data_Unit_5G	Trail and tandem connection monitoring/termination
8007	LR_OCH_Transport_Unit_5G	Trail termination
8010	LR_MPLS_Channel	Extended by HUAWEI
303	LR_DVB_ASI	Digital video broadcast (ASI)
8023	LR_DVB_SDI	Digital video broadcast (SDI)
8024	LR_FICON_Express	Extended by HUAWEI
8021	LR_SAN_FC_400	Extended by HUAWEI
8038	LR_SAN_FC_800	Extended by HUAWEI
8022	LR_SAN_FC_1000	Extended by HUAWEI
8037	LR_SAN_FC_1200	Extended by HUAWEI
8025	LR_HDTV	Extended by HUAWEI
8031	LR_OCH_Data_Unit_0	Extended by HUAWEI

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
69	LR_DS0_64K	DS0 CTP layer rate
305	LR_LAG_Fragment	Link aggregation
8008	LR_DSR_10Gigabit_Ethernet_LAN	Extended by HUAWEI
8009	LR_DSR_10Gigabit_Ethernet_WAN	Extended by HUAWEI
8011	LR_MPLS_Path	Extended by HUAWEI
8020	LR_DSR_GFP_T	Extended by HUAWEI
8026	LR_ETR	Extended by HUAWEI
8027	LR_CLO	Extended by HUAWEI
8028	LR_1G_ISC	Extended by HUAWEI
8029	LR_2G_ISC	Extended by HUAWEI
8030	LR_4G_FICON	Extended by HUAWEI
8032	LR_CPRI	Extended by HUAWEI
8033	LR_CPRI_CUT	Extended by HUAWEI
8034	LR_PHY_MEDIA	Extended by HUAWEI
8035	LR_INFINIBAND_2DOT5G	Extended by HUAWEI
8036	LR_INFINIBAND_5G	Extended by HUAWEI
8039	LR_8G_FICON	
8043	LR_DSR_100Gigabit_Ethernet	Extended by HUAWEI
8044	LR_EPON_OLT	
8045	LR_EPON_ONU	
8046	LR_3GSDI	Extended by HUAWEI
8047	LR_3GSDIRBR	Extended by HUAWEI
8051	LR_10G_FICON	

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
8060	LR_IP_Path	Extended by HUAWEI
8069	LR_DS0_64K_NC	
8070	LR_GRE_Path	Extended by HUAWEI
8071	LR_DSR_32xSTM1	Extended by HUAWEI
8072	LR_RS_32xSTM1	Extended by HUAWEI
8073	LR_MS_32xSTM1	Extended by HUAWEI
299	LR_DSL	Digital Subscriber Line
335	LR_OCH_Data_Unit_Flexible	Extended by HUAWEI
8012	LR_MPLS_IP_VPN	Extended by HUAWEI
8081	LR_OCH_Data_Unit_Cn	Extended by HUAWEI
8082	LR_OCH_Transport_Unit_Cn	Extended by HUAWEI
319	LR_DSR_2.5Gigabit_Ethernet	2.5 Gbit/s Ethernet

**Parent topic:** [CORBA NBI Developer Guide \(Configuration\)](#)

## 9.2.14 Glossary

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This appendix lists the glossary used in the guide.

### 1

At the place where the signals are input, the same channel of optical signals are input to two boards or ports of the WDM equipment through two fibers. The two boards or ports are backed up mutually. When a fault occurs in the working path, the input end of the WDM equipment switches to the protection path. If the working path recovers, the input end of the WDM equipment switch back to the working path.

#### 1+1 optical path protection

### A

## **Access Control List (ACL)**

Access Control List (ACL) is a list of IP address. The addresses listed in the ACL are used for authentication. If the ACL for the user is not null, it indicates that the address where the user logged in is contained in the list.

## **Adjacent Concatenation**

For SDH, the virtual containers (VC) to carry concatenated services are consecutive in terms of their service in the frame structures, so that they use the same path overhead (POH).

## **Alarm**

A visible or an audible indication to notify the person concerned that a failure or an emergency has occurred. See also Event.

## **AIS**

Alarm Indication Signal. A signal sent downstream in a digital network if an upstream failure has been detected and persists for a certain time.

## **Alarm acknowledgement**

The process during which when an alarm is generated, the operator needs to acknowledge the alarm and take the right step to clear the alarm.

## **AIS insertion**

If there are excessive errors in a channel, AIS can be inserted in this channel to indicate it is unavailable. For a line board, you can set whether to insert AIS when there are excessive errors in the B1, B2 and B3 bytes. For a tributary board at the E1 or T1 level, you can set whether to insert AIS when there are excessive errors in BIP-2. For a tributary board at the E3 level or higher, you can set whether to insert AIS when there are excessive errors in the B3 byte.

## **Alarm delay time**

Alarm delay includes start delay and end delay. An alarm is not regarded as being generated until the NE has been detecting it for a period of time, and this period of time is the alarm start delay time. An alarm is not regarded as being cleared until the NE has been detecting the ending of it for a period of time, and this period of time is the alarm end delay time. Setting the delay time can avoid the generation of unnecessary alarms due to misreport or jitter.

## **Alarm reversion**

For the port that has already been configured but has no service, this function can be used to avoid generating relevant alarm information, preventing alarm interference.

## **Alarm suppression**

The suppressed alarm of a specific object is not reported. The object here may be the network-wide equipment, a specific NE, a specific board and even a specific function module of a specific board.

## **ALC**

**Automatic Level Control.** A technique (procedure) to automatically reduce the output power of optical amplifiers to avoid exposure to hazardous levels.

## **All-ONES**

The entire capacity of the adapted or characteristic information is set to logic "1".

## **ALS**

The ALS function of an optical line system automatically switches off the transmitter of a regenerator section in case of cable break in this section.

## **APS**

**Automatic Protection Switching.** Autonomous switching of a signal between and including two MS\_TT, Sn\_TT, or Sm\_TT functions, from a failed working trail/SNC to a protection trail/SNC and subsequent restoration using control signals carried by the K-bytes in the MSOH, HO POH, or LO POH.

## **Auto-negotiation**

The rate/work mode of the communication party set as self-negotiation is specified through negotiation according to the transmission rate of the opposite party.

## **Attribute**

Property of an object.

## **B**

### **Bidirectional (protection) switching**

For a unidirectional fault, both directions (of the trail, subnetwork connection, and so on), including the affected and unaffected direction, are switched.

## **Bit error**

An inconsistency between bits embedded within a signal and bits extracted at the receiver.

## **Bit error alarm threshold**

When the bit error reaches a specific limit, the equipment will report an alarm. This limit is the bit error alarm threshold. The threshold can be divided into crossing threshold and defect threshold.

## **Broadcast service**

The unidirectional services from one service source to multiple service sinks are called the broadcast service.

## **C**

### **CI**

**Characteristic Information.** The information passing across a CP or TCP. It is a signal with a specific format, which is transferred on "network connections". The specific formats will be defined in the technology-specific recommendations.

## **Client**

A terminal (PC or workstation) connected to a network that can send instructions to a server and get results through a user interface. See also server.

## **Client trail**

There is an inclusion relationship between the trails of different levels. For example, a trail of a certain level contains multiple trails of lower levels. In such a structure, the lower-level trail is called the client trail.

## **Collision trails**

The data of a trail at the NE layer is changed. After the trail is re-searched, the original trail becomes a collision trail.

## **Concatenation**

When the standard virtual containers (including VC4/VC3/VC12/VC11) are incapable of carrying the volume of an SDH signal, the containers can be concatenated to function as a larger container.

## **CoS**

Class of Service. CoS keeps the priority mapping rules. It works in internal ports, especially when there is congestion, CoS is even more important. The services at different levels are processed according to the corresponding priorities. The service with higher priority is processed first and the service with lower priority is discarded when the bandwidth is insufficient.

## **Cross-Connection**

Network services are realized through the cross-connections of NEs. The cross-connection is the connection of channels between the tributary board and the line board, or between line boards inside the NE.

## **Current alarms**

Alarms that do not clear, or has cleared but is not acknowledged.

## **Current performance data**

The performance data stored in the current register is called current performance data. The current 15-minute or 24-hour register (only one for each) is applied to collect the performance data in the current monitoring period. It changes within the monitor period.

## **Custom view**

The user-defined view is a subset on the Main Topology. Included network entities can be NE, network management system, link and subnetwork. Generally, the network management personnel need to customize some views and select the network entity under their management from the Main Topology.

## **Clock View**

The Clock View provides a visible platform to implement the clock management function.

## **D**

## **Data interface service**

The service that uses the F1 byte in an SDH frame or some undefined bytes to transmit information such as call charge, network management system information and power supply monitoring.

## **DCC**

Data Communications Channel. The data channel that uses the D1-D12 bytes in the overhead of an STM-N signal to transmit information on operation, management, maintenance and provision (OAM&P) between NEs. The DCC channels that are composed of bytes D1-D3 is referred to as the 192 kbit/s DCC-R channel. The other DCC channel that are composed of bytes D4-D12 is referred to as the 576 kbit/s DCC-M channel.

## **Discrete service**

The cross-connection that exists on an NE but cannot form trails on the network management system.

## **DNI**

Dual node interconnection is an architecture between two rings where two nodes in each ring are interconnected. The two interconnections between the two rings can be arranged to provide protection of the traffic crossing from one ring to the other.

## **E**

### **Extra traffic**

During fault-free conditions, it is possible to use the protection channels to carry additional traffic. This additional traffic, which is referred to as extra traffic, has lower priority than the normal traffic on the working channels and has no means for protection.

## **Equipment set**

An aggregate of multiple managed equipment. Equipment set facilitates the user authority management on equipment in the management domain of the network management system. If some operation authorities over one equipment set are assigned to a user (user group), these operation authorities over all equipment of the equipment set are assigned to the user (user group).

## **ECC**

Embedded Control Channel. An ECC provides a logical operations channel between SDH NEs, utilizing a data communications channel (DCC) as its physical layer.

## **EMU**

Environment Monitoring Unit. A type of power and environment monitoring unit that is used to monitor the environment variables, such as the power supply and temperature. With external signal input through the relay, fire alarm, smoke alarm, burglary alarm, and so on can be monitored as well.

## **Exercise switching**

This command tests whether a switching protocol can work normally without completing the actual switching operation.

### **Exerciser - Ring**

This command exercises ring protection switching of the requested channel without completing the actual bridge and switch. The command is issued and the responses are checked, but no working traffic is affected.

### **Exerciser - Span**

This command exercises span protection of the requested channel without completing the actual bridge and switch. The command is issued and the responses are checked, but no working traffic is affected.

### **Extended ID of NE**

The serial number of a subnetwork where an NE resides, which is usually used to distinguish different network segments. An extended ID and an ID form the physical ID of an NE.

### **Extended protection subnet**

An unprotected chain like ADM-ADM-TM or ADM-ADM-ADM. The end-point NEs of a link are of the ADM type. As this type of protection subnetwork can be extended, we name it extended protection subnetwork.

## **F**

### **Failure**

The fault cause persisted long enough to consider the ability of an item to perform a required function to be terminated. The item may be considered as failed; a fault has now been detected.

### **Fault**

A fault is the inability of a function to perform a required action. This does not include an inability due to preventive maintenance, lack of external resources, or planned actions.

### **F1 byte**

The user path byte, which is reserved for the user but usually it is special for network providers. The F1 byte is mainly used to provide the temporary data or voice path for special maintenance objectives. It belongs to the regenerator section overhead byte.

### **F2, F3 bytes**

The user channel bytes. These two bytes provide the user with the communication between path units related to payload. They belong to the higher order path overhead byte.

### **fiber/cable**

The general name of optical fiber and cable. The physical entity that connects transport equipment in a transport network, bears the transmitted object (user information, network management information) and implements the transport function.

## **Flow**

A collection of packets that have the same characteristics. On the NMS or NE software, a flow is a group of classification rules. On boards, it is a group of packets that have the same quality of service (QoS). At present, two flows are supported: port flow and port+VLAN flow. A port flow is based on port ID, while a port+VLAN flow is based on port ID and VLAN ID. The two flows cannot coexist on the same port.

## **Forced switching**

This command performs the ring switch from working channels or boards to the protection channels or boards. This switch occurs regardless of the state of the protection channels or boards, unless the protection channels or boards are satisfying a higher priority bridge request.

## **Full duplex**

The system that can transmit information in both directions on a communication link.

## **Full filtering trail**

In this search mode, the network management system first deletes all the trail data on the network management system and reserves the service configuration data of respective NEs, and then re-searches for the service configuration data of respective NEs on the network management system to form the new trail information.

## **Full search**

In the full search mode, all the trail information on the network management system will be deleted first (Only the trail information at the network layer on the network management system is deleted, while the service configuration information of NE in NE layer on the network management system and on the NE remain). Then the service configuration information of respective NEs in the NE layer on the network management system is re-researched to form the trail information in the network layer on the network management system.

## **G**

### **Gateway**

The equipment that is used to connect two independent networks that use different communication protocols.

### **Gateway IP**

IP address is used for TCP/IP communication between an NE and the network management system, which is effective only when it is used for TCP/IP communication. That is, only the gateway NE needs the IP address. IP address cannot be used to identify an NE uniquely. NEs in different TCP/IP networks may have the same IP address. And one NE may have several IP addresses (for example: an IP address of a dial-up network, an IP address of the Ethernet port and so on).

### **Gateway NE**

The NE that communicates with the NMS and other NEs through a data communication network.

## **H**

### **Host name**

Name of the computer that functions as a main controlling point in a network and provides special service to the users.

### **High Availability**

The ability of a system to continuously perform its functions during a long period, which may exceed the suggested working time of the independent components. You can obtain the high availability (HA) by using the error tolerance method. Based on learning cases one by one, you must also clearly understand the limitations of the system that requires an HA ability and the degree to which the ability can reach.

### **History alarms**

Alarms that have cleared and been acknowledged.

### **History performance data**

The performance data stored in the history register and the auto-report performance data stored on the network management system are called history performance data in a unified way.

## **I**

### **In-Service Trail Modifying**

A way of trail modification that allows you to configure new routes for a trail and enables the system to automatically delete the original trail after you apply the settings to the NE.

### **Incremental filtering trail**

In this search mode, the network management system first reserves the trail data of the current client and then re-searches the service configuration data of respective NEs on the network management system according to the newly given search condition to form the new trail data and combine it with the original trail data to get the result.

### **Incremental search**

The increment search mode compares the trail information in network layer on the network management system with the service configuration information of respective NEs on the network management system. If they are inconsistent, the trail information will be fed back into the list as an "Inconsistent Trail". When the user has deleted the inconsistent trail information, the system will re-search for the service configuration information that has not formed the trail in the NE layer on the network management system.

### **Inloop**

An output signal is returned back to the corresponding input port.

### **Inter-board wavelength protection**

This function is implemented by the wavelength conversion boards that are capable of dual fed and selective receiving. The dual fed is implemented by adding a passive optical splitter to the tributary. The signal selection is implemented by the SCC turning off the

laser at the tributary side with poorer signal quality according to the signal quality of the lines of two wavelength conversion boards, and letting the channel of light with higher quality pass through the coupler. The coupler is also a passive device and only one channel of light can pass through it. If there are two channels of light passing through the coupler, they interfere each other that would cause bit error to the service. Hence, it is necessary to ensure that only the channel of light with higher quality passes through the coupler at the same time.

### **Intermediate office**

A concept in the telecommunications area. A site that manages fiber/cable or grooms services.

### **Intra-Board wavelength protection**

The intra-board wavelength protection is mainly implemented by the wavelength conversion board with dual fed and signal selection function. The dual fed is implemented by the optical divider inside the board, while the signal selection is implemented by the board turning off the laser of one of the receiving optical interfaces. Hence, this protection mode is also called optical wavelength intra-board path protection. The switching in this protection mode can be completed within a short time, but the services must be interrupted during the maintenance of the damaged board or equipment. Hence, this protection mode has a relatively lower reliability.

### **IP address**

Internet Protocol Address. A 32-bit address that uniquely identifies a node in an IP Internet network. An IP address consists of a network ID and a unique host ID. An IP address consists of the decimal values of its eight bytes, separated with periods; for example, 192.168.7.27.

### **Isolated node**

A type of special NE or an optical port on an NE. Logically, an isolated node does not comprise an SDH NE of any types, which are TM, ADM, REG and DXC

## **L**

### **Layer**

A concept used to allow the transport network functionality to be described hierarchically as successive levels; each layer being solely concerned with the generation and transfer of its characteristic information.

### **License**

A permission provided by a vendor to authorize the use of specific functions of a product. Usually the license consists of encrypted codes, and the operation authority varies with different level of license.

### **Lock status**

Services are not switched to the protection board or channel when a fault occurs, if currently no switching takes place. If currently the switching takes place, after the

working board or channel recovers to normal, the services are not switched back to the working board or channel.

### **Lockout of Switching**

When the switching condition is satisfied, this function disables the service from being switched from the working channel to the protection channel. When the service has been switched, the function enables the service to be restored from the protection channel to the working channel.

### **Login mode**

The client login mode includes single-user and multi-users login modes. The multi-users mode is the default mode.

## **M**

### **Management flag**

A check box helps you to determine whether the trail is a managed object of the trail management function at the network layer. By default, trails are managed objects. If choosing not to manage it through the trail management function, you can manage the cross-connections of an individual NE through the service configuration function performed at a node.

### **Management information**

The information that is used for network management in a transport network.

### **Manual switching**

When the protection channel is efficient and there is no higher-level switching request, services are manually switched from the working channel to the protection channel, testing whether the network still has the protection capability.

### **MS node**

The WDM network node that has the spectrum analysis unit in the link for which the ALC function is configured.

### **Multi-trail protection service**

It is a protection mode in which multiple services with different trails but with the same sink protect an important service with the same sink. This protection mode supports protecting important services through non-optical network trails, such as microwave. It presently supports that three protection trails protect one service trail. At the trail sink, it monitors the quality of protection trail signals and protects important services according to the priority and the signal quality.

### **Main Topology**

The default network management system client interface, and all topology management functions are accessed here.

## **N**

### **NE**

**Network Element.** NE includes the hardware unit and the software running on it. Usually, one NE has at least an SCC (system control and communication) board which responsible for the management and monitoring of the NE. The NE software runs on the SCC board.

### **NE side**

The NE configuration data saved on the SCC board of the equipment, which can be uploaded to the network management system and then stored in databases on the network management system NE side.

### **Network layer**

The logical layer of the network management system that saves the network data. The configuration data related to a network is saved in databases.

### **NNI**

**Network Node Interface.** The interface at a network node which is used to interconnect with another network node. See also SDH NNI.

### **Non-revertive**

In non-revertive switching, there is a working and protection line, board and so on. Services remain on the protection line or board if the switch requests are terminated; that is, when the fault that caused them to switch to the protection line or board is cleared.

### **NE database**

The databases that are saved in an NE. Usually, the databases are saved in the SCC board of an NE.

### **NE ID**

In a network, each NE corresponds to a unique identifier, that is, the NE ID. In the OptiX transmission equipment, it is specified that the NE ID is a 24-bit binary digit, that is, three bytes. The DIP switch on the SCC board of the NE constitutes the lower 16 bits of the NE ID. The higher eight bits of the NE ID are the extended ID (default value: 9), which is also called the subnetwork number. The extended ID is usually used to identify different subnetworks.

### **NM**

Network Management.

### **Non-protection subnet**

A subnet that has no protection.

### **Network segment**

The range of IP addresses in which the gateway NE functions.

### **NE Explorer**

The main operation interface, of the NETWORK MANAGEMENT SYSTEM, which is used to manage the OptiX equipment. In the NE Explorer, the user can configure, manage and maintain the NE, boards, and ports on a per-NE basis.

## **NE Panel**

A graphical user interface, of the network management system, which displays subracks, boards, and ports on an NE. In the NE Panel, the user can complete most of the configuration, management and maintenance functions for an NE.

## **O**

### **Outloop**

An input signal is directly returned back to the corresponding output port.

## **OWSP**

Optical Wavelength Shared Protection. OWSP is a bidirectional ring, where each node is equipped with an OWSP. There are two channels ( $\lambda 1$  and  $\lambda 2$ ) in the main optical path on the internal and external rings in each span on a ring. The fiber and the OWSP on the main optical path are connected to the optical ports inputting  $\lambda 1$  and  $\lambda 2$  on the mux/demux board (unnecessary to be connected to the OTU), and  $\lambda 1$  and  $\lambda 2$  can be added and dropped at every node.

## **P**

### **Path**

A trail in a path layer.

### **Path protection**

The working principle of path protection: When the system works in path protection mode, the PDH path uses the dual fed and signal selection mode. Through the tributary unit and cross-connect unit, the tributary signal is sent simultaneously to the east and west lines. Meanwhile, the cross-connect unit sends the dual fed signals from the opposite end to the tributary unit, and the tributary unit selectively receive the signal from the two signals.

### **Performance register**

The memory space that is used to store performance events.

### **Performance threshold**

A threshold mechanism can be used to generate an autonomous event report when the performance of a transport entity falls below a predetermined level.

## **PMU**

The unit that is used to monitor power supply in the equipment.

### **Protection policy**

In case the service route provides multiple service protections, different protection strategies can be selected as required. Protection strategy refers to the protection mode given the priority in use for the trail: protection, no protection, and extra traffic. Of the above, the protection preference is divided into trail protection and subnetwork connection protection.

### **Protection subnet**

A network concept in the network management system. A protection subnet is not an MSP ring or a path protection ring. A protection subnet consists of NEs and fiber connections.

## **Protocol controller status**

The status of the protocol controller of the protection subnet of the MSP or SNCP type. The statuses are not started, started, starting, partially started.

## **Pane**

A major separate area of a window or dialog box, usually used for display rather than data entry.

## **R**

### **Remote Network Monitoring (RMON)**

A manage information base (MIB) defined by the Internet Engineering Task Force (IETF). RMON is mainly used to monitor the data flow of one network segment or the entire network.

### **Revertive switching**

In revertive operation, the traffic signal (service) always returns to (or remains on) the working SNC/trail if the switch requests are terminated; that is, when the working SNC/trail has recovered from the defect or the external request is cleared.

### **Resource sharing**

Resource sharing means that a physical link resource may belong to multiple protection subnetworks.

## **Route**

The path that a trail passes through.

### **Route constraint**

The constraint conditions for calculating a route. When creating a trail, the user can specify the explicit route and the NEs that the trail cannot pass. The explicit route and the NEs are the constraints for calculating the route.

## **ROADM**

Reconfiguration Optical Add/Drop Multiplexing. ROADM helps you to terminate or pass through any one wavelength at every node without affecting the existing services. At the same time, ROADM can change wavelengths through the network management system remotely, to adjust wavelengths added or dropped in a quick and convenient manner. In addition, ROADM enables power equalization at path level through a built-in power equalization function, and adjusts power for pass-through paths in a better way than a band-based dynamic gain equalizer (DGE) does.

## **S**

### **Section**

A trail in a section layer.

## **S1 byte**

To implement protection switching of clocks in the whole network, the NE must learn about the clock quality information of the clock reference source it traces. Therefore, ITU-T defines S1 byte to transmit the network synchronization status information.

## **Safe control switch**

The IPA safe switch is set in consideration of the long-span networking requirement, which cannot allow too low output optical power. If the safe control switch is turned off, IPA restarting optical power is the specified output power of the OAU. Otherwise, the IPA restarting optical power is restricted to less than 10 dBm.

## **Script file**

It is the text file describing the physical information and configuration information of the entire network, including the network-wide configuration file, NE port naming file, NE configuration file, NE list file, NM computer information file, service actualization script, network layer information file, network modeling and design information file and ASON information file.

## **SD trigger condition**

SD refers to signal degradation. The multiplex section protocol defaults to start switching in case of signal loss. In practice, signal degradation severely affects some services, so protection switching is needed. Or, you can turn off this trigger condition through the switch to avoid MS switching when the signal degrades.

## **SD**

Signal Degrade. A signal indicating the associated data has degraded in the sense that a degraded defect (dDEG) condition is active.

## **SDH-ASON Trail**

A trail that spans both the SDH and ASON domains.

## **SF**

Signal Fail. A signal indicating the associated data has failed in the sense that a near-end defect condition (not being the degraded defect) is active.

## **SDH NNI**

SDH Network Node Interface. It is applied to build communications connection with the equipment beyond the management area of the network management system. Usually, the NM creates an SDH NNI by creating a logical system on the port of an idle line board, and the NE must be a TM without protection and fiber connection.

## **Search domain**

The range of searching for NEs.

## **Server trail**

There is an inclusion relationship between the trails of different levels. For example, a trail of a certain level contains multiple trails of lower levels. In such a structure, the bearer trail that bears another trail of lower level is called the server trail.

### **Secondary filter trail**

In this search mode, the NM re-searches the trail data displayed by the current client according to the given search conditions, helping the customer find the trail data which interests him the most.

### **Shortcut menu**

A menu that is displayed when right-clicking an object's name or icon. Also called a context menu.

### **Serial port extended ECC**

The ECC channel realized by means of serial port.

### **Service clock working route**

The route of a service clock from the source to the sink in a WDM system. The working route can be in the form of point-to-point or broadcast (That is, an input clock source corresponds to multiple output clock sources).

### **Service configuration policy**

When pass-through services are configured on the newly added nodes, the high-order mode or low-order mode can be selected to pass through. When the VC12 service over a VC4 exceeds a preset threshold, higher order cross-connect is selected, otherwise lower order cross-connect is selected. When the services are not VC12 ones, they are converted into VC12 equivalents. For example: if there are two VC3 and four VC12 services on a VC4, there should be  $21 \times 2 + 4 = 46$  VC12 services.

### **Service loading indication**

To indicate the status of loading services in an SDH frame by using the C2 or V5 byte in the SDH path overhead.

### **SLA (Service Level Agreement)**

An agreement signed between the network carrier and the client, concerning the treatments that the client can receive when services are transferred in the network. The agreement contains the information on technology and commerce. Usually, SLA refers to a specific QoS.

### **SLIP**

Serial Line Interface Protocol, defines the framing mode over the serial line to implement transmission of messages over the serial line and provide the remote host interconnection function with a known IP address.

### **Subnet**

The network that consists of a group of interconnected or correlated NEs, according to different functions. For example, protection subnet, clock subnet and so on.

## **Subnet connection protection**

Subnetwork connection protection uses the 1+1 mode. SNCP is of 1+1 protection mode. Payloads are transmitted simultaneously on both the working and the protection sub-network connections. When the working sub-network connection fails, or when its performance deteriorates to a certain level, at the receiving end of the sub-network connection, the signal from the protection sub-network connection is selected according to the preference rule. Switching usually takes the single-end switching mode, no protocol is needed.

## **Subnet mask**

Also referred to as the network mask off code, it is used to define network segments, so that only the computers in the same network segment can communicate with one another, suppressing broadcast storm between different network segments.

## **Subnet number**

Subnetwork number is used to differentiate the different network sections in the sub-network conference. Actually it is the first several digits (one or two) of the user phone number. An orderwire phone number is composed of the sub-network number and the user number.

## **SNCP node**

The SNCP node of a ring subnet that can support the ability to dually feed and selectively receive trails. In this way, subnet connection protection is realized. Usually, the node of the path protection type is set as an SNCP node.

## **Spread type**

The spread type of ATM service includes point-to-point (p2p) and point-to-multipoint (including p2mpRoot and p2mpLeaf).

## **Switching priority**

There may be the case that several protected boards need to be switched; the tributary board switching priority should be set. If the switching priority of each board is set the same, the tributary board that fails later cannot be switched. The board with higher priority can preempt the switching of that with lower priority.

## **Synchronize Alarm**

When synchronizing the alarms, the network management system checks the alarms in the network management system database and the alarms in the NE. If they are inconsistent, the alarms in the NE are uploaded to the network management system database and overwrite the old ones.

## **Synchronize Fiber Service**

To re-upload all services carried on the physical fiber links.

## **Synchronize NE time**

To apply the system time of the network management system server to NEs to keep the time of all NEs consistent.

## T

### **Tag/Untag**

The Ethernet port that can identify and transmit the packets with an 802.1q tag header is referred to as a Tag port; otherwise it is referred to as an Untag port.

### **Terminal NE**

A source NE or a sink trail.

### **Topology**

The network management system topology is a basic component of the man-machine interactive interface. The topology clearly shows the structure of the network, the alarms of different NEs, subnetworks in the network, the communication status, and the basic network operating status.

### **Traffic frame discard flag**

It is the traffic frame discard control. Two options are provided: enable and disable. It indicates the means by which the NE discards cells when the network is congested. When the frame discard mark is closed, the cells will be discarded at the cell level; when it is opened, they will be discarded at the frame level. Here, "frame" refers to the AAL protocol data unit.

### **Trail**

A "transport entity" which consists of an associated pair of "unidirectional trails" capable of simultaneously transferring information in opposite directions between their respective inputs and outputs.

### **Trail consistency check**

Check whether the circuit route and the activation status of the NM side and NE side are the same, clear the superfluous MOs and combine some of the circuits. During network expansion, such an operation as adding fibers to the SDH NNI or configuring/deleting services through the configuration layer will result in circuit inconsistency.

### **Trail management function**

A network level management function of the network management system. Through trail management, you can configure end-to-end services, view graphic interface and visual routes of a trail, query detailed information of a trail, filter, search and locate a trail quickly, manage and maintain trails in a centralized manner, manage alarms and performance data by trail, and print a trail report.

### **Trail View**

The user interface of the network management system, that is used to manage trails based on topologies. The Trail View helps the user to quickly configure and maintain trails. See also Protection View, Clock View.

### **Transmission media layer route**

The route that consists of the physical media (such as fibers and NEs) that a trail passes through.

## **Trunk link**

A route that bears Ethernet services in the network management system.

## **TPS protection**

The equipment level protection that uses one standby tributary board to protect N tributary boards. When a fault occurs on the working board, the SCC issues the switching command, and the payload of the working board can be automatically switched over to the specified protection board and the protection board takes over the job of the working board. After the fault is cleared, the service is automatically switched to the original board.

## **U**

### **Upper threshold**

The value that can generate a performance threshold crossing if exceeded.

## **UAT**

Unavailable Time. A UAT event is reported when the monitored object generates 10 consecutive severely errored seconds (SES) and the SESs begin to be included in the unavailable time. The event will end when the bit error ratio per second is better than 10<sup>-3</sup> within 10 consecutive seconds.

## **Unidirectional (protection) switching**

Unidirectional (protection) switching. For a unidirectional fault (that is, a fault affecting only one direction of transmission), only the affected direction (of the trail, subnetwork connection) is switched.

## **UNI**

User Network Interface. The interface between the user and a network node.

## **Unprotected**

Services transmitted through an ordinary way. Once a failure or interruption occurs, the data cannot be restored for lack of protection mechanism.

## **Unterminated Service**

The service that is not terminated within the management domain of the network management system.

## **UPC/NPC**

Usage Parameter Control/Network Parameter Control. During the communication, the UPC is implemented to monitor the actual traffic on each virtual circuit that is input to the network. Once the specified parameter is exceeded, measures will be taken to control. NPC is similar to the UPC in function. The difference is that the incoming traffic monitoring function is divided into UPC and NPC according to their positions. The UPC locates at the user/network interface, while the NPC at the network interface.

## **Upload**

To query all or some of the configuration data of the NE to the network management system and overwrite the configuration data saved at the NE layer of the network management system.

## User

The user of the network management system client or NE user. The user and password define the corresponding authority of operation and management.

## User group

User set refers to the set of NMS users with the same management authorities. The default user group includes: system administrator, system maintenance engineer, system operator and system supervisor. The attributes of user set include name and detailed description.

## V

### Virtual fiber

The fiber that is created between different equipment. A virtual fiber is used to represent the optical path that bears SDH services in a WDM system.

### VC12, VC3 trail

The channels (that is trail group) provided for trail-layer network nodes (such as a switch) in a path-layer network, and act as the basic unit of transport capacity of paths between trail-layer network nodes.

### VC4 server trail

The path rate of the VC4 server trail is 150.336 Mbit/s. The VC4 server trail provides transparent channels (that is, circuit group) for circuit-layer network nodes (for example, a switch) in a path-layer network, and acts as the basic unit of inter-office communication path. When the VC4 server trail is configured, only the higher order cross-connection of VC4 is generated in the intermediate NE, but no cross-connection is generated at the two ends; that is, no service is added/dropped. Therefore, the VC4 server trail is not a traditional service. It is only the basis for VC3 and VC12 trail creation.

## VCC

Virtual Channel Connection. The VC logical trail that carries data between two end points in an ATM network.

## VCI

Virtual Channel Identifier. The identifier in the ATM (Asynchronous Transfer Mode) cell header that identifies to which virtual channel the cell belongs.

## VPI

The field in the ATM (Asynchronous Transfer Mode) cell header that identifies to which VP (Virtual Path) the cell belongs.

### Virtual concatenation

For SDH, the virtual containers (VC) to carry concatenated services are independent in terms of their location in the frame structures, so that they can be located flexibly.

## **Virtual NE**

Like a normal NE, a virtual NE is also displayed with an icon on a window, but it is only an NE simulated according to the practical situation, which does not represent an actual NE. Therefore, the actual status of this NE cannot be queried and its alarm status cannot be displayed with colors. A virtual NE is used to represent an NE or subnet that is not managed by Huawei's NMS for end-to-end service configuration and trail management.

## **W**

### **Wave band**

A board like the MB2 divides the wavelength resources into such fixed wavelength groups as 1-4, 5-8 and 9-12, and so on. A wavelength group is called a wave band, and a wave band carrying services to be added or dropped is called add/drop wave band.

## **WTR**

Wait to Restore. This command is issued when working channels meet the restore threshold after an SD or SF condition. It is used to maintain the state during the WTR period unless it is preempted by a higher priority bridge request.

### **WTR time**

A period of time that must elapse before a trail/connection that is recovered from a fault can be used again to transport the normal traffic signal and to select the normal traffic signal.

### **Wavelength path protection ring**

The wavelength path protection ring comprises the working ring and the protection ring. Service signals are transmitted in the two rings in opposite directions. In the wavelength path protection ring, service signals from one node (such as node A) to another node (such as node C) are transmitted via the working ring and the protection ring at one time. Node C receives the signals from the two rings at the same time and selects the signal with higher quality.

### **Wavelength protection group**

The important data that is used to describe the wavelength protection structure. The wavelength path protection can only work with the correct configuration of the wavelength protection group.

### **Wavelength protection subnet**

The ring-chain structure that is used to describe wavelength protection. The wavelength protection subnet is the basic network-level information and the basic network-level data oriented to user. The user can create or delete a protection subnet, set parameters for the protection subnet as required. In this way, the management at the network layer is realized.

### **Working path**

A specific path that is part of a protection group and is labeled working.

### **WXCP service**

Wavelength Cross-Connection Protection. The services that have path protection on a ring network. Services are dually fed and selectively received. The working service and the protection services are switched by using the cross-connection function.

**Parent topic:** [CORBA NBI Developer Guide \(Configuration\)](#)

## 9.2.15 Acronyms and Abbreviations

---

This topic lists acronyms and abbreviations that are used in this guide.

### A

#### ACE

Adaptive Communication Environment

#### AIS

Alarm Indication Signal

#### AMI

Alternate Mark Inversion code

#### APS

Automatic Protection Switching

#### ASON

Automatically Switched Optical Network

#### ASN.1

Abstract Syntax Notation One

#### ATM

Asynchronous Transfer Mode

### B

#### БML

Business Management Layer

#### BMS

Business Management System

### C

#### CAR

Committed Access Rate

#### CC

Cross Connection

**CORBA**

Common Object Request Broker Architecture

**COS**

Class Of Service

**CTP**

Connection Termination Point

**CPU**

Central Processing Unit

**D**

**DCC**

Data Communication Channels

**DCN**

Data Communication Network

**DNI**

Dual Node Interconnection

**DWDM**

Dense Wavelength Division Multiplexing

**E**

**ECC**

Embedded Control Channel

**ELL**

Encapsulation Layer Link

**EML**

Element Management Level

**EMS**

Element Management System

**EPG**

Equipment Protection Group

**EPL**

Ethernet Private Line

**EPLan**

Ethernet Private LAN

**EVPL**

Ethernet Virtual Private Line

**EVPLan**

Ethernet Virtual Private LAN

**F****FD**

Flow Domain

**FDFr**

Flow Domain Fragment

**FEC**

Forward Error Correction

**FIFO**

First In First Out

**FTP**

File Transfer Protocol

**FTP**

Floating Termination Point

**G****GCT**

GUI Cut-Through

**GE**

Gigabit Ethernet

**GNE**

Gate Network Element

**GUI**

Graphic User Interface

**H****HA**

High-Availability

**I****ID**

Identity

**IDL**

Interface Definition Language

**IGMP**

Internet Group Management Protocol

**IIOP**

Internet Inter-ORB Protocol

**IMAP**

Integrated Management Application Platform

**ITU-T**

International Telecommunication Union- Telecommunication Standardization Sector

**IP**

Internet Protocol

**L****LAG**

Link Aggregation Group

**LAN**

Local Area Network

**LCAS**

Link Capacity Adjustment Scheme

**LCT**

Local Craft Terminal

**M****MAC**

Media Access Control

**MDP**

Message Dispatch Process

**ME**

Managed Element

**MFDFr**

Matrix Flow Domain Fragment

**MIB**

Management Information Base

**MIP**

Maintenance Association Intermediate Point

**MIT**

**M**anaged Object Instance Tree

**MO**

Managed Object

**MODEM**

Modulator-Demodulator

**MPLS**

Multi-Protocol Label Switching

**MS**

Multiplex Section

**MSP**

Multiplex Section Protection

**MSTP**

Multi-Service Transmission Platform

**MTNM**

Multi-Technology Network Management

**N**

**NBI**

Northbound Interface

**NE**

Network Element

**NEL**

Network Element Level

**NML**

Network Management Level

**NMS**

Network Management System

**NNI**

Network-to-Network Interface

**NPC**

Network Parameter Control

**O**

**OADM**

Optical Add/Drop Multiplexer

**OAM**

Operation Administration Maintenance

**OCh**

Optical Channel

**OMG**

Object Management Group

**ORB**

Object Request Broker

**OSF**

Operation System Function

**OSS**

Operation Support System

**OSN**

Optical Switch Node

**OSI**

Open Systems Interconnection

**OTS**

Optical Transmission Section

**OTM**

Optical Terminal Multiplexer

**OTU**

Optical Transponder Unit

**P****PC**

Personal Computer

**PDH**

Plesiochronous Digital Hierarchy

**PE**

Provider Edge

**PG**

Protection Group

**PM**

Performance Monitor

**PP**

Path Protection

**PRBS**

Pseudo Random Binary Sequence

**PSTN**

Public Switched Telephone Network

**PTP**

Physical Termination Point

**PVP**

Permanent Virtual Path

**Q****QoS**

Quality of Service

**R****RDI**

Remote Defect Indication

**RMEP**

Remote Maintenance Association End Point

**RMON**

Remote Monitoring

**RPR**

Resilient Packet Ring

**S****SCSI**

Small Computer Systems Interface

**SD**

Signal Degradation

**SDH**

Synchronous Digital Hierarchy

**SML**

Service Management Layer

**SMS**

Service Management System

**SNML**

Sub-Network Management Layer

**SNMS**

Subnetwork Management System

**SMTP**

Simple Mail Transfer Protocol

**SNC**

Subnetwork Connection

**SNCP**

Sub-Network Connection Protection

**SONET**

Synchronous Optical Network

**SSL**

Security Socket Layer

**SSM**

Synchronization Status Message

**T****TAO**

The ACE ORB

**TCA**

Threshold Crossing Alarm

**TCM**

Tandem Connection Monitoring

**TCP**

Transmission Control Protocol

**TD**

Traffic Descriptor

**TMF**

Telecommunication Management Forum

**TMN**

Telecommunication Management Network

**TP**

Termination Point

**U**  
**UNI**

User-to-Network Interface

**UPC**

Usage Parameter Control

**UTC**

Universal Time Coordinated

**V**

**VB**

Virtual Bridge

**VC**

Virtual Connection

**VC**

Virtual Circuit

**VC**

Virtual Container

**VC**

Virtual Channel

**VCI**

Virtual Channel Identifier

**VLAN**

Virtual LAN

**VPI**

Virtual Path Identifier

**VP**

Virtual Path

**W**

**WAN**

Wide Area Network

**WDM**

Wavelength Division Multiplexing

**WTR**

Wait-to-Restore

## 9.3 CORBA NBI Developer Guide (Performance)

---

Focusing on the performance management of the CORBA NBI, this document describes the secondary development of the NBI from the aspects as follows: basic information, interface function, information model, and interface model.

- [\*\*Guideline\*\*](#)  
The *NBI Developer Guide* is an important document for users to know NBI specifications. This topic describes how to read this document.
- [\*\*Overview\*\*](#)  
Unless otherwise specified, the CORBA NBI described in this document refers to the standardized NBI that complies with the TMF MTNM standards.
- [\*\*Interface Model\*\*](#)  
This topic provides models of interfaces (such as customized interfaces and TMF 814 recommendation interfaces) applied to the CORBA NBI.
- [\*\*Information Model\*\*](#)  
This topic describes information models supported by the CORBA NBI, including TMF 814 recommendation-based models and customized models.
- [\*\*Format of Notification Events\*\*](#)  
In the additionalInfoUsage.pdf and AVC\_SC\_Notifications.pdf among the supporting documentation of the TMF 814 recommendation, the structure of each notification event of the CORBA interface is described. This chapter presents the detailed definitions of the structure of the notification events.
- [\*\*Notification Event Samples\*\*](#)  
This topic describes samples of notification events that the CORBA NBI supports.
- [\*\*Object Naming Rules\*\*](#)  
This chapter lists the naming rules for various objects in the U2000 CORBA interface. The naming rules are in accordance with the TMF recommendations.
- [\*\*Performance Parameter List\*\*](#)  
This topic describes performance parameters that the CORBA NBI supports.
- [\*\*IDL Description\*\*](#)  
This topic describes the IDL defined in the CORBA NBI.
- [\*\*Description of Unimplemented and Customized Interfaces\*\*](#)

- [Layer Rate Description](#)
- [Glossary](#)  
This appendix lists the glossary used in the guide.
- [Acronyms and Abbreviations](#)  
This topic lists acronyms and abbreviations that are used in this guide.

**Parent topic:** [CORBA NBI Developer Guide](#)

## 9.3.1 About This Document

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### Related Versions

The following table lists the product versions related to this document.

Product Name	Version
iManager U2000	V200R015C60

### Intended Audience

Focusing on the performance management of the CORBA NBI (northbound interface), this document describes the secondary development of the CORBA NBI from the aspects as follows: basic information, interface function, interface model, information model, and format of notification events.

This document provides the reference information about the performance management of the CORBA NBI.

This document is intended for:

- Application Developer
- Data Configuration Engineer

### Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 <b>DANGER</b>	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 <b>CAUTION</b>	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
 <b>NOTICE</b>	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
 <b>NOTE</b>	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

## Command Conventions

The command conventions that may be found in this document are defined as follows.

Convention	Description
<b>Boldface</b>	The keywords of a command line are in <b>boldface</b> .
<i>Italic</i>	Command arguments are in <i>italics</i> .
[ ]	Items (keywords or arguments) in brackets [ ] are optional.
{ x   y   ... }	Optional items are grouped in braces and separated by vertical bars. One item is selected.
[ x   y   ... ]	Optional items are grouped in brackets and separated by vertical bars. One item is selected or no item is selected.

Convention	Description
{ x   y   ... }*	Optional items are grouped in braces and separated by vertical bars. A minimum of one item or a maximum of all items can be selected.
[ x   y   ... ]*	Optional items are grouped in brackets and separated by vertical bars. Several items or no item can be selected.

## GUI Conventions

The GUI conventions that may be found in this document are defined as follows.

Convention	Description
<b>Boldface</b>	Buttons, menus, parameters, tabs, window, and dialog titles are in <b>boldface</b> . For example, click <b>OK</b> .
>	Multi-level menus are in <b>boldface</b> and separated by the ">" signs. For example, choose <b>File &gt; Create &gt; Folder</b> .

## Change History

Updates between document issues are cumulative. Therefore, the latest document issue contains all updates made in previous issues.

### Changes in Issue 06 (2017-06-29) Based on Product Version V200R015C60

Sixth release.

### Changes in Issue 05 (2017-03-20) Based on Product Version V200R015C60

Fifth release.

### Changes in Issue 04 (2016-09-12) Based on Product Version V200R015C60

Fourth release.

### Changes in Issue 03 (2016-06-20) Based on Product Version V200R015C60

Third release.

### Changes in Issue 02 (2016-03-31) Based on Product Version V200R015C60

Second release.

### Changes in Issue 01 (2016-01-15) Based on Product Version V200R015C60

Initial release.

**Parent topic:** [CORBA NBI Developer Guide \(Performance\)](#)

## 9.3.2 Guideline

---

The *NBI Developer Guide* is an important document for users to know NBI specifications. This topic describes how to read this document.

- [\*\*What Is Northbound Model\*\*](#)

Considering networks from the perspective of the OSS, to prevent the OSS from understanding diversified devices and services, you need to convert the objects managed by the EMS or NMS to objects that can be understood by the OSS. This is the northbound model.

- [\*\*What Is NBI\*\*](#)

Data interactions between the OSS and U2000 are implemented through NBIs. For ease of understanding, NBI names adopt a verb-object structure, that is, each NBI is a combination of an "Action" and "Object".

- [\*\*Getting Started\*\*](#)

This topic provides suggestions on reading of interface manuals.

- [\*\*Example\*\*](#)

The following uses the query of a fiber as an example to describe how to query information in the NBI Developer Guide.

**Parent topic:** [CORBA NBI Developer Guide \(Performance\)](#)

### 9.3.2.1 What Is Northbound Model

---

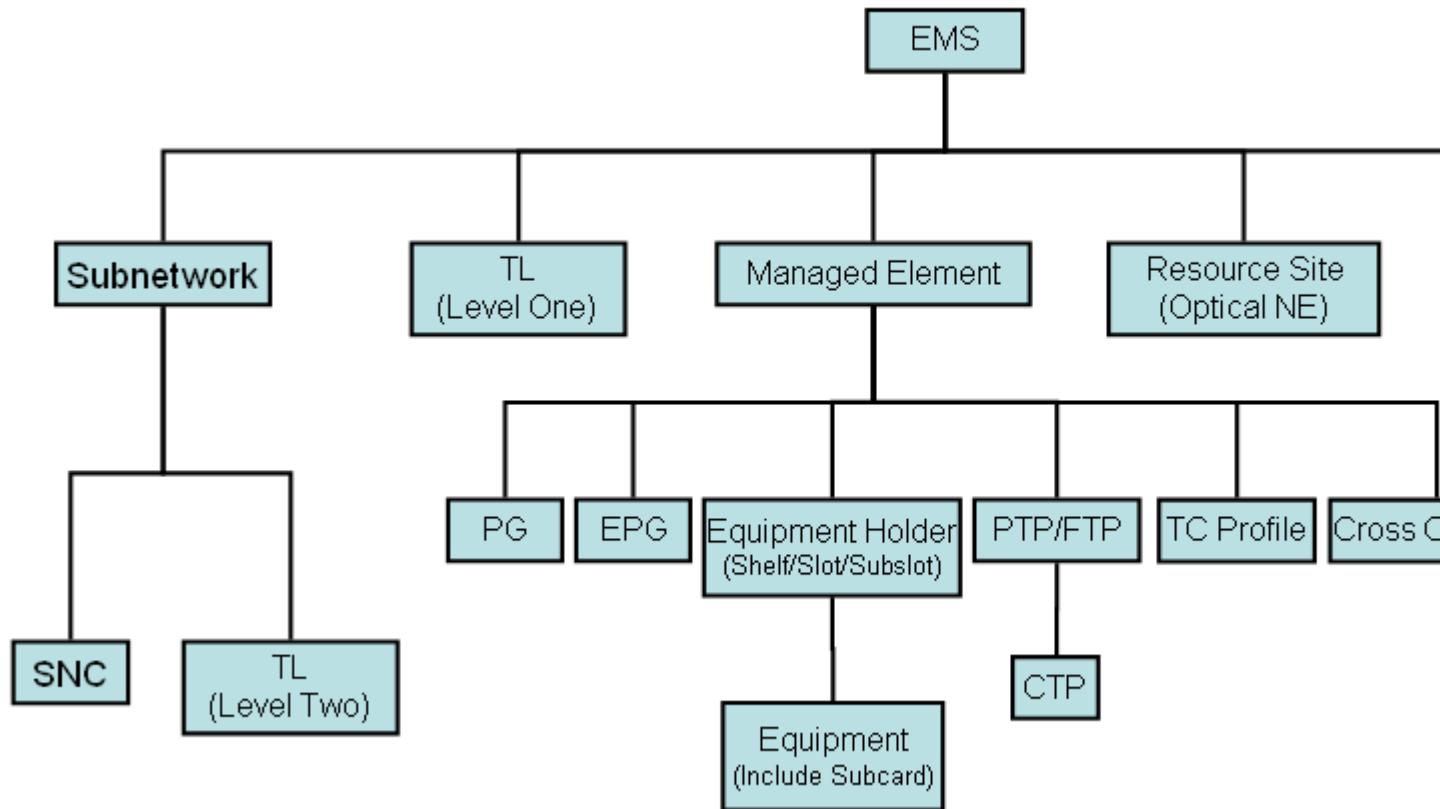
Considering networks from the perspective of the OSS, to prevent the OSS from understanding diversified devices and services, you need to convert the objects managed by the EMS or NMS to objects that can be understood by the OSS. This is the northbound model.

Use NEs, subracks, boards, ports, and fibers/cables as an example. They are abstracted as ME, EquipmentHold, Equipment, TerminationPoint, and TopologicalLink. Getting familiar with the northbound model is the prerequisite for understanding northbound interface (NBI) functions.

NE	Subrack	Board	Port	Fiber/cable
ME	EquipmentHold	Equipment	PhysicalTerminationPoint	TopologicalLink

[Figure 2](#) shows the northbound models of all objects managed by the EMS or NMS.

**Figure 2** Managed object model



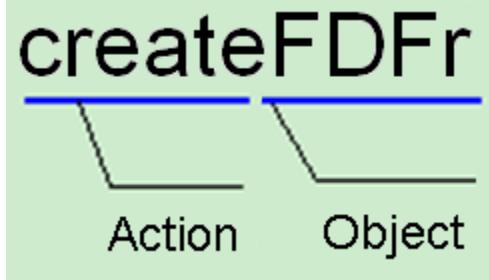
**Parent topic:** [Guideline](#)

## 9.3.2.2 What Is NBI

Data interactions between the OSS and U2000 are implemented through NBIs. For ease of understanding, NBI names adopt a verb-object structure, that is, each NBI is a combination of an "Action" and "Object".

Based on the structure, you can learn the NBI function through its name. The following figure shows an example.

**Figure 1** Schematic diagram of the northbound model



### Action

"Action" can be understood as all operations initiated by the OSS.

**Table 1 Description of NBI operations**

Operation	Description
Get	Indicates the query operation.
Set	Indicates the setting operation.
Create	Indicates the creation operation.
Delete	Indicates the deletion operation.
Activate/Deactivate	Indicates the activation or deactivation operation.
Modify	Indicates the modification operation.

### "Intended Object" of "Action"

To a certain extent, you can understand "Object" as the "Intended Object" of NBI operations. Use common inventory management and service configuration operations as an example. The "Intended Objects" are northbound models such as NEs, boards, and ports.

**Table 2 Mapping between NM objects and northbound objects**

Object in U2000 System	Object in CORBA NBI
NMS or EMS	EMS
NE	ME
Subrack	Shelf
Slot	Slot
Subslot	Sub_Slot
Board	Equipment
Subboard	Equipment
Physical port	PTP
Logical port	FTP
Service protection group	PG
Equipment protection group	EPG
Trail management	SNC
PWE3 service	MFDFr
VSI service	MFDFr
PW	FTP
VLAN management object	FTP
PW switch	IPCrossConnection
MPLS static tunnel	IPCrossConnection
IP tunnel	TrafficTrunk
MPLS dynamic tunnel	TrafficTrunk
Maintenance domain of OAM management	MD
Maintenance association of OAM management	MA
Remote maintenance point	RMEP

**Table 2 Mapping between NM objects and northbound objects**

Object in U2000 System	Object in CORBA NBI
Intermediate maintenance point	MIP

**Parent topic:** [Guideline](#)

### 9.3.2.3 Getting Started

---

This topic provides suggestions on reading of interface manuals.

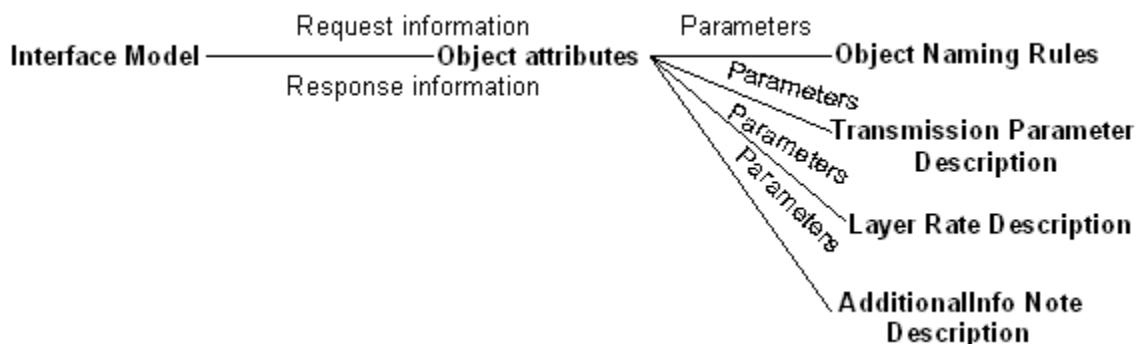
#### Volume Description

The U2000 corresponds to the two service processes of telecom carriers: Fulfillment and Assurance, the U2000 classifies NBIs into four fields by function: inventory management, service provisioning, alarm management, and performance management. These four fields respectively correspond to the four volumes of the *NBI Developer Guide*.

#### Reading Sequence

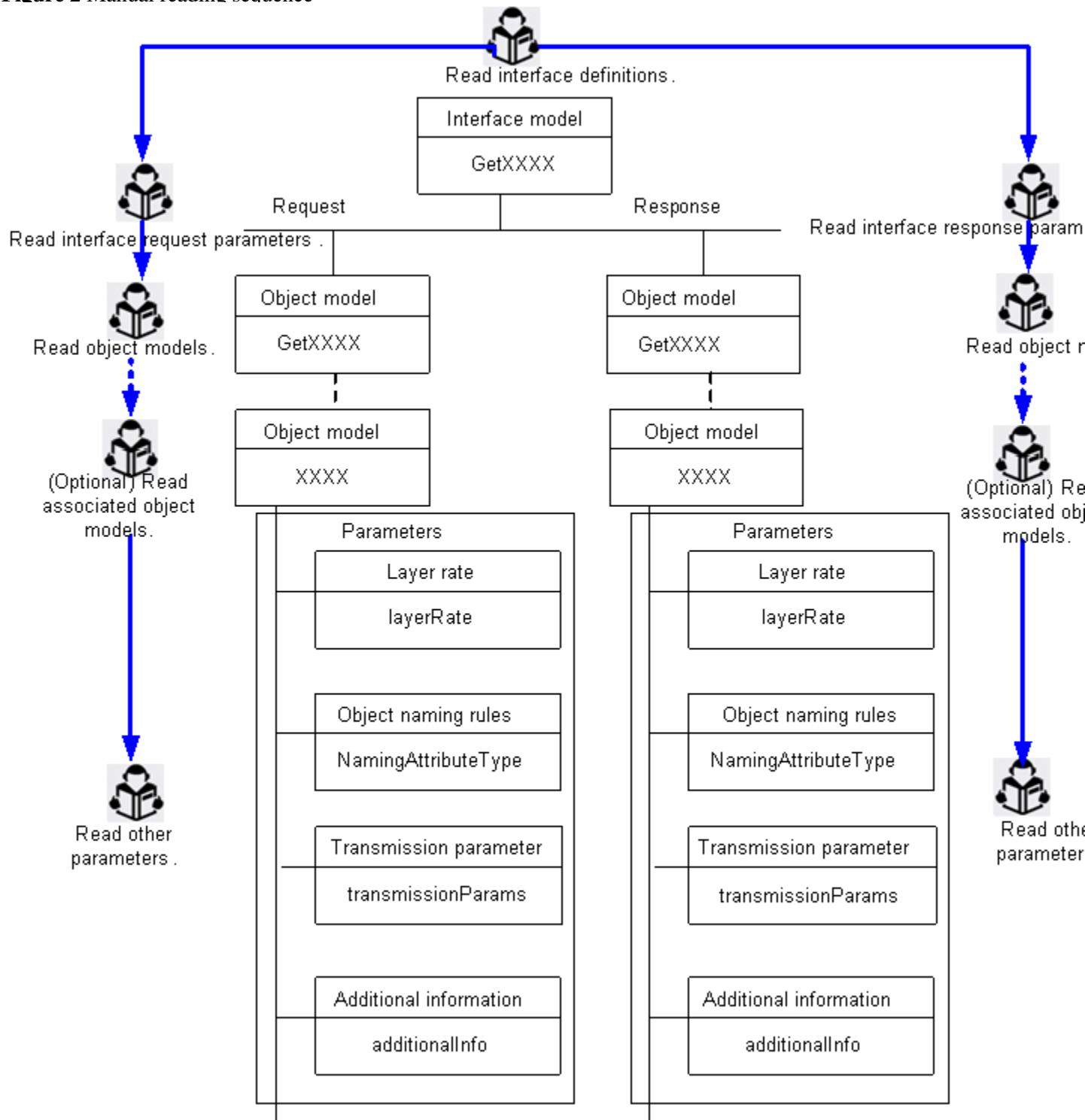
The core of the manual is to describe the request and response information of each interface. The **Interface Model** chapter describes the definition of an interface in detail, and the **Object Attributes** chapter describes the request and response information of the interface. The parameters that are not described in detail in the **Object Attributes** chapter are described in the **Object Naming Rules**, **Transmission Parameter Description**, **Layer Rate Description**, and **AdditionalInfo Usage Note** chapters.

**Figure 1** Structure of chapters in the manual



[Figure 2](#) shows the recommended reading sequence.

**Figure 2** Manual reading sequence



Parent topic: [Guideline](#)

## 9.3.2.4 Example

---

The following uses the query of a fiber as an example to describe how to query information in the NBI Developer Guide.

### Querying Interface Models

First, query NBI models based on service scenarios.

1. The fiber northbound model is **TopologicalLink**. Find the **MultiLayerSubnetworkMgr\_I** module in the **Interface Model** chapter. The action corresponding to the query operation is **get**. Based on the model and action, you can find that the desired NBI is

`getTopologicalLink` in the **Interface Model** chapter.

## getTopologicalLink

This interface is used to query information about a topological link by its name.

### Definition

```
void getTopologicalLink(  
    in globaldefs::NamingAttributes_T topoLinkName,  
    out topologicalLink::TopologicalLink_T topoLink)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about a topological link by its name.

### Parameters

Parameter	Input/Output	Description
topoLinkName	Input	Indicates the name of the topological link.
topoLink	Output	Indicates the topological link.

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input value.
EXCPT_ENTITY_NOT_FOUND	Indicates that the entity was not found.
EXCPT_INTERNAL_ERROR	Indicates an internal error occurred.

### Restrictions

There is no restriction.

2. Through the guide, you can learn the parameter details of the interface, including the parameters you need to set for the interface and the returned values of the interface.

## Building Request Information

Query input parameters of the interface model to further know corresponding object models and correctly construct request models of interfaces.

1. In the request information of the `getTopologicalLink` interface, the included parameter is `topoLinkName` and the type is `NamingAttributes_T`. Learn the detailed naming rules in

the **TopologicalLink** section of the **Object Naming Rules** chapter.

## TopologicalLink

This topic describes the naming rule for a topological link. A topological link can be a physical connection between two

**Table 1** TopologicalLink

Object name	TopologicalLink
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="TopologicalLink"; value="TopologicalLinkName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="TopologicalLink"; value="2008-10-17 19:02:47 -"
Remarks	More description for the value of TopologicalLinkName: If a topological link is created on the U2000 earlier than V2, the value of TopologicalLinkName adopts a format similar to "139981017190247".

2. Build complete request information based on the queried information.

## Querying Response Information

After a request message is sent correctly, response information is returned. You can query the meaning of the response information in the guide.

1. In the response information of the **getTopologicalLink** interface, the included parameter is **topoLink** and the type is **TopologicalLink\_T**. Learn the details about **topologicalLink** in

the **Object Model** chapter.

## TopologicalLink\_T

This topic describes the data structure of topological links.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of topological links.
userLabel	string	User label. This field is blank by default.
nativeEMSName	string	Local name.
owner	string	Name of the owner of the object. This field is blank by default.
direction	"globaldefs ::ConnectionDirection_T"	Direction. The value are: CD_UP, CD_DOWN, CD_BIDIR.
rate	transmissionParameters::LayerRate_T	Layer rate.
aEndTP	globaldefs::NamingAttributes_T	Source.
zEndTP	globaldefs::NamingAttributes_T	Sink.
additionalInfo	globaldefs::NVSList_T	Additional information. For details see the <a href="#">additionalInfo::TopologicalLink_T</a> section.

## Viewing Additional Information

Northbound models are highly abstracted from the logic of different services. For example, **TopologicalLink** can represent fibers, layer 2 links, or IP links. You can distinguish them based on fields such as **rate** and **additionalInfo**.

1. The **TopologicalLinkType** information model contains the **rate** parameter. View the meaning of the layer rate in the response information in the **Rate Layer Description** chapter.
2. The **TopologicalLinkType** information model contains the **additionalInfo** parameter. View the parameter in the **TopologicalLink\_T** section of the **AdditionalInfo Description** chapter.

**Parent topic:** [Guideline](#)

## 9.3.3 Overview

---

Unless otherwise specified, the CORBA NBI described in this document refers to the standardized NBI that complies with the TMF MTNM standards.

- [Introduction](#)
- [Performance Management](#)

**Parent topic:** [CORBA NBI Developer Guide \(Performance\)](#)

## 9.3.3.1 Introduction

---

The common object request broker architecture (CORBA) interface of Huawei provides the performance management function, which involves the management of the performance events of the synchronous digital hierarchy (SDH), wavelength division multiplexing (WDM), Ethernet, asynchronous transfer mode (ATM), package transport network (PTN), and radio transmission node (RTN). With the performance management interface of Huawei, the operating support system (OSS) provides important functions, including monitoring the network performance and analyzing the trend of the network performance.

**Parent topic:** [Overview](#)

## 9.3.3.2 Performance Management

---

The U2000 CORBA NBI provides the performance management functions listed in [Table 1](#).



Unless otherwise specified, the NA equipment does not support the following functions.

---

**Table 1 Performance management**

Function	Function Description	Description
SDH performance management	<p>This function covers the following operations:</p> <ul style="list-style-type: none"><li>• Querying the current performance and the history performance</li></ul>	N/A

**Table 1 Performance management**

Function	Function Description	Description
	<ul style="list-style-type: none"><li>• Enabling and disabling the performance monitoring</li><li>• Resetting the performance event register</li><li>• Querying and setting the threshold crossed alert (TCA) threshold</li></ul>	
WDM performance management	<p>This function covers the following operations:</p> <ul style="list-style-type: none"><li>• Querying the current performance and the history performance</li><li>• Enabling and disabling the performance monitoring</li><li>• Resetting the performance event register</li><li>• Querying and setting the TCA threshold</li></ul>	The NA equipment supports only the functions of querying the current performance and the history performance.
RTN performance management	<p>This function covers the following operations:</p> <ul style="list-style-type: none"><li>• Querying the current performance and the history performance</li><li>• Enabling and disabling the performance monitoring</li><li>• Querying and setting the TCA threshold</li></ul>	N/A
Ethernet performance management	<p>This function covers the querying of the current performance and the history performance.</p>	N/A
ATM performance management	<p>This function covers the querying of the current performance and the history performance.</p>	NA
PTN performance management	<p>This function covers the following operations:</p>	N/A

**Table 1 Performance management**

Function	Function Description	Description
	<ul style="list-style-type: none"><li>• Querying the current performance and the history performance</li><li>• Resetting the performance event register</li></ul>	
Hybrid MSTP performance management	This function covers the querying of the current performance and the history performance.	N/A
OTN Performance management	This function covers the following operations: <ul style="list-style-type: none"><li>• Querying the current performance and the history performance</li><li>• Enabling and disabling the performance monitoring</li></ul>	N/A
Scheduled performance task management	This function covers the following operations: <ul style="list-style-type: none"><li>• Creating a scheduled performance task</li><li>• Querying the scheduled performance task</li><li>• Deleting the scheduled performance task.</li></ul>	Only PTN equipment is supported.
Performance instance management	This function covers the creation, query and deletion of performance instances.	You can create performance instances only for Eth-Port (Packet), E1-Port, LAG port, tunnel, PW (ATM-PW/L2VPN-PW/CES-PW), and V-UNI (L2VPN-V-UNI) of PTN NEs (excluding PTN 6900s and PTN 7900s). The laser object is not supported.

**Parent topic:** [Overview](#)

## 9.3.4 Interface Model

---

This topic provides models of interfaces (such as customized interfaces and TMF 814 recommendation interfaces) applied to the CORBA NBI.

- [PerformanceManagementMgr\\_I](#)

This interface is used to manage performances.

**Parent topic:** [CORBA NBI Developer Guide \(Performance\)](#)

### 9.3.4.1 PerformanceManagementMgr\_I

---

This interface is used to manage performances.

- [createPMCollectionTask](#)

This interface is used to create scheduled performance collection tasks.

- [deletePMCollectionTask](#)

This interface is used to delete scheduled performance collection tasks.

- [selectPMCollectionTask](#)

This interface is used to query scheduled performance collection tasks.

- [getMEPMcapabilities](#)

This interface is used to query performance parameters supported by NEs with a specified layer rate.

- [disablePMData](#)

This interface is used to disable the performance monitoring on a specified object based on preset monitoring conditions.

- [enablePMData](#)

This interface is used to enable the performance monitoring on a specified object based on preset monitoring conditions.

- [clearPMData](#)

This interface is used to clear the accumulated performance values of objects by monitoring conditions.

- [getAllCurrentPMData](#)

This interface is used to query the current performance data of a specified object by the preset monitoring conditions and parameters.

- **[getHistoryPMData](#)**  
This interface is used to query the historical performance data of a specified object by the preset monitoring conditions and parameters.
- **[getHoldingTime](#)**  
This interface is used to query the longest period that performance data can be recorded on the EMS.
- **[getTCATPParameter](#)**  
This interface is used to query threshold-crossing performance parameters.
- **[getHistoryPMDataByPull](#)**  
This interface is used to synchronize and query historical performance data. You can query the historical performance data of specified objects by entering monitoring conditions and parameter names, and upload the data to the specified FTP server.
- **[setTCATPParameter](#)**  
This interface is used to set threshold-crossing performance parameters.
- **[createPerformanceMonitoringData](#)**  
This interface is used to create performance monitoring instances.
- **[deletePerformanceMonitoringData](#)**  
This interface is used to delete performance monitoring instances.
- **[getPfmInstanceByResource](#)**  
This interface is used to query performance monitoring instances.

**Parent topic:** [Interface Model](#)

## 9.3.4.1.1 createPMCollectionTask

---

This interface is used to create scheduled performance collection tasks.

### Definition

```
void createPMCollectionTask(  
    in string taskName,  
    in string destination,  
    in string userName,  
    in string password,  
    in string emsUserName,  
    in globaldefs::NamingAttributesList_T pmTPSelectList,  
    in string period,  
    in string startTime,  
    in string endTime,
```

```

in boolean forceUpload)
raises(globaldefs::ProcessingFailureException);

```

## Function

Create scheduled performance collection tasks.

## Parameters

Parameter	Input/Output	Description	Value
taskName	Input	Task name.	string
destination	Input	FTP address and file name for transferring performance data file.	String. The file suffix must be one of the following: *.pfm, *.txt, *.dat, *.log, *.xlsx, *.csv, *.xls, *.xml, and *.zip. If the file suffix is not of the preceding ones or blank, the U2000 displays an error message indicating that the file suffix is invalid.
userName	Input	FTP user name.	string
password	Input	FTP password.	string
emsUserName	Input	File creator.	string
pmTPSelectList	Input	Monitoring objects of the scheduled performance collection tasks.	globaldefs::NamingAttributesList_T
period	Input	Type of the querying period.	string
startTime	Input	Start time of the task.	string
endTime	Input	End time of the task.	string
forceUpload	Input	Indicates whether to query data on NEs. when the value is 0, query data on the U2000; when the value is 1, query data on NEs.	boolean

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error

## Restrictions

The createPMCollectionTask interface is a best-effort interface.

The period can be only 15min or 24h.

The pmTPSelectList parameter does not support WDM CTP objects.

**Parent topic:** [PerformanceManagementMgr\\_1](#)

## 9.3.4.1.2 deletePMCollectionTask

---

This interface is used to delete scheduled performance collection tasks.

### Definition

```
void deletePMCollectionTask(
    in CollectTaskNameList_T taskNameList,
    in string emsUserName)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Delete scheduled performance collection tasks.

### Parameters

Parameter	Input/Output	Description	Value
taskNameList	Input	List of the names of the tasks to be deleted.	CollectTaskNameList_T

Parameter	Input/Output	Description	Value
emsUserName	Input	Identifier of the user who deletes the tasks.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The period can be only 15min or 24h.

**Parent topic:** [PerformanceManagementMgr I](#)

## 9.3.4.1.3 selectPMCollectionTask

---

This interface is used to query scheduled performance collection tasks.

### Definition

```
void selectPMCollectionTask(
    in CollectTaskNameList_T taskNameList,
    in string emsUserName,
    out CollectTaskInfoList_T taskInfoList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query scheduled performance collection tasks.

### Parameters

Parameter	Input/Output	Description	Value
taskNameList	Input	List of the names of the tasks to be queried.	CollectTaskNameList_T

Parameter	Input/Output	Description	Value
emsUserName	Input	Identifier of the querier.	string
taskInfoList	Output	Information about the queried tasks.	CollectTaskInfoList_T For the element model, see CollectTaskInfo_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The period can be only 15min or 24h.

**Parent topic:** [PerformanceManagementMgr\\_I](#)

## 9.3.4.1.4 getMEPMcapabilities

---

This interface is used to query performance parameters supported by NEs with a specified layer rate.

### Definition

```
void getMEPMcapabilities(
in globaldefs::NamingAttributes_T meName,
in transmissionParameters::LayerRate_T layerRate,
out PMParameterList_T pmParameterList)
raises(globaldefs::ProcessingFailureException);
```

### Function

Query performance parameters supported by NEs with a specified layer rate.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	Name of the NE. It cannot be null.	globaldefs::NamingAttributes_T
layerRate	Input	Layer rate of the performance parameter.	transmissionParameters::LayerRate_T It cannot be null.
pmParameterList	Output	List of the supported performance parameters.	PMParameterList_T For the element model, see PMParameter_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [PerformanceManagementMgr\\_I](#)

## 9.3.4.1.5 disablePMData

---

This interface is used to disable the performance monitoring on a specified object based on preset monitoring conditions.

### Definition

```
void disablePMData(
in PMTPSelectList_T pmTPSelectList,
out PMTPSelectList_T failedTPSelectList)
raises(globaldefs::ProcessingFailureException);
```

## Function

Disable the performance monitoring of objects based on preset monitoring conditions. If the entered object is an NE, the system disables the performance monitoring of all resources on the NE.

## Parameters

Parameter	Input/Output	Description	Value
pmTPSelectList	Input	List of the monitoring conditions that are set.	PMTPSelectList_T For the element model, see PMTPSelect_T.
failedTPSelectList	Output	List of the monitoring conditions of which the setting fails.	PMTPSelectList_T For the element model, see PMTPSelect_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error

## Restrictions

- The performance in the NA period cannot be set.
- The filtering through the PMLocation parameter is not supported.
- The disablePMData interface is a best-effort interface.

**Parent topic:** [PerformanceManagementMgr\\_I](#)

## 9.3.4.1.6 enablePMData

---

This interface is used to enable the performance monitoring on a specified object based on preset monitoring conditions.

## Definition

```
void enablePMData(  
    in PMTPSelectList_T pmTPSelectList,  
    out PMTPSelectList_T failedTPSelectList)  
raises(globaldefs::ProcessingFailureException);
```

## Function

Enable the performance monitoring on a specified object based on preset monitoring conditions. If the entered object is an NE, enable the performance monitoring of all resources on this NE.

## Parameters

Parameter	Input/Output	Description	Value
pmTPSelectList	Input	List of the monitoring conditions that are set.	PMTPSelectList_T For the element model, see PMTPSelect_T.
failedTPSelectList	Output	List of the monitoring conditions of which the setting fails.	PMTPSelectList_T For the element model, see PMTPSelect_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input
EXCPT_ENTITY_NOT_FOUND	The input object does not exist
EXCPT_INTERNAL_ERROR	Internal EMS error

## Restrictions

The performance in the NA period cannot be set.

The filtering through the PMLocation parameter is not supported.

The enablePMData interface is a best-effort interface.

**Parent topic:** [PerformanceManagementMgr\\_I](#)

## 9.3.4.1.7 clearPMData

---

This interface is used to clear the accumulated performance values of objects by monitoring conditions.

### Definition

```
void clearPMData(
    in PMTPSelectList_T pmTPSelectList,
    out PMTPSelectList_T failedTPSelectList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Clear the accumulated performance values of objects by monitoring conditions.

### Parameters

Parameter	Input/Output	Description	Value
pmTPSelectList	Input	List of the monitoring conditions that are cleared.	PMTPSelectList_T For the element model, see PMTPSelect_T.
failedTPSelectList	Output	List of the monitoring conditions of which the clearing fails.	PMTPSelectList_T For the element model, see PMTPSelect_T.

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input
EXCPT_INTERNAL_ERROR	Internal EMS error

### Restrictions

The performance in the NA period cannot be set.

The filtering through the PMLocation parameter is not supported.  
The clearPMData interface is a best-effort interface.

**Parent topic:** [PerformanceManagementMgr\\_I](#)

## 9.3.4.1.8 getAllCurrentPMData

---

This interface is used to query the current performance data of a specified object by the preset monitoring conditions and parameters.

### Definition

```
void getAllCurrentPMData(
    in PMTPSelectList_T pmTPSelectList,
    in PMParameterNameList_T pmParameters,
    in unsigned long how_many,
    out PMDataList_T pmDataList,
    out PMDataIterator_I pmIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query current performance data of a specified object by preset monitoring conditions and parameters.

The performance value (A) in the returned results is different from the performance value (B) displayed in the GUI of the U2000. B is equal to A multiplied by the corresponding unit field value of the performance event ID. For details, see the CORBA NBI Performance Event List.

### Parameters

Parameter	Input/Output	Description	Value
pmTPSelectList	Input	Filters the query results according to the monitoring conditions that are defined in pmTPSelectList. This list cannot be blank.	PMTPSelectList_T For the element model, see PMTPSelect_T.
pmParameters	Input	Queries performance data of the parameter types that are contained in the list.	PMParameterNameList_T

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the maximum volume of data returned upon the first query. You are not recommended to query more than 100 items at a time.	unsigned long
pmDataList	Output	Indicates the returned performance data	PMDATAList_T For the element model, see PMData_T.
pmIt	Output	Indicates an iterator.	PMDATAIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper Caretthreshold.

## Restrictions

You are not recommended to query more than 100 items at a time. The query of the performance data in the NA period is not supported. The performance data of subracks and boards cannot be queried. PTN NEs support the query of PWE3 trails, VPLS trails, and E2E tunnels. The queried performance data does not contain data of intermediate nodes, that is, only the performance data of the source and sink ends is returned. The value of the pmTPSelectList parameter cannot be blank. You can enter an NE, CTP, or PTP. You can not get the performance data of the subracks and services belong to the NE that you entered in the list. In the case of the current performance data, the system does not return the maximum value, the minimum value, or the value 0. The getAllCurrentPMDATA interface is a best-effort interface. In a distributed scenario, the value range of how\_many is [0,1000].

**Parent topic:** [PerformanceManagementMgr\\_I](#)

## **9.3.4.1.9 getHistoryPMData**

---

This interface is used to query the historical performance data of a specified object by the preset monitoring conditions and parameters.

### **Definition**

```
void getHistoryPMData(
    in Destination_T destination,
    in string userName,
    in string password,
    in PMTPSelectList_T pmTPSelectList,
    in PMPParameterNameList_T pmParameters,
    in globaldefs::Time_T startTime,
    in globaldefs::Time_T endTime,
    in boolean forceUpload)
    raises(globaldefs::ProcessingFailureException);
```

### **Function**

1. Query historical performance data by monitoring conditions and parameters.

The performance value (A) in the returned results is different from the performance value (B) displayed in the U2000 GUI. B is equal to A multiplied by the corresponding unit field value of the performance event ID. For details, see the CORBA NBI Performance Event ListCaret.

By default, the value 0 is not filtered out. You can set bFilterHisPFMZeroValue to 1 to enable this function. The bFilterHisPFMZeroValue parameter is in the bundle.cfg configuration file.

2. Query E2E performance objects for PTN NEs by adding the Correlated Trail Name column in the historical performance file.

You can control whether to add the column by setting the bPfmWithE2EObj configuration item in the bundle.cfg file.

The options are as follows:

0 (default): not add

1: add

3. Support interval offset attributes for BITS NEs and add the Offset column in the historical performance data file.

You can control whether to add the column by setting the bPfmBitsOffset configuration item in the bundle.cfg file.

The options are as follows:

0 (default): not add

1: add

By default, the path of the bundle.cfg file is as follows:

On the Windows OS: %IMAP\_ROOT%\etc\oss\_cfg\nbi\corba\conf\ii\_corbaagent\_bundle

On the Solaris or Linux OS: \$IMAP\_ROOT/etc/oss\_cfg/nbi/corba/conf/ii\_corbaagent\_bundle

## Parameters

Parameter	Input/Output	Description	Value
destination	Input	Indicates the FTP address and file name for transferring a historical performance file. For example, 10.70.73.96:/pfmdata.csv	String. The file suffix must be one of the following: *.pfm, *.txt, *.dat, *.log, *.xlsx, *.csv, *.xls, *.xml, and *.zip. If the file suffix is not of the preceding ones or blank, the U2000 displays an error message indicating that the file suffix is invalid.
username	Input	Indicates the FTP user name.	string
password	Input	Indicates the FTP password.	string
pmTPSelectList	Input	Filters the query results according to the monitoring conditions. This list cannot be blank.	PMTPSelectList_T For the element model, see PMTPSelect_T.
pmParameters	Input	Queries performance data of the parameter types that are contained in the list. If the list is blank, the performance data of all the parameter types is queried.	PMParameterNameList_T
startTime	Input	Indicates the start time of the interval for querying historical performance data. For example, 20100903000000.0Z.	globaldefs::Time_T
endTime	Input	Indicates the end time of the interval for querying historical performance data.	globaldefs::Time_T The value must be greater than the value of startTime.

Parameter	Input/Output	Description	Value
		For example, 20100904000000.0Z.	
forceUpload	Input	Specifies whether to query data on NEs. when the value is 0, query data on the U2000; when the value is 1, query data on NEs.	Boolean

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

You are not recommended to query more than 100 items at a time. The query of the performance data in the NA period is not supported. The following object types can be input for the query of performance data: 1. SDH domain: MEs, PTPs, and CTPs. 2. RTN, WDM, MSTP, and PTN domains: MEs and PTPs. 3. E2E objects supported by PTN NEs: PWE3 trails, VPLS trails, and E2E tunnels. The queried performance data does not contain data of intermediate nodes, that is, only the performance data of the source and sink ends is returned. The following object types are supported for the result of the query of performance data: 1. SDH and WDM domains: boards, ports, and channels. 2. RTN, MSTP, and PTN domains: boards and ports. The following are constraints for the query time: 1. The end time of the performance data record must be greater than the start time of the interval for querying performance data. 2. The start time of the performance data record must be smaller than the end time of the interval for querying performance data. 3. The interval for querying performance data and the interval for each performance record are left-closed and right-open. The maximum value, minimum value, and value 0 are contained in the query result. The getHistoryPMDData interface is a best-effort interface. To support the data compression function, the destination parameter allows .zip file names but the file names must: 1. Consist of five or more characters, such as .zip. 2. End up with .zip. If both conditions are met, data files can be compressed. The query of historical RMON performance data in the 30s period is not supported. Interval offset attributes can be queried only for BITS NEs.

**Parent topic:** [PerformanceManagementMgr\\_I](#)

## 9.3.4.1.10 getHoldingTime

---

This interface is used to query the longest period that performance data can be recorded on the EMS.

### Definition

```
void getHoldingTime(  
    out HoldingTime_T holdingTime)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query the longest period that performance data can be recorded on the EMS.

### Parameters

Parameter	Input/Output	Description	Value
holdingTime	Output	Returned holding time of the saved performance records.	HoldingTime_T For the element model, see HoldingTime_T.

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.

### Restrictions

The returned value is always one of the following:

24 hours, 6 periods:  $6 \times 24 = 144$  hours

15 minutes, 16 periods:  $16 \times 15/60 = 4$  hours

For a 24-hour performance event, the system returns six periods. For a 15-minute performance event, the system returns 16 periods.

**Parent topic:** [PerformanceManagementMgr\\_I](#)

## 9.3.4.1.11 getTCATPParameter

---

This interface is used to query threshold-crossing performance parameters.

### Definition

```
void getTCATPParameter(
    in globaldefs::NamingAttributes_T tpName,
    in transmissionParameters::LayerRate_T layerRate,
    in Granularity_T granularity,
    out TCAParameters_T tcaParameter)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query performance threshold crossing parameters according to specified conditions.

### Parameters

Parameter	Input/Output	Description	Value
tpName	Input	TP object that is queried.	globaldefs::NamingAttributes_T
layerRate	Input	Layer rate of the object that is queried.	transmissionParameters::LayerRate_T
granularity	Input	Type of the period that is queried.	Granularity_T
tcaParameter	Output	Performance threshold crossing parameters that are queried.	TCAParameters_T For the element model, see TCAParameters_T.

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The period can be only 15min or 24h.

**Parent topic:** [PerformanceManagementMgr\\_I](#)

## 9.3.4.1.12 getHistoryPMDataByPull

---

This interface is used to synchronize and query historical performance data. You can query the historical performance data of specified objects by entering monitoring conditions and parameter names, and upload the data to the specified FTP server.

### Definition

```
void getHistoryPMDataByPull(
    in string taskName,
    in string compressType,
    in string packingType,
    in PMTPSelectList_T pmTPSelectList,
    in PMParameterNameList_T pmParameters,
    in globaldefs::Time_T startTime,
    in globaldefs::Time_T endTime)
    raises(globaldefs::ProcessingFailureException);
```

### Function

1. Query historical performance data, save the data to a specified FTP server, and notify the NMS of the information. Then the NMS obtains files from the specified FTP server based on the information, such as the file name, FTP server IP address, user name, and password, in the notification.
2. Export files in the format defined by the TeleManagement Forum (TMF) standard, for example, .csv.
3. With the reference for Big Data Inventory Query of Developer Guide (Resource), configure the FTP server by setting the corresponding configuration

items of the big data interface of the deployment tool. The historical performance files are kept for three days by default. You can use the deployment tool to change the settings.

## Parameters

Parameter	Input/Output	Description	Value
startTime	Input	Indicates the start time of the performance query interval. Example: 20100903000000.0Z	globaldefs::Time_T
endTime	Input	Indicates the end time of the performance query interval. Example: 20100904000000.0Z	globaldefs::Time_T
pmTPSelectList	Input	Indicates the filtering of query results based on monitoring conditions (The value cannot be blank).	PMTPSelectList_T For the element model, see "PMTPSelect_T."
pmParameters	Input	Indicates the list of queried performance monitoring objects. (Performance of all parameter types is queried if the value is left blank.)	PMParameterNameList_T
compressType	Input	Specifies whether to compress files and the type of the compression package.	String. Value: NO_COMPRESSION/GZIP. NO_COMPRESSION: not compress; GZIP: compress
packingType	Input	Specifies whether to package files and the packaging mode.	String. Value: NO_PACKING/ZIP/TAR. NO_PACKING: not package; ZIP: package to .zip files; TAR: package to .tar files

Parameter	Input/Output	Description	Value
taskName	Input	Indicates the task name specified by the Manager.	string

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

The query of the performance data in the NA period is not supported.

Historical performance data can only be queried from NEs.

The packingType field cannot be set to ZIP when the compressType field is set to GZIP.

The input object types supported by the performance query are as follows:

1. SDH domain: MEs, PTPs, and CTPs
2. RTN/WDM/MSTP/PTN domain: MEs and PTPs
3. E2E objects in PTN domain: PWE3 trails, VPLS trails, and E2E tunnels. Only the performance data of source and sink ends is returned, and the performance data of intermediate nodes is not returned.

The object types supported by the performance query results are as follows:

1. SDH/WDM domain: boards, ports, and channels
2. RTN/MSTP/PTN domain: boards and ports

Restrictions of query time:

1. The end time of performance records is earlier than the start time of the performance query interval.
2. The start time of performance records is later than the end time of the performance query interval.
3. The performance query interval and performance record interval both have a minimum value but no maximum value.

The query results include the maximum value, minimum value, and O.

This interface is a Best-effort interface.

This interface allows users to query interval offset attributes only for BITS NEs.

**Parent topic:** [PerformanceManagementMgr\\_I](#)

## 9.3.4.1.13 setTCATPParameter

---

This interface is used to set threshold-crossing performance parameters.

### Definition

```
void setTCATPParameter(  
    in globaldefs::NamingAttributes_T tpName,  
    inout TCAParameters_T tcaParameters)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Set performance threshold crossing parameters.

### Parameters

Parameter	Input/Output	Description	Value
tpName	Input	TP object that to be set.	globaldefs::NamingAttributes_T
tcaParameter	Input/Output	As input parameter, it presents performance threshold crossing parameter that to be set. As output parameter, it presents performance threshold crossing parameter that has been successfully set.	TCAParameters_T For the element model, see TCAParameters_T.

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

The setTCATPPParameter interface is a best-effort interface.

The period can be only 15min or 24h.

**Parent topic:** [PerformanceManagementMgr\\_I](#)

## 9.3.4.1.14 createPerformanceMonitoringData

---

This interface is used to create performance monitoring instances.

### Definition

```
void createPerformanceMonitoringData(
    in PerformanceCreateInstance_T createInstance,
    out PerformanceCreateInstanceList_T failedInstanceList)
raises(globaldefs::ProcessingFailureException);
```

### Function

Create performance monitoring instances.

### Parameters

Parameter	Input/Output	Description	Value
createInstance	Input	Indicates the created performance monitoring instance.	PerformanceCreateInstance_T
failedInstanceList	Output	Indicates the list of failed performance monitoring instances.	PerformanceCreateInstanceList_T For the element model, see PerformanceCreateInstance_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	Internal EMS error.
CORBA_ERR_INPUT_UNSUPPORTED_OBJ	The entered monitoring object is not supported.

## Restrictions

Only the performance monitoring instances for Ethernet ports (packet), E1 ports, LAGs, tunnels, PWs and L2VPN V-UNIs of PTN NEs (excluding PTN 6900s and PTN 7900s) are supported.

**Parent topic:** [PerformanceManagementMgr\\_I](#)

## 9.3.4.1.15 deletePerformanceMonitoringData

---

This interface is used to delete performance monitoring instances.

### Definition

```
void deletePerformanceMonitoringData(  
    in PMTPSelectList_T pmTpSelectList,  
    out PMTPSelectList_T failedTpSelectList)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Delete performance monitoring instances.

### Parameters

Parameter	Input/Output	Description	Value
pmTpSelectList	Input	Filters the query results according to the monitoring conditions that are defined in pmTPSelectList. This list cannot be blank.	PMTPLIST_T For the element model, see PMTPSelect_T.

Parameter	Input/Output	Description	Value
failedTpSelectList	Output	Filters the query results according to the monitoring conditions that are defined in pmTPSelectList. This list cannot be blank.	PMTPSelectList_T For the element model, see PMTPSelect_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
CORBA_ERR_INPUT_UNSUPPORTED_OBJ	The entered monitoring object is not supported.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

Only the performance monitoring instances for Ethernet ports (packet), E1 ports, LAGs, tunnels, PWs and L2VPN V-UNIs of PTN NEs (excluding PTN 6900s and PTN 7900s) are supported.

**Parent topic:** [PerformanceManagementMgr\\_I](#)

## 9.3.4.1.16 getPfmInstanceByResource

---

This interface is used to query performance monitoring instances.

### Definition

```
void getPfmInstanceByResource(
    in globaldefs::NamingAttributes_T resourceRef,
    in transmissionParameters::LayerRateList_T layerRateList,
    in globaldefs::NVSList_T additionalInfo,
    out PerformanceMonitoringInstanceList_T instanceList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query performance monitoring instances.

## Parameters

Parameter	Input/Output	Description	Value
resourceRef	Input	Indicates the queried resource object.	globaldefs::NamingAttributes_T
layerRateList	Input	Indicates the layer rate of the queried object.	transmissionParameters::LayerRate_T
instanceList	Output	Indicates the list of performance monitoring instances.	PerformanceMonitoringInstanceList_T For the element model, see PerformanceMonitoringInstance_T.
additionalInfo	Input	Indicates the additional information.	globaldefs::NVSLList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
CORBA_ERR_INPUT_UNSUPPORTED_OBJ	The entered monitoring object is not supported.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

Only the performance monitoring instances for Ethernet ports (packet), E1 ports, LAGs, tunnels, PWs and L2VPN V-UNIs of PTN NEs (excluding PTN 6900s and PTN 7900s) are supported.

**Parent topic:** [PerformanceManagementMgr](#) |

## 9.3.5 Information Model

---

This topic describes information models supported by the CORBA NBI, including TMF 814 recommendation-based models and customized models.

- **performance**

This topic describes information models associated with performance management.

**Parent topic:** [CORBA NBI Developer Guide \(Performance\)](#)

## 9.3.5.1 performance

---

This topic describes information models associated with performance management.

- **HoldingTime\_T**

This topic describes the data structure of holding time.

- **PMParameter\_T**

This topic describes the data structure of performance parameters.

- **PMMeasurement\_T**

This topic describes the data structure of performance records.

- **PMData\_T**

This topic describes the data structure of performance data.

- **PMThreshold\_T**

This topic describes the data structure of performance thresholds.

- **PMThresholdValue\_T**

This topic describes the data structure of performance threshold values.

- **TCAParameter\_T**

This topic describes the data structure of threshold-crossing performance parameters.

- **TCAParameters\_T**

This topic describes the data structure of threshold-crossing performance parameters.

- **PMTPSelect\_T**

This topic describes the data structure of performance monitoring parameters.

- **CollectTaskInfo\_T**

This topic describes the data structure of collection task parameters.

- **PerformanceCreateInstance\_T**

This topic describes the data types of creating performance monitoring instances.

- [PerformanceMonitoringInstance\\_T](#)  
This topic describes the data types of performance monitoring instances.
- [PerformanceTemplate\\_T](#)  
This topic describes the data types of a performance template.
- [PerformanceCreateResource\\_T](#)  
This topic describes the structure type of resources used for creating performance instances.
- [PmMonitorConditioning\\_T](#)  
This topic describes the data types of conditions of performance monitoring instances.
- [ActivityStatusEnum\\_T](#)  
This topic describes the enumerated types of the activation status.
- [InstanceEnum\\_T](#)  
This topic describes the enumerated types of performance monitoring instances.

**Parent topic:** [Information Model](#)

## **9.3.5.1.1 HoldingTime\_T**

---

This topic describes the data structure of holding time.

Name	Type	Description
storeTime24hr	short	Holding time of the 24-hour performance data.
storeTime15min	short	Holding time of the 15-minute performance data.

**Parent topic:** [performance](#)

## **9.3.5.1.2 PMParameter\_T**

---

This topic describes the data structure of performanceparameters.

Name	Type	Description
pmParameterName	PMParameterName_T	Parameter name of the performance record.
pmLocation	PMLocation_T	<p>Location of the performance record. The TMF recommends the following monitoring directions:</p> <p>PML_NEAR_END_Rx (the local end is the receive end)PML_FAR_END_Rx (the remote end is the receive end)PML_NEAR-END_Tx (the local end is the transmit end)PML_FAR-END_Tx (the remote end is the transmit end)PML_BIDIRECTIONAL (bi-direction)PML_CONTRA_NEAR-END_Rx (this direction is not supported currently)PML_CONTRA_FAR-END_Rx (this direction is not supported currently)</p>

**Parent topic:** [performance](#)

## 9.3.5.1.3 PMMeasurement\_T

---

This topic describes the data structure of performancerecords.

Name	Type	Description
pmParameterName	PMParameterName_T	Parameter name of the performance record.
pmLocation	PMLocation_T	Location of the performance record.
value	float	Performance value.
unit	string	Unit of the performance record.
intervalStatus	string	Interval status. In the case of the current performance, the value is always Incomplete; in the case of the history performance, the value is always Valid.

**Parent topic:** [performance](#)

## 9.3.5.1.4 PMData\_T

---

This topic describes the data structure of performance data.

Name	Type	Description
tpName	globaldefs::NamingAttributes_T	Object name.
layerRate	transmissionParameters::LayerRate_T	Layer rate of the object.
granularity	Granularity_T	Monitoring period. The TMF recommends the following three monitoring periods: 15min, 24h, NA (the RMON current performance supports only NA period)
retrievalTime	globaldefs::Time_T	Time in which the system obtains the performance data from the NE.
pmMeasurementList	PMMeasurementList_T	List of the performance data. For the element model, see PMMeasurement_T.

**Parent topic:** [performance](#)

## 9.3.5.1.5 PMThreshold\_T

---

This topic describes the data structure of performance thresholds.

Name	Type	Description
thresholdType	PMThresholdType_T	Threshold type: All the upper and lower thresholds defined in the network management system are upper thresholds (HIGH) in the

Name	Type	Description
		CORBA interface. The trigger field is used to distinguish the upper and lower thresholds. In the case of the upper threshold, the value of the trigger field is true; in the case of the lower threshold, the value of the trigger field is false. The single threshold defined in the network management system is also an upper threshold (HIGH) in the CORBA interface. In addition, the value of the trigger field is true.
triggerFlag	boolean	Triggering flag.
value	float	Threshold value.
unit	string	Unit of the threshold value.
pmMeasurementList	string	List of the measurement data. For the element model, see PMMeasurement_T.

**Parent topic:** [performance](#)

## 9.3.5.1.6 PMThresholdValue\_T

---

This topic describes the data structure of performance threshold values.

Name	Type	Description
pmParameterName	PMParameterName_T	Type of the performance parameter.
pmLocation	PMLocation_T	Location of the performance monitoring.
thresholdType	PMThresholdType_T	Threshold type.
triggerFlag	boolean	Triggering flag.

Name	Type	Description
value	float	Threshold value.
unit	string	Unit.

**Parent topic:** [performance](#)

## 9.3.5.1.7 TCAParameter\_T

---

This topic describes the data structure of threshold-crossing performance parameters.

Name	Type	Description
pmParameterName	performance::PMPParameterName_T	Type of the performance parameter.
granularity	performance::Granularity_T	Period type.
pmLocation	performance::PMLocation_T	Location of the performance monitoring.
thresholdType	performance::PMThresholdType_T	Threshold type. See the description of the thresholdType field in section PMThreshold_T.
triggerFlag	boolean	Triggering flag.
value	float	Threshold value
unit	string	Unit.

**Parent topic:** [performance](#)

## 9.3.5.1.8 TCAParameters\_T

---

This topic describes the data structure of threshold-crossing performance parameters.

Name	Type	Description
layerRate	transmissionParameters::LayerRate_T	Type of the performance parameter.
granularity	performance::Granularity_T	Period type.
tcaTypeValues	PMThresholdValueList_T	List of the performance threshold crossing parameters.

**Parent topic:** [performance](#)

## 9.3.5.1.9 PMTPSelect\_T

---

This topic describes the data structure of performance monitoring parameters.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of the performance-monitored object (it cannot be null). Only NE object names can be entered for BITS NEs.
layerRateList	transmissionParameters::LayerRateList_T	List of the layer rates (if this list is null, it indicates that all the supported layer rates are queried). This field is not supported for BITS NEs and is blank by default.
pMLocationList	PMLocationList_T	List of the performance monitoring locations (if this list is null, it indicates that all the supported locations are queried). PTN, Packet RTN, Packet MSTP+ do not support the pMLocationList field. This field is not supported for BITS NEs and is blank by default.
granularityList	GranularityList_T	List of the periods (if this list is null, it indicates that all

Name	Type	Description
		the supported periods are queried). Only 15mCaretin is supported for BITS NEs.

**Parent topic:** [performance](#)

## 9.3.5.1.10 CollectTaskInfo\_T

---

This topic describes the data structure of collection task parameters.

Name	Type	Description
m_TaskName	string	Name of the task.
m_listPMTPSelect	globaldefs::NamingAttributesList_T	List of monitoring objects.
m_Period	string	Interval between start of two tasks.
m_StartTime	string	Start time of the task.
m_EndTime	string	End time of the task.
m_UserEMSName	string	Name of the EMS user.
m_FTPName	string	FTP user name.
m_FTPPassWord	string	FTP password.
m_FTPAddress	string	FTP address.
forceUpload	boolean	Whether to start the query from the NE side.

**Parent topic:** [performance](#)

## 9.3.5.1.11 PerformanceCreateInstance\_T

---

This topic describes the data types of creating performance monitoring instances.

Name	Type	Description
userLabel	string	Indicates the user label. It is left blank.
nativeEMSName	string	Indicates the native EMS name. It is left blank.
vendorExtensions	any	Indicates an extended field. It is left blank.
resType	int	Indicates the resource type. It is left blank.
pmScheduleName	string	Indicates the scheduled policy name. It is optional.
startTime	Time_T	Indicates the start time.
endTime	Time_T	Indicates the end time.
resourceList	PerformanceCreateResource_T	Indicates the list of resources monitored by the performance monitoring instance.
templateList	PerformanceTemplate_T	Indicates the list of monitoring templates. The templates can be divided into two types: TCA and DATA.

**Parent topic:** [performance](#)

## **9.3.5.1.12 PerformanceMonitoringInstance\_T**

---

This topic describes the data types of performance monitoring instances.

Name	Type	Description
name	NamingAttributes_T	Indicates the name of the performance monitoring instance.

Name	Type	Description
userLabel	string	Indicates the user label. It is left blank.
nativeEMSName	string	Indicates the native EMS name. It is left blank.
vendorExtensions	any	Indicates an extended field. It is left blank.
resourceRef	NamingAttributes_T	Indicates the resource monitored by the performance monitoring instance.
pmmc	PmMonitorConditioning_T	Indicates the structure body of the performance monitoring policy.
status	ActivityStatusEnum_T	Indicates the status of the performance monitoring instance, SUSPENDED or ACTIVE.

**Parent topic:** [performance](#)

## 9.3.5.1.13 PerformanceTemplate\_T

---

This topic describes the data types of a performance template.

Name	Type	Description
id	int	Indicates the template ID.
name	string	Indicates the template name.
type	InstanceEnum_T	Indicates the template type.
period	long	Indicates the monitoring period. The values include 5, 10, 15, 30, 60 and 1440.

**Parent topic:** [performance](#)

## **9.3.5.1.14 PerformanceCreateResource\_T**

---

This topic describes the structure type of resources used for creating performance instances.

Name	Type	Description
resourceRefList	NamingAttributes_T	Indicates the list of resource object names.
resourceSLAList	NamingAttributes_T	Indicates the SLA list.

**Parent topic:** [performance](#)

## **9.3.5.1.15 PmMonitorConditioning\_T**

---

This topic describes the data types of conditions of performance monitoring instances.

Name	Type	Description
granularity	string	Indicates the performance monitoring period. The standard values include 5min, 10min, 15min, 30min, 1h and 24h.
startTime	Time_T	Indicates the start time of performance monitoring.
endTime	Time_T	Indicates the end time of performance monitoring.
pmScheduleName	string	Indicates the scheduled policy template of performance monitoring.

**Parent topic:** [performance](#)

## **9.3.5.1.16 ActivityStatusEnum\_T**

---

This topic describes the enumerated types of the activation status.

Name	Type	Description
NOT_STARTED	string	Indicates that performance monitoring instances are not started.
ACTIVE	string	Indicates that performance monitoring instances have been activated.
SUSPENDED	string	Indicates that performance monitoring instances are suspended.

**Parent topic:** [performance](#)

## 9.3.5.1.17 InstanceEnum\_T

---

This topic describes the enumerated types of performance monitoring instances.

Name	Type	Description
DATA	string	Indicates the DATA monitoring template.
TCA	string	Indicates the TCA monitoring template.

**Parent topic:** [performance](#)

## 9.3.6 Format of Notification Events

---

In the additionalInfoUsage.pdf and AVC\_SC\_Notifications.pdf among the supporting documentation of the TMF 814 recommendation, the structure of each notification event of the CORBA interface is described. This chapter presents the detailed definitions of the structure of the notification events.

---

#### **NOTE:**

By default, the CORBA NBI does not send notifications for access device resource changes. If the OSS needs to know about these changes, set the configuration item BMS\_NOTIFY\_ENABLE\_NBI\_SWITCH for the access subsystem by referring to the "Guidelines for Configuring Configuration Items Using the GUI-based Tool".

---

- [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event](#)

This topic describes the formats of notification events reported when the file transfer status is changed.

- [Format of the NT\\_PERFORMANCE\\_TASK\\_CHANGE Event](#)

This topic describes the format of performance task change events, such as the creation of a performance statistics collection task.

**Parent topic:** [CORBA NBI Developer Guide \(Performance\)](#)

---

## **9.3.6.1 Format of the NT\_FILE\_TRANSFER\_STATUS Event**

---

This topic describes the formats of notification events reported when the file transfer status is changed.

- [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(header\)](#)

This topic describes the header format of an file transfer status change notification event (NT\_FILE\_TRANSFER\_STATUS). The type of the NT\_FILE\_TRANSFER\_STATUS event can be obtained from its header format.

- [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(filterable\\_data\)](#)

This topic describes the format of the filterable\_data of an file transfer status change notification event (NT\_FILE\_TRANSFER\_STATUS). The object and time of the NT\_FILE\_TRANSFER\_STATUS event can be obtained from the format of its filterable\_data.

- [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(remainder\\_of\\_body\)](#)

This topic describes the format of the remainder\_of\_body of an file transfer status event (NT\_FILE\_TRANSFER\_STATUS). Detailed object information of the NT\_FILE\_TRANSFER\_STATUS event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

## **9.3.6.1.1 Format of the NT\_FILE\_TRANSFER\_STATUS Event (header)**

This topic describes the header format of an file transfer status change notification event (NT\_FILE\_TRANSFER\_STATUS). The type of the NT\_FILE\_TRANSFER\_STATUS event can be obtained from its header format.

**Table 1 Header format of the NT\_FILE\_TRANSFER\_STATUS event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_FILE_TRANSFER_STATUS.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event](#)

## **9.3.6.1.2 Format of the NT\_FILE\_TRANSFER\_STATUS Event (filterable\_data)**

This topic describes the format of the filterable\_data of an file transfer status change notification event (NT\_FILE\_TRANSFER\_STATUS). The object and time of the NT\_FILE\_TRANSFER\_STATUS event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_FILE\_TRANSFER\_STATUS event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
filename	string	File directory and file name that are entered. For example, /tmp/alarm4.txt.
transferStatus	FileTransferStatus_T	Transfer status. When transfer fails, the value is FT_FAILED. When transfer is completed, the value is FT_COMPLETED. When transfer is in process, the value is FT_IN_PROGRESS.
percentComplete	short	Progress of the transfer expressed in percentage. The value ranges from 0 to 100. For example, 100 percent.
failureReason	string	Cause of the file transfer failure. When the transfer succeeds, the value is null. When the transfer fails, details of the failure are described. For example, when the IP address is incorrect, the message "connection to 10.71.227.26 failed" is displayed. When the user name or password is incorrect, the message "530 Login incorrect" is displayed.

**Parent topic:** [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event](#)

### **9.3.6.1.3 Format of the NT\_FILE\_TRANSFER\_STATUS Event (remainder\_of\_body)**

---

This topic describes the format of the remainder\_of\_body of an file transfer status event (NT\_FILE\_TRANSFER\_STATUS). Detailed object information of the NT\_FILE\_TRANSFER\_STATUS event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_FILE\_TRANSFER\_STATUS event is always null.

**Parent topic:** [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event](#)

### **9.3.6.2 Format of the NT\_PERFORMANCE\_TASK\_CHANGE Event**

---

This topic describes the format of performance task change events, such as the creation of a performance statistics collection task.

- [Format of the NT\\_PERFORMANCE\\_TASK\\_CHANGE Event \(header\)](#)

This topic describes the header format of an performance task change event (NT\_PERFORMANCE\_TASK\_CHANGE). The type of the NT\_PERFORMANCE\_TASK\_CHANGE event can be obtained based on its header format.

- [Format of the NT\\_PERFORMANCE\\_TASK\\_CHANGE Event \(filterable\\_data\)](#)

This topic describes the format of the filterable\_data of an performance task change event (NT\_PERFORMANCE\_TASK\_CHANGE). The object and time of the NT\_PERFORMANCE\_TASK\_CHANGE event can be obtained from the format of its filterable\_data.

- [Format of the NT\\_PERFORMANCE\\_TASK\\_CHANGE Event \(remainder\\_of\\_body\)](#)

This topic describes the format of the remainder\_of\_body of an performance task change event (NT\_PERFORMANCE\_TASK\_CHANGE). Detailed object information of the NT\_PERFORMANCE\_TASK\_CHANGE event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

## **9.3.6.2.1 Format of the NT\_PERFORMANCE\_TASK\_CHANGE Event (header)**

---

This topic describes the header format of an performance task change event (NT\_PERFORMANCE\_TASK\_CHANGE). The type of the NT\_PERFORMANCE\_TASK\_CHANGE event can be obtained based on its header format.

**Table 1 Header format of the NT\_PERFORMANCE\_TASK\_CHANGE event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_PERFORMANCE_TASK_CHANGE.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_PERFORMANCE\\_TASK\\_CHANGE Event](#)

## **9.3.6.2.2 Format of the NT\_PERFORMANCE\_TASK\_CHANGE Event (filterable\_data)**

---

This topic describes the format of the filterable\_data of an performance task change event (NT\_PERFORMANCE\_TASK\_CHANGE). The object and time of the NT\_PERFORMANCE\_TASK\_CHANGE event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_PERFORMANCE\_TASK\_CHANGE event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
objectName	string	Name of the object that reports the event.
objectType	string	Type of the object that reports the event.
emsTime	globaldefs::Time_T	Time (UTC) when the event occurred at the EMS.
notifyType	string	Type of the notification event. The value is OBJECT_CREATE, OBJECT_DELETE, or OBJECT MODIFY.
attributeList	notifications::NVList_T	List of changed attributes. This field is available only when the notification type is OBJECT MODIFY.
objectBody	CORBA::Any	Created object. This field is available only when the notification type is OBJECT_CREATE.

**Parent topic:** [Format of the NT\\_PERFORMANCE\\_TASK\\_CHANGE Event](#)

### **9.3.6.2.3 Format of the NT\_PERFORMANCE\_TASK\_CHANGE Event (remainder\_of\_body)**

---

This topic describes the format of the remainder\_of\_body of an performance task change event (NT\_PERFORMANCE\_TASK\_CHANGE). Detailed object information of the NT\_PERFORMANCE\_TASK\_CHANGE event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_PERFORMANCE\_TASK\_CHANGE event is always null.

**Parent topic:** [Format of the NT\\_PERFORMANCE\\_TASK\\_CHANGE Event](#)

## 9.3.7 Notification Event Samples

---

This topic describes samples of notification events that the CORBA NBI supports.

- [NT\\_FILE\\_TRANSFER\\_STATUS Event Sample](#)

This topic describes a sample of a file transfer status notification event.

- [NT PERFORMANCE TASK CHANGE Event Sample](#)

This topic describes a sample of a performance task change notification event.

**Parent topic:** [CORBA NBI Developer Guide \(Performance\)](#)

### 9.3.7.1 NT\_FILE\_TRANSFER\_STATUS Event Sample

---

This topic describes a sample of a file transfer status notification event.

**Table 1 NT\_FILE\_TRANSFER\_STATUS event sample**

Sample contents				Remarks	
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"		
		Type_name: "NT_ FILE_TRANSFER_STATUS"			
		Event_name	""		
variable_header		""			
filterable_data	notificationId	0527164725349			

**Table 1 NT\_FILE\_TRANSFER\_STATUS event sample**

Sample contents		Remarks
	fileName	/text.txt
	transferStatus	FT_COMPLETED
	percentComplete	100
	failureReason	""

**Parent topic:** [Notification Event Samples](#)

## 9.3.7.2 NT\_PERFORMANCE\_TASK\_CHANGE Event Sample

---

This topic describes a sample of a performance task change notification event.

**Table 1 NT\_PERFORMANCE\_TASK\_CHANGE event sample**

Sample contents				Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	
			Type_name:"NT_PERFORMANCE_TASK_CHANGE"	
	variable_header	Event_name	""	
			""	
filterable_data	notificationId	03160939255		
	objectName	pfm_collect_task1		
	objectType	NT_PERFORMANCE_TASK		
	emsTime	20060316014052.0Z		

**Table 1 NT\_PERFORMANCE\_TASK\_CHANGE event sample**

Sample contents		Remarks
notifyType	OBJECT_DELETE	

**Parent topic:** [Notification Event Samples](#)

## 9.3.8 Object Naming Rules

---

This chapter lists the naming rules for various objects in the U2000 CORBA interface. The naming rules are in accordance with the TMF recommendations.

The objects contain the following:

- [\*\*ManagedElement\*\*](#)

This topic describes the naming rule for a managed element. A managed element is an NE managed by the EMS.

- [\*\*EquipmentHolder\*\*](#)

This topic describes the naming rule for the equipment holder. Equipment holder is a resource that can hold other physical components. Currently, equipment holders supported by the CORBA NBI include racks, shelves, slots, and subslots.

- [\*\*PTP\*\*](#)

This topic describes the naming rule for a physical termination point (PTP). A PTP is a physical port.

- [\*\*CTP\*\*](#)

This topic describes the naming rule for a connection termination point (CTP). A CTP is a port of a PTP or an FTP.

**Parent topic:** [CORBA NBI Developer Guide \(Performance\)](#)

### 9.3.8.1 ManagedElement

---

This topic describes the naming rule for a managed element. A managed element is an NE managed by the EMS.

**Table 1 ManagedElement**

Object Name	ManagedElement
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName"
Name example in theU2000 CORBA NBI	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825"
Remarks	N/A

**Parent topic:** [Object Naming Rules](#)

## 9.3.8.2 EquipmentHolder

---

This topic describes the naming rule for the equipment holder. Equipment holder is a resource that can hold other physical components. Currently, equipment holders supported by the CORBA NBI include racks, shelves, slots, and subslots.

**Table 1 EquipmentHolder**

Object Name	EquipmentHolder	
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="EquipmentHolder"; value="EquipmentHolderName"	
Name example in theU2000 CORBA NBI	SDH NE	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="EquipmentHolder"; value="/rack=1/shelf=1/slot=5"
	WDM NE	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="33554433" 3. name="EquipmentHolder"; value="/rack=1/shelf=590225/slot=1"
Remarks	Currently, the U2000 CORBA interface supports four types of EquipmentHolder objects: rack, shelf, slot, and subslot.	

**Parent topic:** [Object Naming Rules](#)

### 9.3.8.3 PTP

This topic describes the naming rule for a physical termination point (PTP). A PTP is a physical port.

**Table 1 PTP**

Object Name	PTP	
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="PTP"; value="PTPName"	
Name example in the U2000 CORBA NBI	SDH	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="PTP"; value="/rack=1/shelf=1/slot=5/domain=sdh/port=2"
	WDM	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="33554433" 3. name="PTP"; value="/rack=1/shelf=590225/slot=8/domain=wdm/port=3"
	MSTP	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="PTP"; value="/rack=1/shelf=1/slot=5/domain=eth/type=mp/port=1"
	RTN	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3554433" 3. name="PTP"; value="/rack=1/shelf=1/slot=8/domain=rtn/port=1"
	PTN	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145433" 3. name="PTP"; value="/rack=1/shelf=1/slot=5/domain=ptn/type=physical/port=1" PTN6900 Ethernet: 1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145728" 3. name="PTP"; value="/rack=1/shelf=1/slot=1/sub_slot=0/type=eth/port=0/cli_name=GigabitEthernet1/0/0" PTN6900 E1: 1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145728" 3. name="PTP"; value="/rack=1/shelf=1/slot=12/sub_slot=0/type=pdh/port=0/cli_name=E1 12/0/0"

**Table 1 PTP**

Object Name	PTP	
		PTN6900 Cpos: 1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145728" 3. name="PTP"; value="/rack=1/shelf=1/slot=1/sub_slot=3/type=pos/port=0/cli_name=Cpos1/3/0"
ROUTE		Main logical interface: 1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145728" 3.name="FTP"; value="/rack=1/shelf=1/type=ethtrunk/port=1/cli_name=port" Logical subinterface: 1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145728" 3.name="FTP"; value="/rack=1/shelf=1/type=ethtrunk/port=1/cli_name=port" 4.name="CTP"; value="/sub_port=1" Physical ports: 1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145728" 3.name="PTP"; value="/rack=1/shelf=1/slot=3/sub_slot=0/type=eth/port=1/cli_name=GigabitEthernet3/0/1"
DDN		1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145733" 3.name="PTP"; value="/rack=1/shelf=1/slot=3/domain=ddn/port=10"
Remarks	For the rules of naming the rack or shelf in a PTP name, see <a href="#">EquipmentHolder</a> .	
	MSTP	In the case of the PTP in the MSTP domain, the port type can be: 1. Ethernet domain (in this case, domain=eth) <b>mac</b> : external Ethernet port. <b>mp</b> : internal Ethernet port (VCTRUNK port). <b>rpr</b> : resilient packet ring (RPR) Ethernet port. <b>lp</b> : VB logical port. For example, value="/rack=1/shelf=1/slot=5/domain=eth/type=lp/vb=1/port=1" for a PTP. 2. ATM domain (in this case, domain=atm) <b>atm</b> : external ATM port. <b>atmtrunk</b> : internal ATM port.

**Parent topic:** [Object Naming Rules](#)

## 9.3.8.4 CTP

---

This topic describes the naming rule for a connection termination point (CTP). A CTP is a port of a PTP or an FTP.

**Table 1 CTP**

Object Name	CTP	
Naming rule in TMF		1.name="EMS"; value="CompanyName/EMSname" 2.name="ManagedElement"; value="ManagedElementName" 3.name="PTP"; value="PTPName" or name="FTP"; value="FTPName" 4.name="CTP"; value="CTPName"
Name example in theU2000 CORBA NBI	SDH	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="589825" 3.name="PTP"; value="/rack=1/shelf=1/slot=5/domain=sdh/port=2" 4.name="CTP"; value="/sts3c_au4-j=1/vt2_tu12-k=1-l=3-m=2"
	WDM	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="33554433" 3.name="PTP"; value="/rack=1/shelf=590224/slot=2/domain=wdm/port=1" 4.name="CTP"; value="/och=1/dsr=2"
	OTN	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="33554433" 3.name="PTP"; value="/rack=1/shelf=590224/slot=2/domain=wdm/port=1" 4.name="CTP"; value="/och=1/dsr=1"
	MSTP	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="590174" 3.name="PTP"; value="/rack=1/shelf=1/slot=4/domain=eth/type=mac/port=1" 4.name="CTP"; value="/tunnellabel=16/vclabel=0"
	PTN	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145766"

**Table 1 CTP**

Object Name	CTP	
		3.name="PTP"; value="/rack=1/shelf=1/slot=1/domain=ptn/type=physical/port=15" 4.name="CTP"; value="/outLabel=41"
Remarks	SDH	<p>According to the actual scenario, the SDH CTP has the following several formats.</p> <ol style="list-style-type: none"><li>1. name="CTP"; value="/sts3c_au4-j=1/vt2_tu12-k=2-l=1-m=1" Scenario: VC12 CTP</li><li>2. name="CTP"; value="/sts3c_au4-j=1/tu3_vc3-k=2" Scenario: VC3 CTP</li><li>3. name="CTP"; value="/sts3c_au4-j=3" Scenario: VC4 CTP</li><li>4. name="CTP"; value="/sts3c_au4=1" Scenario: E4 level CTP included in PDH port</li><li>5. name="CTP"; value="/tu3_vc3=1" Scenario: E3 level CTP included in PDH port</li><li>6. name="CTP"; value="/vt2_tu12=1" Scenario: E1 level CTP included in PDH port</li><li>7. name="CTP"; value="/vt15_tu11=1" Scenario: T1 level CTP included in PDH port</li></ol>
	WDM	<p>According to the actual scenario, the WDM CTP has the following several formats.</p> <ol style="list-style-type: none"><li>1. name="CTP"; value="/dsr=1" Scenario: the client-side interface of the service convergence board and bidirectional wavelength conversion board</li><li>2. name="CTP"; value="/dsr=1/och=1" Scenario: unidirectional wavelength conversion board only</li><li>3. name="CTP"; value="/och=1/dsr=1" Scenario: line-side interface of the service convergence board</li><li>4. name="CTP"; value="/och=1" Scenario: line-side interface of the service convergence board and bidirectional wavelength conversion board</li><li>5. name="CTP"; value="/oms=1" Scenario: line-side interface of the multiplexer board, demultiplexer board and add/drop multiplexing board</li><li>6. name="CTP"; value="/os=1" Scenario: optical amplifier board, optical attenuation board and optical line protection (OLP) board</li></ol>

**Table 1 CTP**

Object Name	CTP	
OTN		<p>According to the actual scenario, OTN CTP has the following several formats:</p> <ol style="list-style-type: none"><li>1. name="CTP"; value="/odu1=1" Scenario: internal logical port</li><li>2. name="CTP"; value="/otu1=1" Scenario: client-side interface of an OTU board that receives colorless OTN signals</li><li>3. name="CTP"; value="/och=1/otu1=1" Scenario: client-side interface of an OTU board that receives color OTN signals</li><li>4. name="CTP"; value="/och=1/dsr=1" Scenario: line-side interface of a service-convergence board</li><li>5. name="CTP"; value="/fragment=1/odu1=1" Scenario: inverse-multiplexing virtual concatenation on an OTN board</li></ol>
MSTP		<p>The Ethernet CTP is divided by adding labels of flow points to the PTP. The labels are in the following several formats.</p> <ol style="list-style-type: none"><li>1. name="CTP"; value="/tunnellabel=16/vclabel=0" Scenario: MPLS ports and the tunnel label cannot be "0"</li><li>2. name="CTP"; value="/ethvid=0" Scenario: general ports, ethvid=0 indicates exclusive, ethvid&gt;0 indicates VLAN shared</li><li>3. name="CTP"; value="/ethcvid=2/ethsvid=1" Scenario: QinQ ports</li><li>4. name="CTP"; value="/eth=1" Scenario: QinQ services based on port transparent transmission</li></ol>
PTN		<p>According to the actual scenario, there are the following several formats:</p> <ol style="list-style-type: none"><li>1. name="CTP"; value="/outLabel=16" Scenario: source end of Tunnel</li><li>2. name="CTP"; value="/inLabel=16" Scenario: sink end of Tunnel</li><li>3. name="CTP"; value="AP=2 74 1" Scenario: service access point of PWE3</li></ol>

**Parent topic:** [Object Naming Rules](#)

## 9.3.9 Performance Parameter List

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This topic describes performance parameters that the CORBA NBI supports.

For detailed description of supported performance events, refer to the document "CORBA NBI Performance Event List".



### NOTE:

The document "CORBA NBI Performance Event List" is available on the Huawei technical support website. To obtain this document, contact the local technical support engineers.

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**Parent topic:** [CORBA NBI Developer Guide \(Performance\)](#)

## 9.3.10 IDL Description

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This topic describes the IDL defined in the CORBA NBI.

Refer to the version document *iManager U2000 V200R015C60 CORBA NBI IDL File.zip*.



### NOTE:

The version document *iManager U2000 V200R015C60 CORBA NBI IDL File.zip* is in the package file *NBI Documents* and it is available on the Huawei technical support website. To obtain this document, contact the local technical support engineers.

Access <http://support.huawei.com/> and choose **Support > Software > Fixed Network > SingleOSS-FBB > SingleOSS-FBB > U2000 Common > iManager U2000**. Then select the software version and download the package *NBI Documents*.

Select the corresponding base version if the patch version does not contain the preceding documents.

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**Parent topic:** [CORBA NBI Developer Guide \(Performance\)](#)

## 9.3.11 Description of Unimplemented and Customized Interfaces

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**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
PerformanceManagementMgr_I	getTPHistoryPMData	Queries historical performance data of TPs.	This interface is customized. The detailed developer guide is provided with a special document.
	getPMState	Queries performance monitoring status.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	enableTCA	Enables the TCA.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	disableTCA	Disables the TCA.	This interface does not implement any specific service functions and returns the error message "EXCPT_NOT_IMPLEMENTED".
	SuspendPMCollectionTask	Suspends scheduled performance data collection tasks.	This interface is customized. The detailed developer guide is provided with a special document.
	ResumePMCollectionTask	Resumes scheduled performance data collection tasks.	This interface is customized. The detailed developer guide is provided with a special document.
	ModifyPMCollectionTask	Modifies scheduled performance data collection tasks.	This interface is customized. The detailed developer guide is provided with a special document.
	setTCANotifySwitch	Sets TCA notification.	This interface is customized. The detailed developer guide is provided with a special document.

**Parent topic:** [CORBA NBI Developer Guide \(Performance\)](#)

## 9.3.12 Layer Rate Description

---

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
1	LR_Not_Applicable	Irrelevant layer
2	LR_T1_and_DS1_1_5M	1.5 Mbit/s async/PDH signal
3	LR_T2_and_DS2_6M	6 Mbit/s async/PDH signal
4	LR_T3_and_DS3_45M	45 Mbit/s async/PDH signal
5	LR_E1_2M	2 Mbit/s PDH signal
6	LR_E2_8M	8 Mbit/s PDH signal
7	LR_E3_34M	34 Mbit/s PDH signal
8	LR_E4_140M	140 Mbit/s PDH signal
9	LR_E5_565M	565 Mbit/s PDH signal
10	LR_VT1_5_and_TU11_VC11	VC11 SONET/SDH path signal
11	LR_VT2_and_TU12_VC12	VC12 SONET/SDH path signal
12	LR_VT6_and_TU2_VC2	VC2 SONET/SDH path signal
13	LR_Low_Order_TU3_VC3	VC3 SONET/SDH path signal
14	LR_STS1_and_AU3_High_Order_VC3	AU3 SONET/SDH path signal

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
15	LR_STS3c_and_AU4_VC4	VC4 SONET/SDH path signal
16	LR_STS12c_and_VC4_4c	12xSTS-1/4xVC4 contiguous concatenation
17	LR_STS48c_and_VC4_16c	48xSTS-1/16xVC4 contiguous concatenation
18	LR_STS192c_and_VC4_64c	192xSTS-1/64xVC4 contiguous concatenation
19	LR_Section_OC1_STS1_and_RS_STM0	STM-0 regenerator section
20	LR_Section_OC3_STS3_and_RS_STM1	STM-1 regenerator section
21	LR_Section_OC12_STS12_and_RS_STM4	STM-4 regenerator section
22	LR_Section_OC48_STS48_and_RS_STM16	STM-16 regenerator section
23	LR_Section_OC192_STS192_and_RS_STM64	STM-64 regenerator section
24	LR_Line_OC1_STS1_and_MS_STM0	STM-0 multiplex section
25	LR_Line_OC3_STS3_and_MS_STM1	STM-1 multiplex section
26	LR_Line_OC12_STS12_and_MS_STM4	STM-4 multiplex section
27	LR_Line_OC48_STS48_and_MS_STM16	STM-16 multiplex section
28	LR_Line_OC192_STS192_and_MS_STM64	STM-64 multiplex section
40	LR_Optical_Channel	For WDM wavelength
41	LR_Optical_Multiplex_Section	For WDM wavelength bands

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
42	LR_Optical_Transmission_Section	For WDM entire optical signal, that is, used for OTS and OMS layers of OTM-n.m (n>=1)
43	LR_ATM_NI	For ATM network interfaces (UNI and NNI)
44	LR_ATM_VP	For ATM virtual paths
45	LR_ATM_VC	For ATM virtual channels
46	LR_PHYSICAL_ELECTRICAL	Analog signal on electrical physical media
47	LR_PHYSICAL_OPTICAL	Analog signal on optical physical media
48	LR_PHYSICAL_MEDIALESS	Physical media for technologies, such as radio
49	LR_OPTICAL_SECTION	Wavelength termination for a non DWDM system, that is, used for all kinds of single-lambda ports
50	LR_DIGITAL_SIGNAL_RATE	Raw binary electrical signal of unspecified rate
58	LR_D1_Video	Video capable port
59	LR_ESCON	IBM protocol for mainframes
61	LR_Fast_Ethernet	Not supported by the TMF
62	LR_FC_12_133M	133 Mbit/s Fibre Channel protocol
63	LR_FC_25_266M	266 Mbit/s Fibre Channel protocol

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
64	LR_FC_50_531M	531 Mbit/s Fibre Channel protocol
65	LR_FC_100_1063M	1063 Mbit/s Fibre Channel protocol
66	LR_FDDI	N/A
67	LR_FICON	IBM protocol for mainframes
68	LR_Gigabit_Ethernet	Not supported by the TMF
72	LR_DSR_OC1_STM0	STM-0 digital signal rate
73	LR_DSR_OC3_STM1	STM-1 digital signal rate
74	LR_DSR_OC12_STM4	STM-4 digital signal rate
75	LR_DSR_OC24_STM8	STM-8 digital signal rate
76	LR_DSR_OC48_and_STM16	STM-16 digital signal rate
77	LR_DSR_OC192_and_STM64	STM-64 digital signal rate
78	LR_DSR_OC768_and_STM256	STM-256 digital signal rate
110	LR_DSR_OTU1	DSR of optical channel transport unit 1
111	LR_DSR_OTU2	DSR of optical channel transport unit 2
79	LR_DSR_1_5M	1.5 Mbit/s digital signal rate
80	LR_DSR_2M	2 Mbit/s digital signal rate
81	LR_DSR_6M	4 Mbit/s digital signal rate

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
82	LR_DSR_8M	8 Mbit/s digital signal rate
83	LR_DSR_34M	34 Mbit/s digital signal rate
84	LR_DSR_45M	45 Mbit/s digital signal rate
85	LR_DSR_140M	140 Mbit/s digital signal rate
86	LR_DSR_565M	565 Mbit/s digital signal rate
87	LR_DSR_Gigabit_Ethernet	Gigabit_Ethernet digital signal rate
88	LR_Section_OC24_STS24_and_RS_STM8	STM-8 regenerator section
89	LR_Line_OC24_STS24_and_MS_STM8	STM-8 multiplex section
90	LR_Section_OC768_STS768_and_RS_STM256	STM-256 regenerator section
91	LR_Line_OC768_STS768_and_MS_STM256	STM-256 multiplex section
93	LR_DSR_2xSTM1	2 x STM-1 radio multiplexing
96	LR_Ethernet	All Ethernet rates
97	LR_DSR_Fast_Ethernet	10/100 Mbit/s Ethernet
98	LR_Encapsulation	For Ethernet, the following encapsulation protocols can be applied: HDLC/PPP, HDLC/LAPS, ML/PPP, and GFP Transparent or Frame Mapped types

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
99	LR_Fragment	Used for inverse multiplexing modeling (virtual concatenation for SONET/SDH and IMA)
100	LR_STS6c_and_VC4_2c	6xSTS-1/2xVC4 contiguous concatenation
101	LR_STS9c_and_VC4_3c	9xSTS-1/3xVC4 contiguous concatenation
103	LR_STS24c_and_VC4_8c	24xSTS-1/8xVC4 Contiguous concatenation
113	LR_DSR_10Gigabit_Ethernet	10 Gbit/s Ethernet
115	LR_DSR_40Gigabit_Ethernet	Extended by HUAWEI
8001	LR_Section_and_RS	Extended by HUAWEI
8002	LR_Line_and_MS	Extended by HUAWEI
8003	LR_ATM	ATM layer rate (extended by HUAWEI)
8004	LR_Optical_Supervision_Channel	Rate of optical monitor layer (extended by HUAWEI)
8005	LR_FC_200_2125M	2125 Mbit/s Fibre Channel protocol (extended by HUAWEI)
104	LR_OCH_Data_Unit_1	Trail and tandem connection monitoring/termination
105	LR_OCH_Data_Unit_2	Trail and tandem connection monitoring/termination
106	LR_OCH_Data_Unit_3	Trail and tandem connection monitoring/termination

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
8041	LR_OCH_Data_Unit_4	Trail and tandem connection monitoring/termination
107	LR_OCH_Transport_Unit_1	Optical channel transport unit 1 (trail termination)
108	LR_OCH_Transport_Unit_2	Optical channel transport unit 2 (trail termination)
109	LR_OCH_Transport_Unit_3	Optical channel transport unit 3 (trail termination)
8042	LR_OCH_Transport_Unit_4	Optical channel transport unit 4 (trail termination)
8006	LR_OCH_Data_Unit_5G	Trail and tandem connection monitoring/termination
8007	LR_OCH_Transport_Unit_5G	Trail termination
8010	LR_MPLS_Channel	Extended by HUAWEI
303	LR_DVB_ASI	Digital video broadcast (ASI)
8023	LR_DVB_SDH	Digital video broadcast (SDH)
8024	LR_FICON_Express	Extended by HUAWEI
8021	LR_SAN_FC_400	Extended by HUAWEI
8038	LR_SAN_FC_800	Extended by HUAWEI
8022	LR_SAN_FC_1000	Extended by HUAWEI
8037	LR_SAN_FC_1200	Extended by HUAWEI

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
8025	LR_HDTV	Extended by HUAWEI
8031	LR_OCH_Data_Unit_0	Extended by HUAWEI
69	LR_DS0_64K	DS0 CTP layer rate
305	LR_LAG_Fragment	Link aggregation
8008	LR_DSR_10Gigabit_Ethernet_LAN	Extended by HUAWEI
8009	LR_DSR_10Gigabit_Ethernet_WAN	Extended by HUAWEI
8011	LR_MPLS_Path	Extended by HUAWEI
8020	LR_DSR_GFP_T	Extended by HUAWEI
8026	LR_ETR	Extended by HUAWEI
8027	LR_CLO	Extended by HUAWEI
8028	LR_1G_ISC	Extended by HUAWEI
8029	LR_2G_ISC	Extended by HUAWEI
8030	LR_4G_FICON	Extended by HUAWEI
8032	LR_CPRI	Extended by HUAWEI
8033	LR_CPRI_CUT	Extended by HUAWEI
8034	LR_PHY_MEDIA	Extended by HUAWEI
8035	LR_INFINIBAND_2DOT5G	Extended by HUAWEI
8036	LR_INFINIBAND_5G	Extended by HUAWEI
8039	LR_8G_FICON	
8043	LR_DSR_100Gigabit_Ethernet	Extended by HUAWEI
8044	LR_EPON_OLT	
8045	LR_EPON_ONU	
8046	LR_3GSDI	Extended by HUAWEI

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
8047	LR_3GSDIRBR	Extended by HUAWEI
8051	LR_10G_FICON	
8060	LR_IP_Path	Extended by HUAWEI
8069	LR_DS0_64K_NC	
8070	LR_GRE_Path	Extended by HUAWEI
8071	LR_DSR_32xSTM1	Extended by HUAWEI
8072	LR_RS_32xSTM1	Extended by HUAWEI
8073	LR_MS_32xSTM1	Extended by HUAWEI
299	LR_DSL	Digital Subscriber Line
335	LR_OCH_Data_Unit_Flexible	Extended by HUAWEI
8012	LR_MPLS_IP_VPN	Extended by HUAWEI
8081	LR_OCH_Data_Unit_Cn	Extended by HUAWEI
8082	LR_OCH_Transport_Unit_Cn	Extended by HUAWEI
319	LR_DSR_2.5Gigabit_Ethernet	2.5 Gbit/s Ethernet

**Parent topic:** [CORBA NBI Developer Guide \(Performance\)](#)

## **9.3.13 Glossary**

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This appendix lists the glossary used in the guide.

### **1**

At the place where the signals are input, the same channel of optical signals are input to two boards or ports of the WDM equipment through two fibers. The two boards or ports are backed up mutually. When a fault occurs in the working path, the input end of the

WDM equipment switches to the protection path. If the working path recovers, the input end of the WDM equipment switch back to the working path.

## **1+1 optical path protection**

### **A**

#### **Access Control List (ACL)**

Access Control List (ACL) is a list of IP address. The addresses listed in the ACL are used for authentication. If the ACL for the user is not null, it indicates that the address where the user logged in is contained in the list.

#### **Adjacent Concatenation**

For SDH, the virtual containers (VC) to carry concatenated services are consecutive in terms of their service in the frame structures, so that they use the same path overhead (POH).

#### **Alarm**

A visible or an audible indication to notify the person concerned that a failure or an emergency has occurred. See also Event.

#### **AIS**

Alarm Indication Signal. A signal sent downstream in a digital network if an upstream failure has been detected and persists for a certain time.

#### **Alarm acknowledgement**

The process during which when an alarm is generated, the operator needs to acknowledge the alarm and take the right step to clear the alarm.

#### **AIS insertion**

If there are excessive errors in a channel, AIS can be inserted in this channel to indicate it is unavailable. For a line board, you can set whether to insert AIS when there are excessive errors in the B1, B2 and B3 bytes. For a tributary board at the E1 or T1 level, you can set whether to insert AIS when there are excessive errors in BIP-2. For a tributary board at the E3 level or higher, you can set whether to insert AIS when there are excessive errors in the B3 byte.

#### **Alarm delay time**

Alarm delay includes start delay and end delay. An alarm is not regarded as being generated until the NE has been detecting it for a period of time, and this period of time is the alarm start delay time. An alarm is not regarded as being cleared until the NE has been detecting the ending of it for a period of time, and this period of time is the alarm end delay time. Setting the delay time can avoid the generation of unnecessary alarms due to misreport or jitter.

#### **Alarm reversion**

For the port that has already been configured but has no service, this function can be used to avoid generating relevant alarm information, preventing alarm interference.

#### **Alarm suppression**

The suppressed alarm of a specific object is not reported. The object here may be the network-wide equipment, a specific NE, a specific board and even a specific function module of a specific board.

## **ALC**

Automatic Level Control. A technique (procedure) to automatically reduce the output power of optical amplifiers to avoid exposure to hazardous levels.

## **All-ONES**

The entire capacity of the adapted or characteristic information is set to logic "1".

## **ALS**

The ALS function of an optical line system automatically switches off the transmitter of a regenerator section in case of cable break in this section.

## **APS**

Automatic Protection Switching. Autonomous switching of a signal between and including two MS\_TT, Sn\_TT, or Sm\_TT functions, from a failed working trail/SNC to a protection trail/SNC and subsequent restoration using control signals carried by the K-bytes in the MSOH, HO POH, or LO POH.

## **Auto-negotiation**

The rate/work mode of the communication party set as self-negotiation is specified through negotiation according to the transmission rate of the opposite party.

## **Attribute**

Property of an object.

## **B**

### **Bidirectional (protection) switching**

For a unidirectional fault, both directions (of the trail, subnetwork connection, and so on), including the affected and unaffected direction, are switched.

## **Bit error**

An inconsistency between bits embedded within a signal and bits extracted at the receiver.

## **Bit error alarm threshold**

When the bit error reaches a specific limit, the equipment will report an alarm. This limit is the bit error alarm threshold. The threshold can be divided into crossing threshold and defect threshold.

## **Broadcast service**

The unidirectional services from one service source to multiple service sinks are called the broadcast service.

## **C**

## **CI**

**Characteristic Information.** The information passing across a CP or TCP. It is a signal with a specific format, which is transferred on "network connections". The specific formats will be defined in the technology-specific recommendations.

## **Client**

A terminal (PC or workstation) connected to a network that can send instructions to a server and get results through a user interface. See also server.

## **Client trail**

There is an inclusion relationship between the trails of different levels. For example, a trail of a certain level contains multiple trails of lower levels. In such a structure, the lower-level trail is called the client trail.

## **Collision trails**

The data of a trail at the NE layer is changed. After the trail is re-searched, the original trail becomes a collision trail.

## **Concatenation**

When the standard virtual containers (including VC4/VC3/VC12/VC11) are incapable of carrying the volume of an SDH signal, the containers can be concatenated to function as a larger container.

## **CoS**

**Class of Service.** CoS keeps the priority mapping rules. It works in internal ports, especially when there is congestion, CoS is even more important. The services at different levels are processed according to the corresponding priorities. The service with higher priority is processed first and the service with lower priority is discarded when the bandwidth is insufficient.

## **Cross-Connection**

Network services are realized through the cross-connections of NEs. The cross-connection is the connection of channels between the tributary board and the line board, or between line boards inside the NE.

## **Current alarms**

Alarms that do not clear, or has cleared but is not acknowledged.

## **Current performance data**

The performance data stored in the current register is called current performance data. The current 15-minute or 24-hour register (only one for each) is applied to collect the performance data in the current monitoring period. It changed within the monitor period.

## **Custom view**

The user-defined view is a subset on the Main Topology. Included network entities can be NE, network management system, link and subnetwork. Generally, the network management personnel need to customize some views and select the network entity under their management from the Main Topology.

## **Clock View**

The Clock View provides a visible platform to implement the clock management function.

## **D**

### **Data interface service**

The service that uses the F1 byte in an SDH frame or some undefined bytes to transmit information such as call charge, network management system information and power supply monitoring.

## **DCC**

Data Communications Channel. The data channel that uses the D1-D12 bytes in the overhead of an STM-N signal to transmit information on operation, management, maintenance and provision (OAM&P) between NEs. The DCC channels that are composed of bytes D1-D3 is referred to as the 192 kbit/s DCC-R channel. The other DCC channel that are composed of bytes D4-D12 is referred to as the 576 kbit/s DCC-M channel.

## **Discrete service**

The cross-connection that exists on an NE but cannot form trails on the network management system.

## **DNI**

Dual node interconnection is an architecture between two rings where two nodes in each ring are interconnected. The two interconnections between the two rings can be arranged to provide protection of the traffic crossing from one ring to the other.

## **E**

### **Extra traffic**

During fault-free conditions, it is possible to use the protection channels to carry additional traffic. This additional traffic, which is referred to as extra traffic, has lower priority than the normal traffic on the working channels and has no means for protection.

## **Equipment set**

An aggregate of multiple managed equipment. Equipment set facilitates the user authority management on equipment in the management domain of the network management system. If some operation authorities over one equipment set are assigned to a user (user group), these operation authorities over all equipment of the equipment set are assigned to the user (user group).

## **ECC**

Embedded Control Channel. An ECC provides a logical operations channel between SDH NEs, utilizing a data communications channel (DCC) as its physical layer.

## **EMU**

Environment Monitoring Unit. A type of power and environment monitoring unit that is used to monitor the environment variables, such as the power supply and temperature.

With external signal input through the relay, fire alarm, smoke alarm, burglary alarm, and so on can be monitored as well.

### **Exercise switching**

This command tests whether a switching protocol can work normally without completing the actual switching operation.

### **Exerciser - Ring**

This command exercises ring protection switching of the requested channel without completing the actual bridge and switch. The command is issued and the responses are checked, but no working traffic is affected.

### **Exerciser - Span**

This command exercises span protection of the requested channel without completing the actual bridge and switch. The command is issued and the responses are checked, but no working traffic is affected.

### **Extended ID of NE**

The serial number of a subnetwork where an NE resides, which is usually used to distinguish different network segments. An extended ID and an ID form the physical ID of an NE.

### **Extended protection subnet**

An unprotected chain like ADM-ADM-TM or ADM-ADM-ADM. The end-point NEs of a link are of the ADM type. As this type of protection subnetwork can be extended, we name it extended protection subnetwork.

## **F**

### **Failure**

The fault cause persisted long enough to consider the ability of an item to perform a required function to be terminated. The item may be considered as failed; a fault has now been detected.

### **Fault**

A fault is the inability of a function to perform a required action. This does not include an inability due to preventive maintenance, lack of external resources, or planned actions.

### **F1 byte**

The user path byte, which is reserved for the user but usually it is special for network providers. The F1 byte is mainly used to provide the temporary data or voice path for special maintenance objectives. It belongs to the regenerator section overhead byte.

### **F2, F3 bytes**

The user channel bytes. These two bytes provide the user with the communication between path units related to payload. They belong to the higher order path overhead byte.

### **fiber/cable**

The general name of optical fiber and cable. The physical entity that connects transport equipment in a transport network, bears the transmitted object (user information, network management information) and implements the transport function.

## **Flow**

A collection of packets that have the same characteristics. On the NMS or NE software, a flow is a group of classification rules. On boards, it is a group of packets that have the same quality of service (QoS). At present, two flows are supported: port flow and port+VLAN flow. A port flow is based on port ID, while a port+VLAN flow is based on port ID and VLAN ID. The two flows cannot coexist on the same port.

## **Forced switching**

This command performs the ring switch from working channels or boards to the protection channels or boards. This switch occurs regardless of the state of the protection channels or boards, unless the protection channels or boards are satisfying a higher priority bridge request.

## **Full duplex**

The system that can transmit information in both directions on a communication link.

## **Full filtering trail**

In this search mode, the network management system first deletes all the trail data on the network management system and reserves the service configuration data of respective NEs, and then re-searches for the service configuration data of respective NEs on the network management system to form the new trail information.

## **Full search**

In the full search mode, all the trail information on the network management system will be deleted first (Only the trail information at the network layer on the network management system is deleted, while the service configuration information of NE in NE layer on the network management system and on the NE remain). Then the service configuration information of respective NEs in the NE layer on the network management system is re-searched to form the trail information in the network layer on the network management system.

## **G**

### **Gateway**

The equipment that is used to connect two independent networks that use different communication protocols.

### **Gateway IP**

IP address is used for TCP/IP communication between an NE and the network management system, which is effective only when it is used for TCP/IP communication. That is, only the gateway NE needs the IP address. IP address cannot be used to identify an NE uniquely. NEs in different TCP/IP networks may have the same IP address. And one NE may have several IP addresses (for example: an IP address of a dial-up network, an IP address of the Ethernet port and so on).

## **Gateway NE**

The NE that communicates with the NMS and other NEs through a data communication network.

## **H**

### **Host name**

Name of the computer that functions as a main controlling point in a network and provides special service to the users.

### **High Availability**

The ability of a system to continuously perform its functions during a long period, which may exceed the suggested working time of the independent components. You can obtain the high availability (HA) by using the error tolerance method. Based on learning cases one by one, you must also clearly understand the limitations of the system that requires an HA ability and the degree to which the ability can reach.

### **History alarms**

Alarms that have cleared and been acknowledged.

### **History performance data**

The performance data stored in the history register and the auto-report performance data stored on the network management system are called history performance data in a unified way.

## **I**

### **In-Service Trail Modifying**

A way of trail modification that allows you to configure new routes for a trail and enables the system to automatically delete the original trail after you apply the settings to the NE.

### **Incremental filtering trail**

In this search mode, the network management system first reserves the trail data of the current client and then re-searches the service configuration data of respective NEs on the network management system according to the newly given search condition to form the new trail data and combine it with the original trail data to get the result.

### **Incremental search**

The increment search mode compares the trail information in network layer on the network management system with the service configuration information of respective NEs on the network management system. If they are inconsistent, the trail information will be fed back into the list as an "Inconsistent Trail". When the user has deleted the inconsistent trail information, the system will re-search for the service configuration information that has not formed the trail in the NE layer on the network management system.

### **Inloop**

An output signal is returned back to the corresponding input port.

### **Inter-board wavelength protection**

This function is implemented by the wavelength conversion boards that are capable of dual fed and selective receiving. The dual fed is implemented by adding a passive optical splitter to the tributary. The signal selection is implemented by the SCC turning off the laser at the tributary side with poorer signal quality according to the signal quality of the lines of two wavelength conversion boards, and letting the channel of light with higher quality pass through the coupler. The coupler is also a passive device and only one channel of light can pass through it. If there are two channels of light passing through the coupler, they interfere each other that would cause bit error to the service. Hence, it is necessary to ensure that only the channel of light with higher quality passes through the coupler at the same time.

### **Intermediate office**

A concept in the telecommunications area. A site that manages fiber/cable or grooms services.

### **Intra-Board wavelength protection**

The intra-board wavelength protection is mainly implemented by the wavelength conversion board with dual fed and signal selection function. The dual fed is implemented by the optical divider inside the board, while the signal selection is implemented by the board turning off the laser of one of the receiving optical interfaces. Hence, this protection mode is also called optical wavelength intra-board path protection. The switching in this protection mode can be completed within a short time, but the services must be interrupted during the maintenance of the damaged board or equipment. Hence, this protection mode has a relatively lower reliability.

### **IP address**

Internet Protocol Address. A 32-bit address that uniquely identifies a node in an IP Internet network. An IP address consists of a network ID and a unique host ID. An IP address consists of the decimal values of its eight bytes, separated with periods; for example, 192.168.7.27.

### **Isolated node**

A type of special NE or an optical port on an NE. Logically, an isolated node does not comprise an SDH NE of any types, which are TM, ADM, REG and DXC

## **L**

### **Layer**

A concept used to allow the transport network functionality to be described hierarchically as successive levels; each layer being solely concerned with the generation and transfer of its characteristic information.

### **License**

A permission provided by a vendor to authorize the use of specific functions of a product. Usually the license consists of encrypted codes, and the operation authority varies with different level of license.

### **Lock status**

Services are not switched to the protection board or channel when a fault occurs, if currently no switching takes place. If currently the switching takes place, after the working board or channel recovers to normal, the services are not switched back to the working board or channel.

### **Lockout of Switching**

When the switching condition is satisfied, this function disables the service from being switched from the working channel to the protection channel. When the service has been switched, the function enables the service to be restored from the protection channel to the working channel.

### **Login mode**

The client login mode includes single-user and multi-users login modes. The multi-users mode is the default mode.

## **M**

### **Management flag**

A check box helps you to determine whether the trail is a managed object of the trail management function at the network layer. By default, trails are managed objects. If choosing not to manage it through the trail management function, you can manage the cross-connections of an individual NE through the service configuration function performed at a node.

### **Management information**

The information that is used for network management in a transport network.

### **Manual switching**

When the protection channel is efficient and there is no higher-level switching request, services are manually switched from the working channel to the protection channel, testing whether the network still has the protection capability.

### **MS node**

The WDM network node that has the spectrum analysis unit in the link for which the ALC function is configured.

### **Multi-trail protection service**

It is a protection mode in which multiple services with different trails but with the same sink protect an important service with the same sink. This protection mode supports protecting important services through non-optical network trails, such as microwave. It presently supports that three protection trails protect one service trail. At the trail sink, it monitors the quality of protection trail signals and protects important services according to the priority and the signal quality.

### **Main Topology**

The default network management system client interface, and all topology management functions are accessed here.

## **N**

## **NE**

Network Element. NE includes the hardware unit and the software running on it. Usually, one NE has at least an SCC (system control and communication) board which responsible for the management and monitoring of the NE. The NE software runs on the SCC board.

### **NE side**

The NE configuration data saved on the SCC board of the equipment, which can be uploaded to the network management system and then stored in databases on the network management system NE side.

### **Network layer**

The logical layer of the network management system that saves the network data. The configuration data related to a network is saved in databases.

## **NNI**

Network Node Interface. The interface at a network node which is used to interconnect with another network node. See also SDH NNI.

### **Non-revertive**

In non-revertive switching, there is a working and protection line, board and so on. Services remain on the protection line or board if the switch requests are terminated; that is, when the fault that caused them to switch to the protection line or board is cleared.

### **NE database**

The databases that are saved in an NE. Usually, the databases are saved in the SCC board of an NE.

## **NE ID**

In a network, each NE corresponds to a unique identifier, that is, the NE ID. In the OptiX transmission equipment, it is specified that the NE ID is a 24-bit binary digit, that is, three bytes. The DIP switch on the SCC board of the NE constitutes the lower 16 bits of the NE ID. The higher eight bits of the NE ID are the extended ID (default value: 9), which is also called the subnetwork number. The extended ID is usually used to identify different subnetworks.

## **NM**

Network Management.

### **Non-protection subnet**

A subnet that has no protection.

### **Network segment**

The range of IP addresses in which the gateway NE functions.

### **NE Explorer**

The main operation interface, of the NETWORK MANAGEMENT SYSTEM, which is used to manage the OptiX equipment. In the NE Explorer, the user can configure, manage and maintain the NE, boards, and ports on a per-NE basis.

## **NE Panel**

A graphical user interface, of the network management system, which displays subracks, boards, and ports on an NE. In the NE Panel, the user can complete most of the configuration, management and maintenance functions for an NE.

## **O**

### **Outloop**

An input signal is directly returned back to the corresponding output port.

## **OWSP**

Optical Wavelength Shared Protection. OWSP is a bidirectional ring, where each node is equipped with an OWSP. There are two channels ( $\lambda 1$  and  $\lambda 2$ ) in the main optical path on the internal and external rings in each span on a ring. The fiber and the OWSP on the main optical path are connected to the optical ports inputting  $\lambda 1$  and  $\lambda 2$  on the mux/demux board (unnecessary to be connected to the OTU), and  $\lambda 1$  and  $\lambda 2$  can be added and dropped at every node.

## **P**

### **Path**

A trail in a path layer.

### **Path protection**

The working principle of path protection: When the system works in path protection mode, the PDH path uses the dual fed and signal selection mode. Through the tributary unit and cross-connect unit, the tributary signal is sent simultaneously to the east and west lines. Meanwhile, the cross-connect unit sends the dual fed signals from the opposite end to the tributary unit, and the tributary unit selectively receive the signal from the two signals.

### **Performance register**

The memory space that is used to store performance events.

### **Performance threshold**

A threshold mechanism can be used to generate an autonomous event report when the performance of a transport entity falls below a predetermined level.

## **PMU**

The unit that is used to monitor power supply in the equipment.

### **Protection policy**

In case the service route provides multiple service protections, different protection strategies can be selected as required. Protection strategy refers to the protection mode given the priority in use for the trail: protection, no protection, and extra traffic. Of the

above, the protection preference is divided into trail protection and subnetwork connection protection.

### **Protection subnet**

A network concept in the network management system. A protection subnet is not an MSP ring or a path protection ring. A protection subnet consists of NEs and fiber connections.

### **Protocol controller status**

The status of the protocol controller of the protection subnet of the MSP or SNCP type. The statuses are not started, started, starting, partially started.

### **Pane**

A major separate area of a window or dialog box, usually used for display rather than data entry.

## **R**

### **Remote Network Monitoring (RMON)**

A manage information base (MIB) defined by the Internet Engineering Task Force (IETF). RMON is mainly used to monitor the data flow of one network segment or the entire network.

### **Revertive switching**

In revertive operation, the traffic signal (service) always returns to (or remains on) the working SNC/trail if the switch requests are terminated; that is, when the working SNC/trail has recovered from the defect or the external request is cleared.

### **Resource sharing**

Resource sharing means that a physical link resource may belong to multiple protection subnetworks.

### **Route**

The path that a trail passes through.

### **Route constraint**

The constraint conditions for calculating a route. When creating a trail, the user can specify the explicit route and the NEs that the trail cannot pass. The explicit route and the NEs are the constraints for calculating the route.

### **ROADM**

Reconfiguration Optical Add/Drop Multiplexing. ROADM helps you to terminate or pass through any one wavelength at every node without affecting the existing services. At the same time, ROADM can change wavelengths through the network management system remotely, to adjust wavelengths added or dropped in a quick and convenient manner. In addition, ROADM enables power equalization at path level through a built-in power equalization function, and adjusts power for pass-through paths in a better way than a band-based dynamic gain equalizer (DGE) does.

## S

### Section

A trail in a section layer.

### S1 byte

To implement protection switching of clocks in the whole network, the NE must learn about the clock quality information of the clock reference source it traces. Therefore, ITU-T defines S1 byte to transmit the network synchronization status information.

### Safe control switch

The IPA safe switch is set in consideration of the long-span networking requirement, which cannot allow too low output optical power. If the safe control switch is turned off, IPA restarting optical power is the specified output power of the OAU. Otherwise, the IPA restarting optical power is restricted to less than 10 dBm.

### Script file

It is the text file describing the physical information and configuration information of the entire network, including the network-wide configuration file, NE port naming file, NE configuration file, NE list file, NM computer information file, service actualization script, network layer information file, network modeling and design information file and ASON information file.

### SD trigger condition

SD refers to signal degradation. The multiplex section protocol defaults to start switching in case of signal loss. In practice, signal degradation severely affects some services, so protection switching is needed. Or, you can turn off this trigger condition through the switch to avoid MS switching when the signal degrades.

### SD

Signal Degrade. A signal indicating the associated data has degraded in the sense that a degraded defect (dDEG) condition is active.

### SDH-ASON Trail

A trail that spans both the SDH and ASON domains.

### SF

Signal Fail. A signal indicating the associated data has failed in the sense that a near-end defect condition (not being the degraded defect) is active.

### SDH NNI

SDH Network Node Interface. It is applied to build communications connection with the equipment beyond the management area of the network management system. Usually, the NM creates an SDH NNI by creating a logical system on the port of an idle line board, and the NE must be a TM without protection and fiber connection.

### Search domain

The range of searching for NEs.

## **Server trail**

There is an inclusion relationship between the trails of different levels. For example, a trail of a certain level contains multiple trails of lower levels. In such a structure, the bearer trail that bears another trail of lower level is called the server trail.

## **Secondary filter trail**

In this search mode, the NM re-searches the trail data displayed by the current client according to the given search conditions, helping the customer find the trail data which interests him the most.

## **Shortcut menu**

A menu that is displayed when right-clicking an object's name or icon. Also called a context menu.

## **Serial port extended ECC**

The ECC channel realized by means of serial port.

## **Service clock working route**

The route of a service clock from the source to the sink in a WDM system. The working route can be in the form of point-to-point or broadcast (That is, an input clock source corresponds to multiple output clock sources).

## **Service configuration policy**

When pass-through services are configured on the newly added nodes, the high-order mode or low-order mode can be selected to pass through. When the VC12 service over a VC4 exceeds a preset threshold, higher order cross-connect is selected, otherwise lower order cross-connect is selected. When the services are not VC12 ones, they are converted into VC12 equivalents. For example: if there are two VC3 and four VC12 services on a VC4, there should be  $21 \times 2 + 4 = 46$  VC12 services.

## **Service loading indication**

To indicate the status of loading services in an SDH frame by using the C2 or V5 byte in the SDH path overhead.

## **SLA (Service Level Agreement)**

An agreement signed between the network carrier and the client, concerning the treatments that the client can receive when services are transferred in the network. The agreement contains the information on technology and commerce. Usually, SLA refers to a specific QoS.

## **SLIP**

Serial Line Interface Protocol, defines the framing mode over the serial line to implement transmission of messages over the serial line and provide the remote host interconnection function with a known IP address.

## **Subnet**

The network that consists of a group of interconnected or correlated NEs, according to different functions. For example, protection subnet, clock subnet and so on.

### **Subnet connection protection**

Subnetwork connection protection uses the 1+1 mode. SNCP is of 1+1 protection mode. Payloads are transmitted simultaneously on both the working and the protection sub-network connections. When the working sub-network connection fails, or when its performance deteriorates to a certain level, at the receiving end of the sub-network connection, the signal from the protection sub-network connection is selected according to the preference rule. Switching usually takes the single-end switching mode, no protocol is needed.

### **Subnet mask**

Also referred to as the network mask off code, it is used to define network segments, so that only the computers in the same network segment can communicate with one another, suppressing broadcast storm between different network segments.

### **Subnet number**

Subnetwork number is used to differentiate the different network sections in the sub-network conference. Actually it is the first several digits (one or two) of the user phone number. An orderwire phone number is composed of the sub-network number and the user number.

### **SNCP node**

The SNCP node of a ring subnet that can support the ability to dually feed and selectively receive trails. In this way, subnet connection protection is realized. Usually, the node of the path protection type is set as an SNCP node.

### **Spread type**

The spread type of ATM service includes point-to-point (p2p) and point-to-multipoint (including p2mpRoot and p2mpLeaf).

### **Switching priority**

There may be the case that several protected boards need to be switched; the tributary board switching priority should be set. If the switching priority of each board is set the same, the tributary board that fails later cannot be switched. The board with higher priority can preempt the switching of that with lower priority.

### **Synchronize Alarm**

When synchronizing the alarms, the network management system checks the alarms in the network management system database and the alarms in the NE. If they are inconsistent, the alarms in the NE are uploaded to the network management system database and overwrite the old ones.

### **Synchronize Fiber Service**

To re-upload all services carried on the physical fiber links.

### **Synchronize NE time**

To apply the system time of the network management system server to NEs to keep the time of all NEs consistent.

## T

### Tag/Untag

The Ethernet port that can identify and transmit the packets with an 802.1q tag header is referred to as a Tag port; otherwise it is referred to as an Untag port.

### Terminal NE

A source NE or a sink trail.

### Topology

The network management system topology is a basic component of the man-machine interactive interface. The topology clearly shows the structure of the network, the alarms of different NEs, subnetworks in the network, the communication status, and the basic network operating status.

### Traffic frame discard flag

It is the traffic frame discard control. Two options are provided: enable and disable. It indicates the means by which the NE discards cells when the network is congested. When the frame discard mark is closed, the cells will be discarded at the cell level; when it is opened, they will be discarded at the frame level. Here, "frame" refers to the AAL protocol data unit.

### Trail

A "transport entity" which consists of an associated pair of "unidirectional trails" capable of simultaneously transferring information in opposite directions between their respective inputs and outputs.

### Trail consistency check

Check whether the circuit route and the activation status of the NM side and NE side are the same, clear the superfluous MOs and combine some of the circuits. During network expansion, such an operation as adding fibers to the SDH NNI or configuring/deleting services through the configuration layer will result in circuit inconsistency.

### Trail management function

A network level management function of the network management system. Through trail management, you can configure end-to-end services, view graphic interface and visual routes of a trail, query detailed information of a trail, filter, search and locate a trail quickly, manage and maintain trails in a centralized manner, manage alarms and performance data by trail, and print a trail report.

### Trail View

The user interface of the network management system, that is used to manage trails based on topologies. The Trail View helps the user to quickly configure and maintain trails. See also Protection View, Clock View.

### Transmission media layer route

The route that consists of the physical media (such as fibers and NEs) that a trail passes through.

### **Trunk link**

A route that bears Ethernet services in the network management system.

### **TPS protection**

The equipment level protection that uses one standby tributary board to protect N tributary boards. When a fault occurs on the working board, the SCC issues the switching command, and the payload of the working board can be automatically switched over to the specified protection board and the protection board takes over the job of the working board. After the fault is cleared, the service is automatically switched to the original board.

## **U**

### **Upper threshold**

The value that can generate a performance threshold crossing if exceeded.

### **UAT**

Unavailable Time. A UAT event is reported when the monitored object generates 10 consecutive severely errored seconds (SES) and the SESs begin to be included in the unavailable time. The event will end when the bit error ratio per second is better than  $10^{-3}$  within 10 consecutive seconds.

### **Unidirectional (protection) switching**

Unidirectional (protection) switching. For a unidirectional fault (that is, a fault affecting only one direction of transmission), only the affected direction (of the trail, subnetwork connection) is switched.

### **UNI**

User Network Interface. The interface between the user and a network node.

### **Unprotected**

Services transmitted through an ordinary way. Once a failure or interruption occurs, the data cannot be restored for lack of protection mechanism.

### **Unterminated Service**

The service that is not terminated within the management domain of the network management system.

### **UPC/NPC**

Usage Parameter Control/Network Parameter Control. During the communication, the UPC is implemented to monitor the actual traffic on each virtual circuit that is input to the network. Once the specified parameter is exceeded, measures will be taken to control. NPC is similar to the UPC in function. The difference is that the incoming traffic monitoring function is divided into UPC and NPC according to their positions. The UPC locates at the user/network interface, while the NPC at the network interface.

## **Upload**

To query all or some of the configuration data of the NE to the network management system and overwrite the configuration data saved at the NE layer of the network management system.

## **User**

The user of the network management system client or NE user. The user and password define the corresponding authority of operation and management.

## **User group**

User set refers to the set of NMS users with the same management authorities. The default user group includes: system administrator, system maintenance engineer, system operator and system supervisor. The attributes of user set include name and detailed description.

## **V**

### **Virtual fiber**

The fiber that is created between different equipment. A virtual fiber is used to represent the optical path that bears SDH services in a WDM system.

### **VC12, VC3 trail**

The channels (that is trail group) provided for trail-layer network nodes (such as a switch) in a path-layer network, and act as the basic unit of transport capacity of paths between trail-layer network nodes.

### **VC4 server trail**

The path rate of the VC4 server trail is 150.336 Mbit/s. The VC4 server trail provides transparent channels (that is, circuit group) for circuit-layer network nodes (for example, a switch) in a path-layer network, and acts as the basic unit of inter-office communication path. When the VC4 server trail is configured, only the higher order cross-connection of VC4 is generated in the intermediate NE, but no cross-connection is generated at the two ends; that is, no service is added/dropped. Therefore, the VC4 server trail is not a traditional service. It is only the basis for VC3 and VC12 trail creation.

## **VCC**

Virtual Channel Connection. The VC logical trail that carries data between two end points in an ATM network.

## **VCI**

Virtual Channel Identifier. The identifier in the ATM (Asynchronous Transfer Mode) cell header that identifies to which virtual channel the cell belongs.

## **VPI**

The field in the ATM (Asynchronous Transfer Mode) cell header that identifies to which VP (Virtual Path) the cell belongs.

## **Virtual concatenation**

For SDH, the virtual containers (VC) to carry concatenated services are independent in terms of their location in the frame structures, so that they can be located flexibly.

## **Virtual NE**

Like a normal NE, a virtual NE is also displayed with an icon on a window, but it is only an NE simulated according to the practical situation, which does not represent an actual NE. Therefore, the actual status of this NE cannot be queried and its alarm status cannot be displayed with colors. A virtual NE is used to represent an NE or subnet that is not managed by Huawei's NMS for end-to-end service configuration and trail management.

## **W**

### **Wave band**

A board like the MB2 divides the wavelength resources into such fixed wavelength groups as 1-4, 5-8 and 9-12, and so on. A wavelength group is called a wave band, and a wave band carrying services to be added or dropped is called add/drop wave band.

## **WTR**

Wait to Restore. This command is issued when working channels meet the restore threshold after an SD or SF condition. It is used to maintain the state during the WTR period unless it is preempted by a higher priority bridge request.

### **WTR time**

A period of time that must elapse before a trail/connection that is recovered from a fault can be used again to transport the normal traffic signal and to select the normal traffic signal.

### **Wavelength path protection ring**

The wavelength path protection ring comprises the working ring and the protection ring. Service signals are transmitted in the two rings in opposite directions. In the wavelength path protection ring, service signals from one node (such as node A) to another node (such as node C) are transmitted via the working ring and the protection ring at one time. Node C receives the signals from the two rings at the same time and selects the signal with higher quality.

### **Wavelength protection group**

The important data that is used to describe the wavelength protection structure. The wavelength path protection can only work with the correct configuration of the wavelength protection group.

### **Wavelength protection subnet**

The ring-chain structure that is used to describe wavelength protection. The wavelength protection subnet is the basic network-level information and the basic network-level data oriented to user. The user can create or delete a protection subnet, set parameters for the protection subnet as required. In this way, the management at the network layer is realized.

### **Working path**

A specific path that is part of a protection group and is labeled working.

## **WXCP service**

Wavelength Cross-Connection Protection. The services that have path protection on a ring network. Services are dually fed and selectively received. The working service and the protection services are switched by using the cross-connection function.

**Parent topic:** [CORBA NBI Developer Guide \(Performance\)](#)

## **9.3.14 Acronyms and Abbreviations**

---

This topic lists acronyms and abbreviations that are used in this guide.

### **A**

#### **ACE**

Adaptive Communication Environment

#### **AIS**

Alarm Indication Signal

#### **AMI**

Alternate Mark Inversion code

#### **APS**

Automatic Protection Switching

#### **ASON**

Automatically Switched Optical Network

#### **ASN.1**

Abstract Syntax Notation One

#### **ATM**

Asynchronous Transfer Mode

### **B**

#### **BLML**

Business Management Layer

#### **BMS**

Business Management System

### **C**

#### **CAR**

Committed Access Rate

**CC**

Cross Connection

**CORBA**

Common Object Request Broker Architecture

**COS**

Class Of Service

**CTP**

Connection Termination Point

**CPU**

Central Processing Unit

**D****DCC**

Data Communication Channels

**DCN**

Data Communication Network

**DNI**

Dual Node Interconnection

**DWDM**

Dense Wavelength Division Multiplexing

**E****ECC**

Embedded Control Channel

**ELL**

Encapsulation Layer Link

**EML**

Element Management Level

**EMS**

Element Management System

**EPG**

Equipment Protection Group

**EPL**

Ethernet Private Line

**EPLan**

**Ethernet Private LAN**

**EVPL**

Ethernet Virtual Private Line

**EVPLan**

Ethernet Virtual Private LAN

**F**

**FD**

Flow Domain

**FDFr**

Flow Domain Fragment

**FEC**

Forward Error Correction

**FIFO**

First In First Out

**FTP**

File Transfer Protocol

**FTP**

Floating Termination Point

**G**

**GCT**

GUI Cut-Through

**GE**

Gigabit Ethernet

**GNE**

Gate Network Element

**GUI**

Graphic User Interface

**H**

**HA**

High-Availability

**I**

**ID**

Identity

**IDL**

**IDL** Interface Definition Language

**IGMP**

Internet Group Management Protocol

**IIP**

Internet Inter-ORB Protocol

**IMAP**

Integrated Management Application Platform

**ITU-T**

International Telecommunication Union- Telecommunication Standardization Sector

**IP**

Internet Protocol

**L**

**LAG**

Link Aggregation Group

**LAN**

Local Area Network

**LCAS**

Link Capacity Adjustment Scheme

**LCT**

Local Craft Terminal

**M**

**MAC**

Media Access Control

**MDP**

Message Dispatch Process

**ME**

Managed Element

**MFDFr**

Matrix Flow Domain Fragment

**MIB**

Management Information Base

**MIP**

Maintenance Association Intermediate Point

**MIT**

Managed Object Instance Tree

**MO**

Managed Object

**MODEM**

Modulator-Demodulator

**MPLS**

Multi-Protocol Label Switching

**MS**

Multiplex Section

**MSP**

Multiplex Section Protection

**MSTP**

Multi-Service Transmission Platform

**MTNM**

Multi-Technology Network Management

**N****NBI**

Northbound Interface

**NE**

Network Element

**NEL**

Network Element Level

**NML**

Network Management Level

**NMS**

Network Management System

**NNI**

Network-to-Network Interface

**NPC**

Network Parameter Control

**O****OADM**

**OADM** Optical Add/Drop Multiplexer

**OAM**

Operation Administration Maintenance

**OCh**

Optical Channel

**OMG**

Object Management Group

**ORB**

Object Request Broker

**OSF**

Operation System Function

**OSS**

Operation Support System

**OSN**

Optical Switch Node

**OSI**

Open Systems Interconnection

**OTS**

Optical Transmission Section

**OTM**

Optical Terminal Multiplexer

**OTU**

Optical Transponder Unit

**P**

**PC**

Personal Computer

**PDH**

Plesiochronous Digital Hierarchy

**PE**

Provider Edge

**PG**

Protection Group

**PM**

**P** Performance Monitor

**PP**

Path Protection

**PRBS**

Pseudo Random Binary Sequence

**PSTN**

Public Switched Telephone Network

**PTP**

Physical Termination Point

**PVP**

Permanent Virtual Path

**Q**

**QoS**

Quality of Service

**R**

**RDI**

Remote Defect Indication

**RMEP**

Remote Maintenance Association End Point

**RMON**

Remote Monitoring

**RPR**

Resilient Packet Ring

**S**

**SCSI**

Small Computer Systems Interface

**SD**

Signal Degradation

**SDH**

Synchronous Digital Hierarchy

**SML**

Service Management Layer

**SMS**

**Service Management System**

**SNML**

Sub-Network Management Layer

**SNMS**

Subnetwork Management System

**SMTP**

Simple Mail Transfer Protocol

**SNC**

Subnetwork Connection

**SNCP**

Sub-Network Connection Protection

**SONET**

Synchronous Optical Network

**SSL**

Security Socket Layer

**SSM**

Synchronization Status Message

**T**

**TAO**

The ACE ORB

**TCA**

Threshold Crossing Alarm

**TCM**

Tandem Connection Monitoring

**TCP**

Transmission Control Protocol

**TD**

Traffic Descriptor

**TMF**

Telecommunication Management Forum

**TMN**

Telecommunication Management Network

**TP**

**T** Termination Point

**U**  
**UNI**

User-to-Network Interface

**UPC**

Usage Parameter Control

**UTC**

Universal Time Coordinated

**V**

**VB**

Virtual Bridge

**VC**

Virtual Connection

**VC**

Virtual Circuit

**VC**

Virtual Container

**VC**

Virtual Channel

**VCI**

Virtual Channel Identifier

**VLAN**

Virtual LAN

**VPI**

Virtual Path Identifier

**VP**

Virtual Path

**W**

**WAN**

Wide Area Network

**WDM**

Wavelength Division Multiplexing

**WTR**

## 9.4 CORBA NBI Developer Guide (Inventory)

---

Focusing on the resource management of the CORBA NBI, this document describes the secondary development of the NBI from the aspects as follows: basic information, interface function, information model, and interface model.

- **Guideline**  
The *NBI Developer Guide* is an important document for users to know NBI specifications. This topic describes how to read this document.
- **Overview**  
Unless otherwise specified, the CORBA NBI described in this document refers to the standardized NBI that complies with the TMF MTNM standards.
- **Interface Model**  
This topic provides models of interfaces (such as customized interfaces and TMF 814 recommendation interfaces) applied to the CORBA NBI.
- **Information Model**  
This topic describes information models supported by the CORBA NBI, including TMF 814 recommendation-based models and customized models.
- **Transmission Parameters**  
This topic describes transmission parameters of the following objects: inventory ports, services, and traffic policies.
- **Format of Notification Events**  
In the additionalInfoUsage.pdf and AVC\_SC\_Notifications.pdf among the supporting documentation of the TMF 814 recommendation, the structure of each notification event of the CORBA interface is described. This chapter presents the detailed definitions of the structure of the notification events.
- **Notification Event Samples**  
This topic describes samples of notification events that the CORBA NBI supports.
- **Object Naming Rules**  
This chapter lists the naming rules for various objects in the U2000 CORBA interface. The naming rules are in accordance with the TMF recommendations.

- [AdditionalInfo Description](#)  
This chapter describes the usage of additional fields in each functional module of the CORBA NBI. The additional fields, consisting of additionalInfo and additionalCreateInfo.
- [UniqueName Naming Rules](#)  
This topic describes the functions, object naming rules, and important notes of the UniqueName.
- [IDL Description](#)  
This topic describes the IDL defined in the CORBA NBI.
- [Description of Unimplemented and Customized Interfaces](#)
- [Big Data Inventory Query](#)  
The big data inventory query mechanism enables the OSS to obtain inventory data after the inventory data is saved to XML files and sent to the FTP server.
- [Layer Rate Description](#)
- [Glossary](#)  
This appendix lists the glossary used in the guide.
- [Acronyms and Abbreviations](#)  
This topic lists acronyms and abbreviations that are used in this guide.

**Parent topic:** [CORBA NBI Developer Guide](#)

## 9.4.1 About This Document

---

### Related Versions

The following table lists the product versions related to this document.

Product Name	Version
iManager U2000	V200R015C60

### Intended Audience

Focusing on the resource management of the CORBA NBI (northbound interface), this document describes the secondary development of the CORBA NBI from the aspects as follows: basic information, interface function, interface model, information model, transmission parameters, and format of notification events.

This document provides the reference information about the resource management of the CORBA NBI.

This document is intended for:

- Application Developer
- Data Configuration Engineer

## Symbol Conventions

The symbols that may be found in this document are defined as follows.

Symbol	Description
 <b>DANGER</b>	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 <b>CAUTION</b>	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
 <b>NOTICE</b>	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.
 <b>NOTE</b>	Calls attention to important information, best practices and tips. NOTE is used to address information not related to personal injury, equipment damage, and environment deterioration.

## Command Conventions

The command conventions that may be found in this document are defined as follows.

Convention	Description
<b>Boldface</b>	The keywords of a command line are in <b>boldface</b> .

Convention	Description
<i>Italic</i>	Command arguments are in <i>italics</i> .
[ ]	Items (keywords or arguments) in brackets [ ] are optional.
{ x   y   ... }	Optional items are grouped in braces and separated by vertical bars. One item is selected.
[ x   y   ... ]	Optional items are grouped in brackets and separated by vertical bars. One item is selected or no item is selected.
{ x   y   ... }*	Optional items are grouped in braces and separated by vertical bars. A minimum of one item or a maximum of all items can be selected.
[ x   y   ... ]*	Optional items are grouped in brackets and separated by vertical bars. Several items or no item can be selected.

## GUI Conventions

The GUI conventions that may be found in this document are defined as follows.

Convention	Description
<b>Boldface</b>	Buttons, menus, parameters, tabs, window, and dialog titles are in <b>boldface</b> . For example, click <b>OK</b> .
>	Multi-level menus are in <b>boldface</b> and separated by the ">" signs. For example, choose <b>File &gt; Create &gt; Folder</b> .

## Change History

Updates between document issues are cumulative. Therefore, the latest document issue contains all updates made in previous issues.

### Changes in Issue 06 (2017-06-29) Based on Product Version V200R015C60

Sixth release.

### Changes in Issue 05 (2017-03-20) Based on Product Version V200R015C60

Fifth release.

### Changes in Issue 04 (2016-09-12) Based on Product Version V200R015C60

Fourth release.

## **Changes in Issue 03 (2016-06-20) Based on Product Version V200R015C60**

Third release.

## **Changes in Issue 02 (2016-03-31) Based on Product Version V200R015C60**

Second release.

## **Changes in Issue 01 (2016-01-15) Based on Product Version V200R015C60**

Initial release.

**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)

## **9.4.2 Guideline**

---

The *NBI Developer Guide* is an important document for users to know NBI specifications. This topic describes how to read this document.

- [\*\*What Is Northbound Model\*\*](#)

Considering networks from the perspective of the OSS, to prevent the OSS from understanding diversified devices and services, you need to convert the objects managed by the EMS or NMS to objects that can be understood by the OSS. This is the northbound model.

- [\*\*What Is NBI\*\*](#)

Data interactions between the OSS and U2000 are implemented through NBIs. For ease of understanding, NBI names adopt a verb-object structure, that is, each NBI is a combination of an "Action" and "Object".

- [\*\*Getting Started\*\*](#)

This topic provides suggestions on reading of interface manuals.

- [\*\*Example\*\*](#)

The following uses the query of a fiber as an example to describe how to query information in the NBI Developer Guide.

**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)

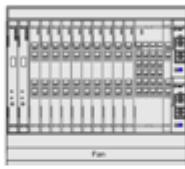
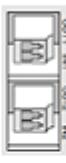
### **9.4.2.1 What Is Northbound Model**

---

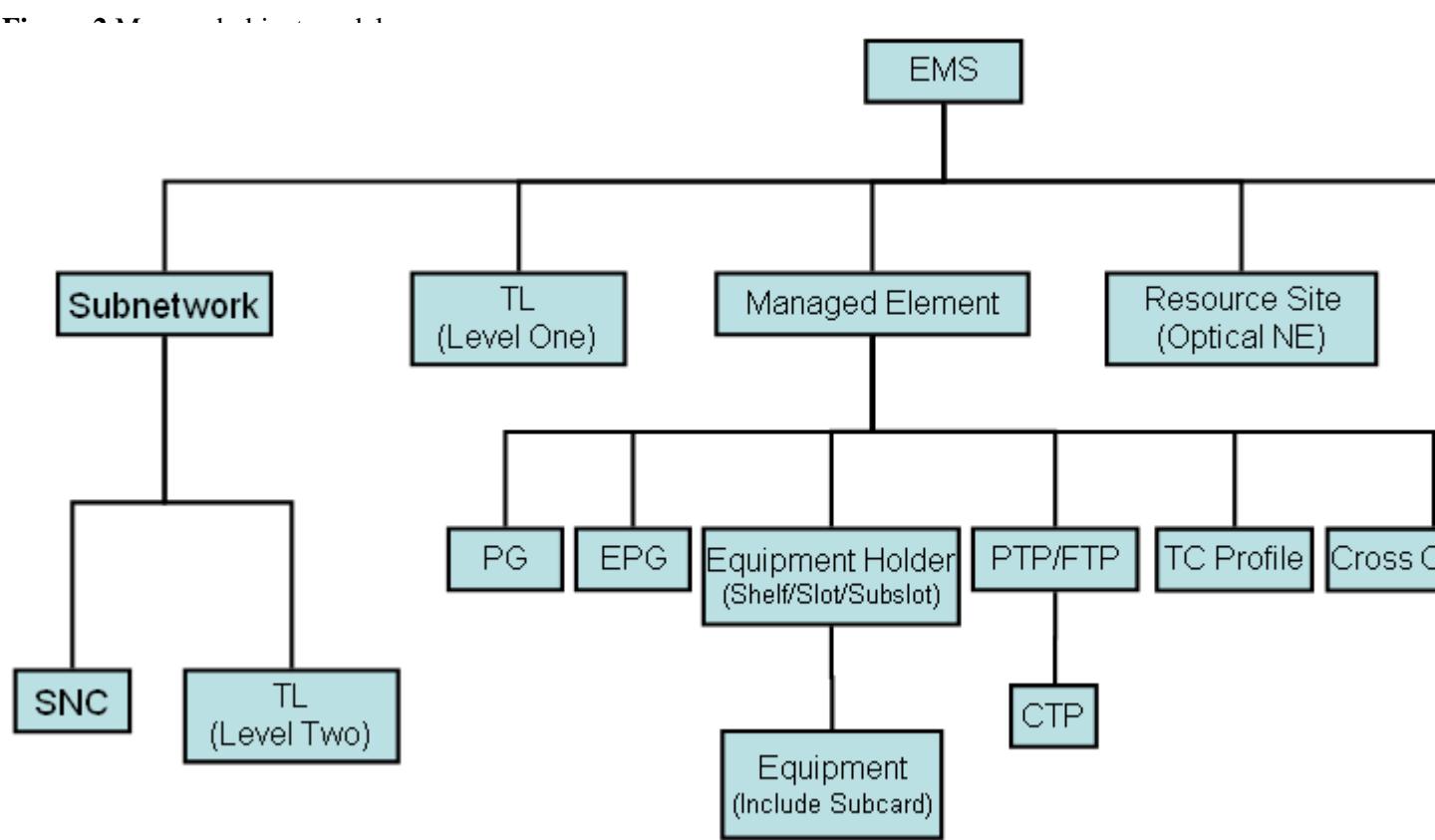
Considering networks from the perspective of the OSS, to prevent the OSS from understanding diversified devices and services, you need to convert the objects managed by the EMS or NMS to objects that can be understood by the OSS. This is the northbound model.

Use NEs, subracks, boards, ports, and fibers/cables as an example. They are abstracted as ME, EquipmentHold, Equipment, TerminationPoint, and TopologicalLink. Getting familiar with the northbound model is the prerequisite for understanding northbound interface (NBI) functions.

**Figure 1** Schematic diagram of the northbound model

				
NE	Subrack	Board	Port	Fiber/cable
ME	EquipmentHold	Equipment	PhysicalTerminationPoint	TopologicalLink

[Figure 2](#) shows the northbound models of all objects managed by the EMS or NMS.



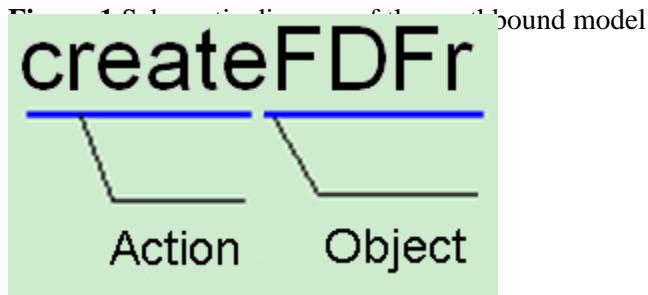
**Parent topic:** [Guideline](#)

## 9.4.2.2 What Is NBI

---

Data interactions between the OSS and U2000 are implemented through NBIs. For ease of understanding, NBI names adopt a verb-object structure, that is, each NBI is a combination of an "Action" and "Object".

Based on the structure, you can learn the NBI function through its name. The following figure shows an example.



## Action

"Action" can be understood as all operations initiated by the OSS.

**Table 1 Description of NBI operations**

Operation	Description
Get	Indicates the query operation.
Set	Indicates the setting operation.
Create	Indicates the creation operation.
Delete	Indicates the deletion operation.
Activate/Deactivate	Indicates the activation or deactivation operation.
Modify	Indicates the modification operation.

## "Intended Object" of "Action"

To a certain extent, you can understand "Object" as the "Intended Object" of NBI operations. Use common inventory management and service configuration operations as an example. The "Intended Objects" are northbound models such as NEs, boards, and ports.

**Table 2 Mapping between NM objects and northbound objects**

Object in U2000 System	Object in CORBA NBI
NMS or EMS	EMS
NE	ME

**Table 2 Mapping between NM objects and northbound objects**

Object in U2000 System	Object in CORBA NBI
Subrack	Shelf
Slot	Slot
Subslot	Sub_Slot
Board	Equipment
Subboard	Equipment
Physical port	PTP
Logical port	FTP
Service protection group	PG
Equipment protection group	EPG
Trail management	SNC
PWE3 service	MFDFr
VSI service	MFDFr
PW	FTP
VLAN management object	FTP
PW switch	IPCrossConnection
MPLS static tunnel	IPCrossConnection
IP tunnel	TrafficTrunk
MPLS dynamic tunnel	TrafficTrunk
Maintenance domain of OAM management	MD
Maintenance association of OAM management	MA
Remote maintenance point	RMEP
Intermediate maintenance point	MIP

Parent topic: [Guideline](#)

## 9.4.2.3 Getting Started

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This topic provides suggestions on reading of interface manuals.

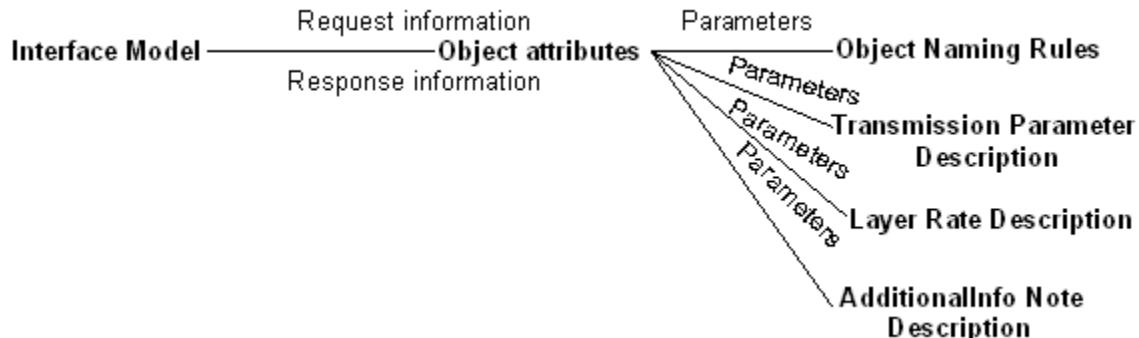
### Volume Description

The U2000 corresponds to the two service processes of telecom carriers: Fulfillment and Assurance, the U2000 classifies NBIs into four fields by function: inventory management, service provisioning, alarm management, and performance management. These four fields respectively correspond to the four volumes of the *NBI Developer Guide*.

### Reading Sequence

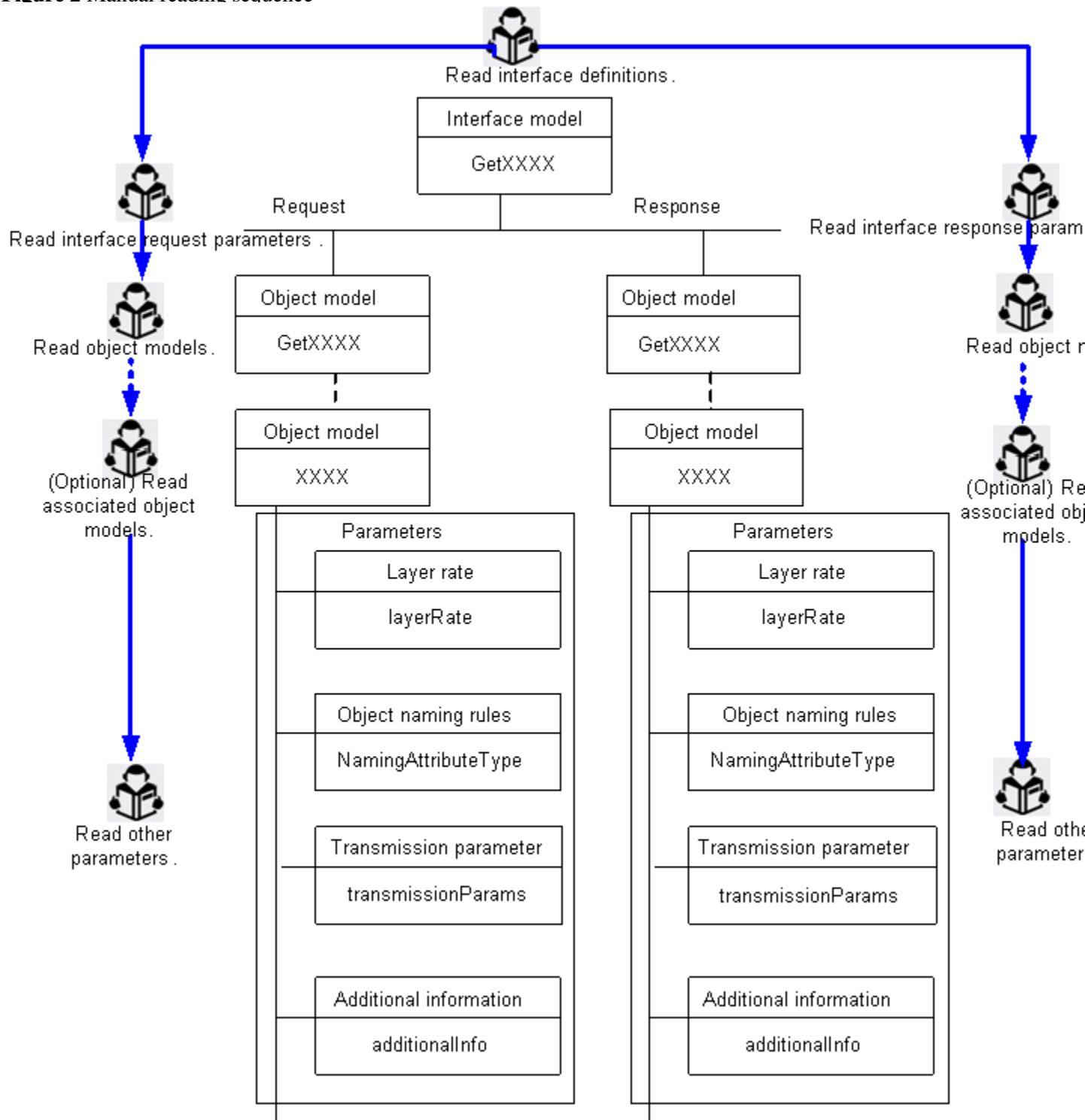
The core of the manual is to describe the request and response information of each interface. The **Interface Model** chapter describes the definition of an interface in detail, and the **Object Attributes** chapter describes the request and response information of the interface. The parameters that are not described in detail in the **Object Attributes** chapter are described in the **Object Naming Rules**, **Transmission Parameter Description**, **Layer Rate Description**, and **AdditionalInfo Usage Note** chapters.

**Figure 1** Structure of chapters in the manual



[Figure 2](#) shows the recommended reading sequence.

**Figure 2** Manual reading sequence



**Parent topic:** [Guideline](#)

## 9.4.2.4 Example

---

The following uses the query of a fiber as an example to describe how to query information in the NBI Developer Guide.

### Querying Interface Models

First, query NBI models based on service scenarios.

1. The fiber northbound model is **TopologicalLink**. Find the **MultiLayerSubnetworkMgr\_I** module in the **Interface Model** chapter. The action corresponding to the query operation is **get**. Based on the model and action, you can find that the desired NBI is

`getTopologicalLink` in the **Interface Model** chapter.

## getTopologicalLink

This interface is used to query information about a topological link by its name.

### Definition

```
void getTopologicalLink(  
    in globaldefs::NamingAttributes_T topoLinkName,  
    out topologicalLink::TopologicalLink_T topoLink)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about a topological link by its name.

### Parameters

Parameter	Input/Output	Description
topoLinkName	Input	Indicates the name of the topological link.
topoLink	Output	Indicates the topological link.

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input value.
EXCPT_ENTITY_NOT_FOUND	Indicates that the entity was not found.
EXCPT_INTERNAL_ERROR	Indicates an internal error.

### Restrictions

There is no restriction.

2. Through the guide, you can learn the parameter details of the interface, including the parameters you need to set for the interface and the returned values of the interface.

## Building Request Information

Query input parameters of the interface model to further know corresponding object models and correctly construct request models of interfaces.

1. In the request information of the `getTopologicalLink` interface, the included parameter is `topoLinkName` and the type is `NamingAttributes_T`. Learn the detailed naming rules in

the **TopologicalLink** section of the **Object Naming Rules** chapter.

## TopologicalLink

This topic describes the naming rule for a topological link. A topological link can be a physical connection between two

**Table 1** TopologicalLink

Object name	TopologicalLink
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="TopologicalLink"; value="TopologicalLinkName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="TopologicalLink"; value="2008-10-17 19:02:47 -"
Remarks	More description for the value of TopologicalLinkName: If a topological link is created on the U2000 earlier than V2, the value of TopologicalLinkName adopts a format similar to "139981017190247".

2. Build complete request information based on the queried information.

## Querying Response Information

After a request message is sent correctly, response information is returned. You can query the meaning of the response information in the guide.

1. In the response information of the **getTopologicalLink** interface, the included parameter is **topoLink** and the type is **TopologicalLink\_T**. Learn the details about **topologicalLink** in

the **Object Model** chapter.

## TopologicalLink\_T

This topic describes the data structure of topological links.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of topological links.
userLabel	string	User label. This field is blank by default.
nativeEMSName	string	Local name.
owner	string	Name of the owner of the object. This field is blank by default.
direction	"globaldefs ::ConnectionDirection_T"	Direction. The value are: CD_UP, CD_DOWN, CD_BIDIR.
rate	transmissionParameters::LayerRate_T	Layer rate.
aEndTP	globaldefs::NamingAttributes_T	Source.
zEndTP	globaldefs::NamingAttributes_T	Sink.
additionalInfo	globaldefs::NVSList_T	Additional information. For details see the <a href="#">additionalInfo::TopologicalLink_T</a> section.

## Viewing Additional Information

Northbound models are highly abstracted from the logic of different services. For example, **TopologicalLink** can represent fibers, layer 2 links, or IP links. You can distinguish them based on fields such as **rate** and **additionalInfo**.

1. The **TopologicalLinkType** information model contains the **rate** parameter. View the meaning of the layer rate in the response information in the **Rate Layer Description** chapter.
2. The **TopologicalLinkType** information model contains the **additionalInfo** parameter. View the parameter in the **TopologicalLink\_T** section of the **AdditionalInfo Description** chapter.

**Parent topic:** [Guideline](#)

## 9.4.3 Overview

---

Unless otherwise specified, the CORBA NBI described in this document refers to the standardized NBI that complies with the TMF MTNM standards.

- [Introduction](#)
- [Resource Management](#)

**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)

## 9.4.3.1 Introduction

---

Huawei CORBA interface provides perfect resource management functions for the operation support system (OSS). Through this interface, the network management resources of Huawei network management system can be uploaded to the OSS so that the resources on the OSS keep consistent with the actual network resources.



**NOTICE:**  
During the application and maintenance of customer management, personal data will be used. Therefore, you must comply with the laws of the applicable countries or Huawei user privacy policies and take necessary measures to protect personal data of users.

---

**Parent topic:** [Overview](#)

## 9.4.3.2 Resource Management

---

[Table 1](#) lists the resource management functions that the U2000 CORBA NBI provides.



**NOTE:**  
In the case of the router, only the query of NEs, shelves, slots, and boards is supported and other resources cannot be queried.

By default, equipment of NA version does not support the functions in the following table.

---

**Table 1 Resource management**

Functional Feature	Function Description	Description
Query of physical resources of equipment	For example, NEs, shelves, slots, boards, ports, and topology connections.	N/A
Query of SDH resources	For example, current termination points (CTPs) of synchronous digital hierarchy (SDH), SDH trails, SDH cross-connections, multiplex section protection (MSP) protection groups, and SDH protection subnets.	N/A
Query of RTN resources	For example, RTN trails, dynamic MPLS tunnels, static MPLS tunnels, IP tunnels, point-to-point ATM services, point-to-point TDM services, point-to-point Ethernet services, and Ethernet VPN services, RTN protection groups.	N/A
Query of WDM resources	For example, wavelength division multiplexing (WDM) CTPs, WDM trails, WDM cross-connections, and WDM protection groups.	Equipment of NA version supports only the query of WDM CTPs and WDM trails.
Query of SDH ASON resources	For example, ASON domains, SNPP links, SDH ASON trails, and SDH ASON cross-connections.	N/A
Query of Ethernet resources	For example, flow domain (FD), encapsulation layer link (ELL), and flow domain fragment (FDFr).	Only SDH and MSTP equipment supports this function.
Query MSTP resources	For example, multi-service transmission platform (MSTP) endpoints, virtual bridges, L2 forwarding tables, link aggregation protection groups, quality of service (QoS), flows, Ethernet services of individual	N/A

**Table 1 Resource management**

Functional Feature	Function Description	Description
	NEs, asynchronous transfer mode (ATM) services of individual NEs, ATM traffic descriptors, ATM protection groups, resilient packet ring (RPR) protection groups, RPR protection nodes, and RPR links.	
Query of Hybrid MSTP resources	For example, logical ports (such as LAG ports) and the following services: MPLS static tunnels, PW switching, point-to-point ATM services, point-to-point CES services, point-to-point Ethernet services, and E-LAN services.	N/A
Query of PTN resources	For example, logical PTN ports and PTN services. Logical PTN ports include LAGs, IMAs, MP groups, serials, and VEs. PTN services include dynamic MPLS tunnels, static MPLS tunnels, IP tunnels, PW switching, point-to-point ATM services, point-to-point TDM services, point-to-point Ethernet services, and Ethernet VPN services.	N/A
Query of OTN resources	For example, PTP, CTP, OTN trails, OTN cross-connections, OTN protection groups.	N/A
Query of other inventory objects	For example, network management systems and physical topology subnets.	The equipment of NA version supports this query function.

**Parent topic:** [Overview](#)

## 9.4.4 Interface Model

---

This topic provides models of interfaces (such as customized interfaces and TMF 814 recommendation interfaces) applied to the CORBA NBI.

- [Common\\_I](#)  
This interface consists of a set of interfaces that other managers can also use.
- [emsMgr\\_I](#)  
This interface is used to manage an EMS. For example, the getEMS interface enables an NMS to query the information about the EMS.
- [EquipmentInventoryMgr\\_I](#)  
This interface is used to manage resources, such as equipment, boards, and ports on boards.
- [ManagedElementMgr\\_I](#)  
This interface is used to manage NEs and termination points (TPs), including NEs, ports, and cross-connections on NEs.
- [MultiLayerSubnetworkMgr\\_I](#)  
This interface is used to manage subnets.
- [ProtectionMgr\\_I](#)  
This interface is used to manage protection groups.
- [HW\\_MSTPInventoryMgr\\_I](#)  
This interface is used to manage MSTP inventories.
- [HW\\_MSTPProtectionMgr\\_I](#)  
This interface is used to manage the MSTP protection.
- [HW\\_MSTPServicesMgr\\_I](#)  
This interface is used to manage MSTP services.
- [TrafficDescriptorMgr\\_I](#)  
This interface is used to manage traffic descriptors and supported in only the MSTP equipment.
- [HW\\_controlPlaneMgr\\_I](#)  
This interface is used to manage the route control plane, including querying route names, route node names, and SNNP links.
- [EncapsulationLayerLinkMgr\\_I](#)  
This interface is used to query information about encapsulation layer links (ELLs).
- [FlowDomainMgr\\_I](#)  
This interface is used to query information about flow domain fragments and matrix flow domain fragments. The MSTP equipment is supported only.
- [MaintenanceMgr\\_I](#)  
This interface is used to manage maintenance functions.

- [TopoMgr\\_I](#)  
This interface is used to manage network topologies.
- [TCProfileMqr\\_I](#)  
This interface is used to manage traffic policy profiles. Traffic policy profiles include port, Ethernet V-UNI ingress or egress, PW, ATM, ATM COS mapping and DS domain mapping policy profiles. PTN equipment is supported.
- [EmsSession\\_I](#)  
This interface is used to query NMS managers and check the network communication.
- [EmsSessionFactory\\_I](#)  
This interface is used to query the object reference of a target interface.
- [Version\\_I](#)  
This interface is used to query information about IDL versions.
- [HW\\_VPNMgr\\_I](#)  
This interface is used to manage services, such as, PWE3 (ATM, CES, and EES services), VPLS, NativeEth and tunnel services. The supported equipment is as follows: PTN, Hybrid MSTP, and RTN900 series equipment. NativeEth services are applicable only to RTN equipment of V100R002 version.
- [TrailNtwProtMgr\\_I](#)  
This interface provides protection for network trails, including tunnels.
- [IPMgr\\_I](#)  
This interface is used for the NMS to query the configurations of L2 and L3 interface bridging, static routes, VRF, FRR, and VRRP protection.

**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)

## **9.4.4.1 Common\_I**

---

This interface consists of a set of interfaces that other managers can also use.

- [getCapabilities](#)  
This interface is used to query the capability of a manager.

**Parent topic:** [Interface Model](#)

### **9.4.4.1.1 getCapabilities**

---

This interface is used to query the capability of a manager.

## Definition

```
void getCapabilities(  
    out CapabilityList_T capabilities)  
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query a manager's capability.

## Parameters

Parameter	Input/Output	Description	Value
capabilities	Output	Indicates a manager's capability.	globaldefs::CapabilityList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [Common\\_I](#)

## 9.4.4.2 emsMgr\_I

---

This interface is used to manage an EMS. For example, the getEMS interface enables an NMS to query the information about the EMS.

- [getEMS](#)

This interface is used to query the details of the U2000.

- [getAllTopLevelSubnetworkNames](#)

This interface is used to query all subnets' names on the U2000.

- [getAllTopLevelSubnetworks](#)  
This interface is used to query details of all subnets on the U2000.
- [getAllTopLevelTopologicalLinkNames](#)  
This interface is used to query the names of all fiber connections between top-level topology subnets on the U2000.
- [getAllTopLevelTopologicalLinks](#)  
This interface is used to query details of all fiber connections between top-level topology subnets on the U2000.
- [getTopLevelTopologicalLink](#)  
This interface is used to query details of a specific top-level fiber connection on the U2000.
- [getObjectClockSourceStatus](#)  
This interface is used to query all available clock sources on a specified SDH NE.

**Parent topic:** [Interface Model](#)

## 9.4.4.2.1 getEMS

---

This interface is used to query the details of the U2000.

### Definition

```
void getEMS (
    out EMS_T emsInfo)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query the details of the U2000.

### Parameters

Parameter	Input/Output	Description	Value
emsInfo	Output	Indicates the obtained information about the U2000.	EMS_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [emsMgr\\_I](#)

## 9.4.4.2.2 getAllTopLevelSubnetworkNames

---

This interface is used to query all subnets' names on the U2000.

### Definition

```
void getAllTopLevelSubnetworkNames (
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query all subnets' names on the U2000.

### Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the number of subnets that are returned for the first time.	unsigned long
nameList	Output	Indicates the list of the subnet names.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is only one subnet on the U2000 and its ID is 1.

**Parent topic:** [emsMgr\\_I](#)

## 9.4.4.2.3 getAllTopLevelSubnetworks

---

This interface is used to query details of all subnets on the U2000.

### Definition

```
void getAllTopLevelSubnetworks (
    in unsigned long how_many,
    out multiLayerSubnetwork::SubnetworkList_T sList,
    out multiLayerSubnetwork::SubnetworkIterator_I sIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of all the subnets on the U2000.

### Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the number of subnets that are returned for the first time.	unsigned long

Parameter	Input/Output	Description	Value
sList	Output	Indicates subnets' details. For the element model, see multiLayerSubnetwork::MultiLayerSubnetwork_T.	multiLayerSubnetwork::SubnetworkList_T
sIt	Output	Indicates the iterator.	multiLayerSubnetwork::SubnetworkIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

The subnet on the U2000 is unique and the subnet ID is 1.

**Parent topic:** [emsMgr\\_I](#)

## 9.4.4.2.4 getAllTopLevelTopologicalLinkNames

This interface is used to query the names of all fiber connections between top-level topology subnets on the U2000.

### Definition

```
void getAllTopLevelTopologicalLinkNames(
in unsigned long how_many,
out globaldefs::NamingAttributesList_T nameList,
out globaldefs::NamingAttributesIterator_I nameIt)
raises(globaldefs::ProcessingFailureException);
```

### Function

Query the names of all fiber connections between top-level topology subnets in the U2000.

Because the U2000 has only one topology subnet, such connections do not exist.

## Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the number of fibers that are returned for the first time.	unsigned long
nameList	Output	Indicates the returned fiber names.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [emsMgr\\_I](#)

## 9.4.4.2.5 getAllTopLevelTopologicalLinks

This interface is used to query details of all fiber connections between top-level topology subnets on the U2000.

### Definition

```
void getAllTopLevelTopologicalLinks(  
in unsigned long how_many,  
out topologicalLink::TopologicalLinkList_T topoList,
```

```

out topologicalLink::TopologicalLinkIterator_I topoIt)
raises(globaldefs::ProcessingFailureException);

```

## Function

Query all fiber connections between top-level topology subnets on the U2000.

Because the U2000 has only one topology subnet, such connections do not exist.

## Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the number of fibers that are returned for the first time.	unsigned long
topoList	Output	Indicates the returned fiber information.	topologicalLink::TopologicalLinkList_TFor element model, see topologicalLink::TopologicalLink_T.
topoIt	Output	Indicates the iterator.	topologicalLink::TopologicalLinkIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [emsMgr\\_I](#)

## 9.4.4.2.6 getTopLevelTopologicalLink

---

This interface is used to query details of a specific top-level fiber connection on the U2000.

## Definition

```
void getTopLevelTopologicalLink(  
in globaldefs::NamingAttributes_T topoLinkName,  
out topologicalLink::TopologicalLink_T topoLink)  
raises(globaldefs::ProcessingFailureException);
```

## Function

Query a specific top-level fiber connection on the U2000.

Because the U2000 has only one topology subnet, the connection does not exist.

## Parameters

Parameter	Input/Output	Description	Value
topoLinkName	Input	Indicates the fiber name.	globaldefs::NamingAttributesList_T
topoLink	Output	Indicates the returned fiber information.	topologicalLink::TopologicalLink_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [emsMgr\\_I](#)

## **9.4.4.2.7 getObjectClockSourceStatus**

---

This interface is used to query all available clock sources on a specified SDH NE.

## Definition

```
void getObjectClockSourceStatus (
    in globaldefs::NamingAttributes_T managedElementName,
    out ClockSourceStatusList_T clockSourceStatusList)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query all available clock sources on a specified SDH NE.

## Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	Indicates an NE name.	globaldefs::NamingAttributesList_T
clockSourceStatusList	Output	Indicates the list of clock sources.	emsMgr::ClockSourceStatusList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_NOT_IMPLEMENTED	Indicates that the interface is inapplicable to a specific NE.

## Restrictions

This interface is not applicable to a WDM NE, because a WDM NE clock is realized on the U2000 in a mode different from that for an SDH NE clock.

**Parent topic:** [emsMgr\\_I](#)

## 9.4.4.3 EquipmentInventoryMgr\_I

This interface is used to manage resources, such as equipment, boards, and ports on boards.

Instruction:

You can query and manage information of computer room configuration through NBIs and maintain the configuration information based on needs. During the application and maintenance of computer room configuration information, personal data will be used. Therefore, you must comply with the laws of the applicable countries or Huawei user privacy policies and take necessary measures to fully protect personal data against leakage.

- **[getEquipment](#)**

This interface is used to query details of a specific holder or device.

- **[getAllEquipment](#)**

This interface is used to query all equipment and equipment holders contained in an NE manager or equipment holder.

- **[getAllEquipmentNames](#)**

This interface is used to query names of all equipment and equipment holders contained in an NE manager or equipment holder.

- **[getContainedEquipment](#)**

This interface is used to query names and details of allequipment in equipment holder.

- **[getAllSupportedPTPs](#)**

This interface is used to query all ports on equipment.

- **[getAllSupportedPTPNames](#)**

This interface is used to query the names of all ports on equipment.

- **[getAllSupportingEquipment](#)**

This interface is used to query equipment holder or equipment where a port is located by port name.

- **[getAllSupportingEquipmentNames](#)**

This interface is used to query the names of the equipment or equipment holders where the port is located according to the port name.

- **[getEquipmentStaticInfo](#)**

This interface is used to query static information about equipment, including type attributes, rate levels and port quantity.

- **[getPhysicalLocationInfo](#)**

This interface is used to query physical locations of subracks, equipment rooms and racks.

- **[getAllEquipmentAdditionalInfo](#)**

This interface is used to query additional information about all boards on a specified device.

**Parent topic:** [Interface Model](#)

## 9.4.4.3.1 getEquipment

---

This interface is used to query details of a specific holder or device.

### Definition

```
void getEquipment(  
    in globaldefs::NamingAttributes_T equipmentOrHolderName,  
    out EquipmentOrHolder_T equip)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of a specific holder or device. Subboard SNs cannot be queried.

### Parameters

Parameter	Input/Output	Description	Value
equipmentOrHolderName	Input	Indicates the name of a holder or equipment that you want to query.	globaldefs::NamingAttributes_T
equip	Output	Indicates the obtained details of the equipment or holder.	EquipmentOrHolder_T For the element model, see Equipment_T and EquipmentHolder_T.

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

### Restrictions

By modifying the IsManufactureEnable field in bundle.cfg file, you can determine whether to filter additional information in returned data. For details, see Equipment\_T. When

If IsManufactureEnable is set to 1, you can invoke the interface to query optical module information of transport equipment.

By default, the path of bundle.cfg is as follows:

On the Windows OS: %IMAP\_ROOT%\etc\oss\_cfg\nbi\corba\conf\ii\_corbaagent\_bundle

On the Solaris or Linux OS: \$IMAP\_ROOT/etc/oss\_cfg/nbi/corba/conf/ii\_corbaagent\_bundle

**Parent topic:** [EquipmentInventoryMgr\\_I](#)

## 9.4.4.3.2 getAllEquipment

---

This interface is used to query all equipment and equipment holders contained in an NE manager or equipment holder.

### Definition

```
void getAllEquipment(  
    in globaldefs::NamingAttributes_T meOrHolderName,  
    in unsigned long how_many,  
    out EquipmentOrHolderList_T eqList,  
    out EquipmentOrHolderIterator_I eqIt)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query all equipment and equipment holders contained in an NE manager or equipment holder. Subboard SNs cannot be queried.

### Parameters

Parameter	Input/Output	Description	Value
meOrHolderName	Input	Indicates the name for the equipment or equipment holder that you want to query	globaldefs::NamingAttributes_T
how_many	Input	Indicates the quantity of the data that is returned in the first batch.	unsigned long

Parameter	Input/Output	Description	Value
eqList	Output	Indicates the data that is returned in the first batch.	EquipmentOrHolderList_T For the element model, see Equipment_T and EquipmentHolder_T.
eqIt	Output	Indicates the iterator.	EquipmentOrHolderIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

By modifying the IsManufactureEnable field of bundle.cfg file, you can determine whether the additional information about the returned data is filtered. For details, see Equipment\_T. When IsManufactureEnable is set to 1, you can invoke the interface to query optical module information of transport equipment.

By default, the path of bundle.cfg is as follows:

On the Windows OS: %IMAP\_ROOT%\etc\oss\_cfg\nbi\corba\conf\ii\_corbaagent\_bundle

On the Solaris or Linux OS: \$IMAP\_ROOT/etc/oss\_cfg/nbi/corba/conf/ii\_corbaagent\_bundle

**Parent topic:** [EquipmentInventoryMgr\\_I](#)

## 9.4.4.3.3 getAllEquipmentNames

---

This interface is used to query names of all equipment and equipment holders contained in an NE manager or equipment holder.

## Definition

```
void getAllEquipmentNames(
in globaldefs::NamingAttributes_T meOrHolderName,
in unsigned long how_many,
out globaldefs::NamingAttributesList_T nameList,
out globaldefs::NamingAttributesIterator_I nameIt)
raises(globaldefs::ProcessingFailureException);
```

## Function

Query the names of all equipment and equipment holders contained in an NE manager or equipment holder. This interface has the same behavior as getAllEquipment, but returns object names instead of object details.

## Parameters

Parameter	Input/Output	Description	Value
meOrHolderName	Input	Indicates the name of the equipment or equipment holder that you want to query.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the data volume that is returned in the first batch.	unsigned long
nameList	Output	Indicates the data that is returned in the first batch.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

Abnormal Value	Description
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [EquipmentInventoryMgr\\_I](#)

## 9.4.4.3.4 getContainedEquipment

---

This interface is used to query names and details of allequipment in equipment holder.

### Definition

```
void getContainedEquipment(
in globaldefs::NamingAttributes_T equipmentHolderName,
out EquipmentOrHolderList_T equipmentOrHolderList)
raises(globaldefs::ProcessingFailureException);
```

### Function

Query the equipment and equipment holders directly contained by specific equipment holder.

### Parameters

Parameter	Input/Output	Description	Value
equipmentHolderName	Input	Indicates the equipment holder name.	globaldefs::NamingAttributes_T
equipmentOrHolderList	Output	Indicates the next-level equipment and equipment holders directly contained by the equipment holder.	EquipmentOrHolderList_T For the element model, see Equipment_T or EquipmentHolder_T.

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [EquipmentInventoryMgr\\_I](#)

## 9.4.4.3.5 getAllSupportedPTPs

---

This interface is used to query all ports on equipment.

### Definition

```
void getAllSupportedPTPs(
    in globaldefs::NamingAttributes_T equipmentName,
    in unsigned long how_many,
    out terminationPoint::TerminationPointList_T tpList,
    out terminationPoint::TerminationPointIterator_I tpIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query all ports on equipment.

### Parameters

Parameter	Input/Output	Description	Value
equipmentName	Input	Indicates the name of the equipment or equipment holder that you want to query.	globaldefs::NamingAttributes_T

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the quantity of the PTPs that are returned in the first batch.	unsigned long
tpList	Output	Indicates the ports that are returned in the first batch.	terminationPoint::TerminationPointList_T For the element model, see terminationPoint::TerminationPoint_T.
tpIt	Output	Indicates the iterator.	terminationPoint::TerminationPointIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [EquipmentInventoryMgr\\_I](#)

## 9.4.4.3.6 getAllSupportedPTPNames

---

This interface is used to query the names of all ports on equipment.

### Definition

```

void getAllSupportedPTPNames (
    in globaldefs::NamingAttributes_T equipmentName,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);

```

## Function

Query the names of all ports on equipment. This interface is similar to the getAllSupportedPTPs interface. The difference is that the getAllSupportedPTPs interface is used to query port details while the getAllSupportedPTPNames interface is used to query port names.

## Parameters

Parameter	Input/Output	Description	Value
meOrHolderName	Input	Indicates the name of the equipment or equipment holder that you want to query.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the quantity of PTP names that are returned in the first batch.	unsigned long
nameList	Output	Indicates the port names that are returned in the first batch.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	Globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

Abnormal Value	Description
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [EquipmentInventoryMgr\\_I](#)

### 9.4.4.3.7 getAllSupportingEquipment

---

This interface is used to query equipment holder or equipment where a port is located by port name.

#### Definition

```
void getAllSupportingEquipment(
    in globaldefs::NamingAttributes_T ptpName,
    out EquipmentOrHolderList_T eqList)
    raises(globaldefs::ProcessingFailureException);
```

#### Function

Query the details of equipment holder or equipment where a port is located by port name.

#### Parameters

Parameter	Input/Output	Description	Value
ptpName	Input	Indicates the name of the port that you want to query.	globaldefs::NamingAttributes_T
eqList	Output	Indicates the obtained details of the equipment or holder.	EquipmentOrHolderList_T For the element model, see Equipment_T or EquipmentHolder_T.

#### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [EquipmentInventoryMgr\\_I](#)

## 9.4.4.3.8 getAllSupportingEquipmentNames

---

This interface is used to query the names of the equipment or equipment holders where the port is located according to the port name.

### Definition

```
void getAllSupportingEquipmentNames(
in globaldefs::NamingAttributes_T ptpName,
out globaldefs::NamingAttributesList_T nameList)
raises(globaldefs::ProcessingFailureException);
```

### Function

Query the name of the equipment or equipment holders where the port is located according to the port name. This interface is similar to the getAllSupportingEquipment interface. The difference between them is that the getAllSupportingEquipment interface returns the details while the getAllSupportingEquipmentNames interface returns the names.

### Parameters

Parameter	Input/Output	Description	Value
ptpName	Input	Indicates a port name that you want to query.	globaldefs::NamingAttributes_T

Parameter	Input/Output	Description	Value
eqList	Output	Indicates the obtained details of the equipment or equipment holder.	EquipmentOrHolderList_T For the element model, see Equipment_T or EquipmentHolder_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [EquipmentInventoryMgr\\_I](#)

## 9.4.4.3.9 getEquipmentStaticInfo

---

This interface is used to query static information about equipment, including type attributes, rate levels and port quantity.

### Definition

```
void getEquipmentStaticInfo(
    in EquipmentObjectTypeList_T typeList,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T staticInfoList,
    out globaldefs::NamingAttributesIterator_I staticInfoIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query static information about equipment, including type attributes, rate levels and port quantity.

The type attributes of equipment are as follows:

function\_class\_clock = true: clock function

function\_class\_xc = true: cross-connection function

function\_class\_pdh = true: tributary function

function\_class\_oline = true: optical line function

function\_class\_eline = true: electrical line board

dynamic\_port = true: dynamic port function of a board

function\_class\_na = true: other attributes

A board may have multiple attributes in the preceding attributes.

The rate levels of ports are as follows:

e1, e2, e3, e4, stm-1, stm-2, stm-4, stm-8, stm-16, stm-48, stm-64, stm-256

stm-1024, sonet\_vt15, sonet\_vt2, sonet\_vt3, sonet\_vt6, sonet\_ds3, sonet\_sts1, sonet\_sts3

## Parameters

Parameter	Input/Output	Description	Value
typeList	Input	Indicates the list of equipment types that you want to query.	EquipmentObjectTypeList_T
how_many	Input	Indicates the pieces of static information that is returned in the first batch.	unsigned long
staticInfoList	Output	Indicates the static information that is returned in the first batch.	globaldefs::NamingAttributesList_T
staticInfoIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [EquipmentInventoryMgr\\_I](#)

## 9.4.4.3.10 getPhysicalLocationInfo

---

This interface is used to query physical locations of subracks, equipment rooms and racks.

### Definition

```
void getPhysicalLocationInfo(
    out PhysicalLocationInfoList_T phyLocationInfoList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query physical locations of subracks, equipment rooms, and racks.

### Parameters

Parameter	Input/Output	Description	Value
phyLocationInfoList	Output	Indicates the obtained information about subracks, equipment rooms, and cabinets.	PhysicalLocationInfoList_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [EquipmentInventoryMgr\\_I](#)

## 9.4.4.3.11 getAllEquipmentAdditionalInfo

---

This interface is used to query additional information about all boards on a specified device.

### Definition

```
void getAllEquipmentAdditionalInfo(
    in globaldefs::NamingAttributes_T meOrHolderName,
    out ObjectAdditionalInfoList_T additionalInfoList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

This interface is used to query additional information about all boards on a specified device.

### Parameters

Parameter	Input/Output	Description	Value
meOrHolderName	Input	Indicates the device name.	globaldefs::NamingAttributes_T
additionalInfoList	Output	Indicates the additional information about all boards on the device.  Only the following fields are supported:	equipment::ObjectAdditionalInfoList_T  For the element model, see ObjectAdditionalInfoList_T.

Parameter	Input/Output	Description	Value
		<p>NENName: local name of the NE to which boards belong</p> <p>NEType: type of the NE to which boards belong</p> <p>BoardType: board type</p> <p>BoardBarCode: bar codes of boards</p> <p>BiosVersion: BIOS versions of boards</p> <p>SoftwareVersion: board software versions</p> <p>LogicVersion: FBGA versions of boards</p> <p>PCBVersion: board hardware versions</p>	

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the object does not exist.

## Restrictions

The interface supports additional information of boards only on the SDH, WDM, OTN, RTN, and PTN devices.

**Parent topic:** [Equipment\InventoryMgr\\_I](#)

## **9.4.4.4 ManagedElementMgr\_I**

---

This interface is used to manage NEs and termination points (TPs), including NEs, ports, and cross-connections on NEs.

- [getAllManagedElements](#)

This interface is used to query details about all NEs on the U2000.

- [getAllManagedElementNames](#)

This interface is used to query the names of all NEs on the U2000.

- [getContainingSubnetworkNames](#)

This interface is used to query subnets that contain NEs by NE name.

- [getAllPTPs](#)

This interface is used to query all PTPs on an NE by NE name.

- [getAllTPNames](#)

This interface is used to query names of the desired PTPs on an NE.

- [getTP](#)

This interface is used to query details of a physical or logical TP by TP name.

- [getManagedElement](#)

This interface is used to query details of an NE by NE name.

- [getContainedPotentialTPs](#)

This interface is used to query all potential CTPs in a TP by TP name.

- [getContainedPotentialTPNames](#)

This interface is used to query the names of all potential CTPs in a TP by TP name.

- [getContainedInUseTPs](#)

This interface is used to query all potential in-use CTPs in a TP by TP name.

- [getContainedInUseTPNames](#)

This interface is used to query names of InUse ports in a TP by TP name.

- [getContainedCurrentTPs](#)

This interface is used to query CTPs used or to be used by cross-connections in a TP by TP name.

- [getContainedCurrentTPNames](#)

This interface is used to query names of CTPs used or to be used by cross-connections in a TP by TP name.

- [getContainingTPs](#)

This interface is used to query information about TPs that contain a CTP by CTP name.

- [getContainingTPNames](#)  
This interface is used to query names of TPs that contain a CTP by CTP name.
- [getAllCrossConnections](#)  
This interface is used to query cross-connections on an NE by NE name.
- [getNEStaticInfo](#)  
This interface is used to query static information about an NE by NE name.
- [getFTPMembers](#)  
This interface is used to query member information about an FTP by FTP name.
- [getAvailableTimeSlot](#)  
This interface is used to query available timeslot about an PTP by PTP name.

**Parent topic:** [Interface Model](#)

## 9.4.4.1 getAllManagedElements

---

This interface is used to query details about all NEs on the U2000.

### Definition

```
void getAllManagedElements(
    in unsigned long how_many,
    out managedElement::ManagedElementList_T meList,
    out managedElement::ManagedElementIterator_I meIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query the details about all NEs on the U2000.

### Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the quantity of NEs that are returned for the first time.  Do not query details about more than 100 NEs at a time.	unsigned long

Parameter	Input/Output	Description	Value
meList	Output	Indicates the returned NE list. For the element model, see: managedElement::ManagedElement_T.	managedElement::ManagedElementList_T
meIt	Output	Indicates the iterator.	managedElement::ManagedElementIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

Do not query details about more than 100 NEs at a time.

Querying details about idle optical NEs is not supported, and querying details about virtual NEs can be enabled. This interface is a best-effort-mode interface.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.4.2 getAllManagedElementNames

---

This interface is used to query the names of all NEs on the U2000.

### Definition

```
void getAllManagedElementNames (
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query the names of all NEs on the U2000.

## Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the maximum number of NEs that are returned for the first time.	unsigned long
nameList	Output	Indicates the returned NE list.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

The restriction on getAllManagedElementNames is the same as that on getAllManagedElements.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.4.3 getContainingSubnetworkNames

---

This interface is used to query subnets that contain NEs by NE name.

### Definition

```
void getContainingSubnetworkNames (
    in globaldefs::NamingAttributes_T managedElementName,
    out globaldefs::NamingAttributesList_T subnetNames)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query the names of the subnets that contain NEs.

## Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	Indicates the NE name that you want to query.	globaldefs::NamingAttributes_T
subnetNames	Output	Indicates the names of subnets that contain NEs.	globaldefs::NamingAttributesList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.4 getAllPTPs

---

This interface is used to query all PTPs on an NE by NE name.

### Definition

```
void getAllPTPs(  
    in globaldefs::NamingAttributes_T managedElementName,  
    in transmissionParameters::LayerRateList_T tpLayerRateList,
```

```

in transmissionParameters::LayerRateList_T connectionLayerRateList,
in unsigned long how_many,
out terminationPoint::TerminationPointList_T tpList,
out terminationPoint::TerminationPointIterator_I tpIt)
raises(globaldefs::ProcessingFailureException);

```

## Function

Query the PTPs that a specific NE contains and that meet the requirement.

## Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	Indicates an NE name that you want to query.	globaldefs::NamingAttributesList_T
tpLayerRateList	Input	Indicates the layer rate filtering conditions.	transmissionParameters::LayerRateList_T
connectionLayerRateList	Input	Indicates conditions for filtering connection layer rates.	transmissionParameters ::LayerRateList_T
how_many	Input	Indicates the maximum number of PTPs that are returned for the first time.	unsigned long
tpList	Output	Indicates the returned details of the PTPs.	terminationPoint::TerminationPointList_T For the element model, see terminationPoint::TerminationPoint_T.
tpIt	Output	Indicates the iterator	terminationPoint::TerminationPointIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that there are too many iterators.

## Restrictions

If both tpLayerRateList and connectionLayerRateList are blank, all the PTPs of the NE are returned; if only one of the two parameters is set, all the PTPs that meet the requirement are returned.

Here, connectionLayerRateList refers to all the connection layer rates that the PTP may support, and it is not related to the current usage of the CTP in the PTP.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.5 getAllPTPNames

---

This interface is used to query names of the desired PTPs on an NE.

### Definition

```
void getAllPTPNames(
    in globaldefs::NamingAttributes_T managedElementName,
    in transmissionParameters::LayerRateList_T tpLayerRateList,
    in transmissionParameters::LayerRateList_T connectionLayerRateList,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of the desired PTPs on an NE.

### Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	Indicates the NE name that you want to query.	globaldefs::NamingAttributesList_T
tpLayerRateList	Input	Indicates the conditions for filtering layer rates.	transmissionParameters::LayerRateList_T
connectionLayerRateList	Input	Indicates conditions for filtering connection layer rates.	transmissionParameters::LayerRateList_T
how_many	Input	Indicates the maximum number of PTPs that are returned for the first time.	unsigned long
nameList	Output	Indicates the returned list of PTP names.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

If both tpLayerRateList and connectionLayerRateList are blank, all the PTPs of the NE are returned; if only one of the two parameters is set, all the PTPs that meet the requirement are returned.

Here, connectionLayerRateList refers to all the connection layer rates that the PTP may support, and it is not related to the current usage of the CTP in the PTP.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.6 getTP

---

This interface is used to query details of a physical or logical TP by TP name.

### Definition

```
void getTP(  
    in globaldefs::NamingAttributes_T tpName,  
    out terminationPoint::TerminationPoint_T tp)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of a TP by TP name. This interface also supports queries of a FTP object by name.

### Parameters

Parameter	Input/Output	Description	Value
tpName	Input	Indicates a TP name that you want to query.	globaldefs::NamingAttributesList_T
tp	Output	Indicates returned TP details.	terminationPoint::TerminationPoint_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

Abnormal Value	Description
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INVALID_INPUT	Indicates an invalid input.

## Restrictions

There is no restriction.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.4.7 getManagedElement

---

This interface is used to query details of an NE by NE name.

### Definition

```
void getManagedElement(
    in globaldefs::NamingAttributes_T managedElementName,
    out managedElement::ManagedElement_T me)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of an NE by NE name.

### Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	Indicates an NE name that you want to query.	globaldefs::NamingAttributesList_T
me	Output	Indicates returned NE details.	managedElement::ManagedElement_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INVALID_INPUT	Indicates an invalid input.

## Restrictions

There is no are striction.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.4.8 getContainedPotentialTPs

---

This interface is used to query all potential CTPs in a TP by TP name.

### Definition

```
void getContainedPotentialTPs(
    in globaldefs::NamingAttributes_T tpName,
    in transmissionParameters::LayerRateList_T layerRateList,
    in unsigned long how_many,
    out terminationPoint::TerminationPointList_T tpList,
    out terminationPoint::TerminationPointIterator_I tpIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query all potential CTPs in a TP by TP name.

Note: PotentialTP refers to all CTPs regardless of their usage and connection status. For SDH, PotentialTP refers to all VC4/VC3/VC12 CTPs of the 3/7/3 multiplex relationship. For WDM, PotentialTP refers to all CTPs that are established by the CORBA interface according to the current port model of the U2000.

### Parameters

Parameter	Input/Output	Description	Value
tpName	Input	Indicates a TP name that you want to query.	globaldefs::NamingAttributesList_T
LayerRateList	Input	Indicates the conditions for filtering layer rates.	transmissionParameters::LayerRateList_T
how_many	Input	Indicates the data volume that is returned for the first time.	unsigned long
tpList	Output	Indicates the list of TPs that are returned for the first time.	terminationPoint::TerminationPointList_T For the element model, see terminationPoint::TerminationPoint_T.
tpIt	Output	Iterator	terminationPoint::TerminationPointIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INVALID_INPUT	Indicates the invalid input.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

WDM CTPs are not supported.

SDH VC3 and VC12 CTPs do not belong to each other.

**Parent topic:** [ManagedElementMgr](#)

## 9.4.4.9 getContainedPotentialTPNames

---

This interface is used query the names of all potential CTPs in a TP by TP name.

### Definition

```
void getContainedPotentialTPNames(  
    in globaldefs::NamingAttributes_T tpName,  
    in transmissionParameters::LayerRateList_T layerRateList,  
    in unsigned long how_many,  
    out globaldefs::NamingAttributesList_T nameList,  
    out globaldefs::NamingAttributesIterator_I nameIt)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query the names of all potential CTPs in a TP by TP name.

### Parameters

Parameter	Input/Output	Description	Value
tpName	Input	Indicates a TP name that you want to query.	globaldefs::NamingAttributesList_T
LayerRateList	Input	Indicates the conditions for filtering layer rates.	transmissionParameters::LayerRateList_T
how_many	Input	Indicates the maximum number of TPs that are returned for the first time.	unsigned long
nameList	Output	Indicates the returned list of TP names.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator	globaldefs::NamingAttributesIterator_I

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

The restriction on getContainedPotentialTPNames is the same as that on getContainedPotentialTPs.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.10 getContainedInUseTPs

---

This interface is used to query all potential in-use CTPs in a TP by TP name.

### Definition

```
void getContainedInUseTPs(
    in globaldefs::NamingAttributes_T tpName,
    in transmissionParameters::LayerRateList_T layerRateList,
    in unsigned long how_many,
    out terminationPoint::TerminationPointList_T tpList,
    out terminationPoint::TerminationPointIterator_I tpIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query all potential in-use CTPs in a TP by TP name.

Note: In-use CTPs refer to the CTPs being terminated, mapped, or used by cross-connections.

### Parameters

Parameter	Input/Output	Description	Value
tpName	Input	Indicates a TP name that you want to query.	globaldefs::NamingAttributesList_T
LayerRateList	Input	Indicates the conditions for filtering layer rates.	transmissionParameters::LayerRateList_T
how_many	Input	Indicates the maximum number of PTPs that are returned for the first time.	unsigned long
tpList	Output	Indicates the returned TP list. For the element model, see terminationPoint::TerminationPointList_T.	terminationPoint::TerminationPointList_T For the element model, see terminationPoint::TerminationPoint_T.
tpIt	Output	Indicates an iterator.	terminationPoint::TerminationPointIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

WDM CTPs are not supported.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.11 getContainedInUseTPNames

---

This interface is used to query names of InUse ports in a TP by TP name.

### Definition

```
void getContainedInUseTPNames(
    in globaldefs::NamingAttributes_T tpName,
    in transmissionParameters::LayerRateList_T layerRateList,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of InUse ports in a TP by TP name.

Note: In-use CTPs refer to the CTPs being terminated, mapped, or used by cross-connections.

### Parameters

Parameter	Input/Output	Description	Value
tpName	Input	Indicates a TP name that you want to query.	globaldefs::NamingAttributesList_T
LayerRateList	Input	Indicates conditions for filtering layer rates.	transmissionParameters::LayerRateList_T
how_many	Input	Indicates the maximum number of PTPs that are returned for the first time.	unsigned long
nameList	Output	Indicates the returned list of TP names.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates the invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

This interface is not applicable to a WDM CTP.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.4.12 getContainedCurrentTPs

---

This interface is used to query CTPs used or to be used by cross-connections in a TP by TP name.

### Definition

```
void getContainedCurrentTPs(
    in globaldefs::NamingAttributes_T tpName,
    in transmissionParameters::LayerRateList_T layerRateList,
    in unsigned long how_many,
    out terminationPoint::TerminationPointList_T tpList,
    out terminationPoint::TerminationPointIterator_I tpIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query Current CTPs in a TP by TP name.

Note: A Current CTP is a TP that has been used by a cross-connection or can be used by two cross-connections.

### Parameters

Parameter	Input/Output	Description	Value
tpName	Input	Indicates a TP name that you want to query.	globaldefs::NamingAttributesList_T
LayerRateList	Input	Indicates conditions for filtering layer rates.	transmissionParameters::LayerRateList_T
how_many	Input	Indicates the maximum number of PTPs that are returned for the first time.	unsigned long
tpList	Output	Indicates the TP list. For the element model, see terminationPoint::TerminationPoint_T.	terminationPoint::TerminationPointList_T
tpIt	Output	Iterator	terminationPoint::TerminationPointIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

WDM CTPs and WDM FTPs are not supported.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.13 getContainedCurrentTPNames

---

This interface is used to query names of CTPs used or to be used by cross-connections in a TP by TP name.

### Definition

```
void getContainedCurrentTPNames(
    in globaldefs::NamingAttributes_T tpName,
    in transmissionParameters::LayerRateList_T layerRateList,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of Current CTPs in a TP by TP name.

### Parameters

Parameter	Input/Output	Description	Value
tpName	Input	Indicates a TP name that you want to query.	globaldefs::NamingAttributesList_T
LayerRateList	Input	Indicates layer rate filtering conditions.	transmissionParameters::LayerRateList_T
how_many	Input	Indicates the maximum number of PTPs that is returned for the first time	unsigned long
nameList	Output	Indicatesthe returned list of CTP names.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates the invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

WDM CTPs and WDM FTPs are not supported.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.4.14 getContainingTPs

---

This interface is used to query information about TPs that contain a CTP by CTP name.

### Definition

```
void getContainingTPs(
    in globaldefs::NamingAttributes_T tpName,
    out terminationPoint::TerminationPointList_T tpList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about TPs that contain a CTP by CTP name.

### Parameters

Parameter	Input/Output	Description	Value
tpName	Input	Indicates a CTP name that you want to query.	globaldefs::NamingAttributes_T
tpList	Output	Indicates the list of TPs that	terminationPoint::TerminationPointList_T

Parameter	Input/Output	Description	Value
		contain the CTP specified by tpName.	For the element model, see terminationPoint::TerminationPoint_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.15 getContainingTPNames

---

This interface is used to query names of TPs that contain a CTP by CTP name.

### Definition

```
void getContainingTPNames(
in globaldefs::NamingAttributes_T tpName,
out globaldefs::NamingAttributesList_T tpNameList)
raises(globaldefs::ProcessingFailureException);
```

### Function

Query the names of TPs that contain a CTP by CTP name.

### Parameters

Parameter	Input/Output	Description	Value
tpName	Input	Indicates the name of the CTP that you want to query.	globaldefs::NamingAttributes_T
tpNameList	Output	Indicates the name list of the TPs that contain the object specified by tpName.	globaldefs::NamingAttributesList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is not restriction.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.16 getAllCrossConnections

---

This interface is used to query cross-connections on an NE by NE name.

### Definition

```
void getAllCrossConnections(
in globaldefs::NamingAttributes_T managedElementName,
in transmissionParameters::LayerRateList_T connectionRateList,
in unsigned long how_many,
out subnetworkConnection::CrossConnectList_T ccList,
out subnetworkConnection::CCIIterator_I ccIt)
raises(globaldefs::ProcessingFailureException);
```

## Function

Query cross-connections of an NE, including static and dynamic cross-connections on SDH, WDM, and OTN trails.

The levels of supported cross-connections are as follows:

VC12, VC3, VC4, 4C, 8C, 16C, 64C, OCH, client (including GE and FC), OMS, OS (corresponding to free cross-connections on the U2000), ODU0, ODU1, ODU2, ODU3, ODU4, ODU5G, OTU1, OTU2, OTU3, OTU5G and 64k

## Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	Indicates an NE name.	globaldefs::NamingAttributes_T
connectionRateList	Input	Indicates the list of rate levels for cross-connections that you want to query. The TMF recommends that this parameter should not be blank.	transmissionParameter::LayerRateList_Ts
how_many	Input	Indicates the maximum quantity of the data that is returned for the first time.	unsigned long
ccList	Output	Indicates the returned list of cross-connections.	subnetworkConnection::CrossConnectList_T For the element model, see subnetworkConnection::CrossConnect_T.
ccIt	Output	Indicates the iterator.	subnetworkConnection::CCIIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

The following cross-connections can be queried:

Cross-connections with levels that are not contained in the function list.

cross-connections of a unidirectional OUT board.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.4.17 getNEStaticInfo

---

This interface is used to query static information about an NE by NE name.

### Definition

```
void getNEStaticInfo(
    in globaldefs::NamingAttributes_T managedElementName,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T staticInfoList,
    out globaldefs::NamingAttributesIterator_I staticInfoIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query static information about an NE.

The format of the values of the elements in staticInfoList is as follows:{name NE ID value field supported by the NE}

The values of the fields supported by the NE are as follows:

domain\_sdh = true

domain\_sonet = true

domain\_wdm = true  
 domain\_rtn = true  
 domain\_ptn = true  
 domain\_other = true

## Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	Indicates an NE name that you want to query.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the maximum quantity of the data that is returned for the first time.	unsigned long
staticInfoList	Output	Indicates the returned static information.	globaldefs::NamingAttributesList_T
staticInfoIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

A subrack whose control board must belong to an optical NE cannot be queried.

The managedElementName parameter cannot be blank.

Optical NEs belong to only the WDM field.

SDH NEs or multi-type NEs can support multiple fields. The field that SDH NEs or multi-type NEs belong to is static data, such as domain\_sdh = true, domain\_sonet = true, domain\_wdm = true, and domain\_other = true.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.4.18 getFTPMembers

---

This interface is used to query member information about an FTP by FTP name.

### Definition

```
void getFTPMembers(
    in globaldefs::NamingAttributes_T ftpName,
    out subnetworkConnection::TPDataList_T tpList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query member information about a specified FTP.

### Parameters

Parameter	Input/Output	Description	Value
ftpName	Input	Name of the FTP to be queried	globaldefs::NamingAttributes_T
tpList	Output	Member information of FTP	subnetworkConnection::TPDataList_T For the element model, see: subnetworkConnection::TPData_T.

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.

Abnormal Value	Description
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.4.19 getAvailableTimeSlot

---

This interface is used to query available timeslot about an PTP by PTP name.

### Definition

```
void getAvailableTimeSlot(
    in globaldefs::NamingAttributes_T tpName,
    out string timeslot)
    raises(globaldefs::ProcessingFailureException);
```

### Function

query available timeslot about an PTP by PTP name.

### Parameters

Parameter	Input/Output	Description	Value
tpName	Input	the name of the PTP	globaldefs::NamingAttributes_T
timeslot	Output	the remaining available timeslots	string

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [ManagedElementMgr\\_I](#)

## 9.4.4.5 MultiLayerSubnetworkMgr\_I

---

This interface is used to manage subnets.

Instruction:

You can query and manage customer information of trails through NBIs and maintain the customer information based on needs. During the application and maintenance of trail customer information, personal data will be used. Therefore, you must comply with the laws of the applicable countries or Huawei user privacy policies and take necessary measures to fully protect personal data against leakage.

- [getAllManagedElements](#)

This interface is used to query details of all NE objects in a specified subnet.

- [getAllManagedElementNames](#)

This interface is used to query the names of all NE objects in a specified subnet.

- [getMultiLayerSubnetwork](#)

This interface is used to query information about a subnet by subnet name.

- [getAllTopologicalLinks](#)

This interface is used to query details of topological links between NEs in a subnet by subnet name.

- [getAllTopologicalLinkNames](#)

This interface is used to query names of topological links between NEs in a subnet by subnet name.

- [getAllInternalTopologicalLinks](#)

This interface is used to query information about topological links in an NE by NE name.

- [getAllInternalTopologicalLinkNames](#)  
This interface is used query names of all topological links in an NE by NE name.
- [getTopologicalLink](#)  
This interface is used to query information about a topological link by its name.
- [getAllEdgePoints](#)  
This interface is used to query information about all edge points in a subnet by subnet name.
- [getAllEdgePointNames](#)  
This interface is used to query names of all edge points in a subnet by subnet name.
- [getAllSubnetworkConnections](#)  
This interface is used to query all subnet connections in a subnet.
- [getAllSubnetworkConnectionNames](#)  
This interface is used to query names of all subnet connections in a specific subnet.
- [getAllSubnetworkConnectionsWithTP](#)  
This interface is used to query details about all SNCsrelated to a TP by TP name.
- [getAllSubnetworkConnectionNamesWithTP](#)  
This interface is used to query names of SNCs related to a TP by TP name.
- [getRoute](#)  
This interface is used to query routing information about an SNC.
- [getSNC](#)  
This interface is used to query details of subnetwork connections (SNCs) by SNC name.
- [getSNCsByUserLabel](#)  
This interface is used to query information about subnetwork connections (SNCs) by user label.
- [getSNCsByEndObjectName](#)  
This interface is used to query subnetwork connection (SNC) details by source and sink names.
- [getRouteAndTopologicalLinks](#)  
This interface is used to query information about routes and topological links in an SNC by SNC name.
- [getWaveLengthStatusByEndObject](#)  
This interface is used to collect the statistics on the reachable resources of a WDM wavelength.
- [getOrginalRoute](#)  
This interface is used to query information about the source route of an ASON SNC by ASON SNC name.
- [getAllSNCNamesWithHigherOrderSNC](#)  
This interface is used to query all trail names of client-side based on the name of server trails and supports filtering the information according to the later rate.

- [getPresetRoute](#)  
This interface is used to query the information about specified preset restoration trails for the ASON SNC.
- [getSNCNamesByRouteModificationTime](#)  
This interface query all of the trails according the route modification time.
- [getRouteAndTopologicalLinksBySNCs](#)  
This interface is used to query information about routes and topological links in multiple SNCs by their name.
- [getAllMicrowaveLinksReport](#)  
This interface is used to query network-wide microwave links and save them to the specified server.
- [getAllConjunctionSNCs](#)  
This interface is used to query all associated OTN ASON trails.
- [getConjunctionSNC](#)  
This interface is used to query associated trails of a specified ONT ASON trail.
- [getSharedRoute](#)  
This interface is used to query the routing information of the shared restoration trail of a specified ASON SNC.
- [getOrginalPresetRoute](#)  
This interface is used to query the routing information of the original preset restoration trail of a specified ASON SNC.
- [getServerConnections](#)  
This interface is used to query the corresponding server trails (including ASON trails) of client trails (EPL/EVPL/EPLAN).

**Parent topic:** [Interface Model](#)

## 9.4.4.5.1 getAllManagedElements

---

This interface is used to query details of all NE objects in a specified subnet.

### Definition

```
void getAllManagedElements(
  in globaldefs::NamingAttributes_T subnetName,
  in unsigned long how_many,
  out managedElement::ManagedElementList_T meList,
  out managedElement::ManagedElementIterator_I meIt)
```

```
raises(globaldefs::ProcessingFailureException);
```

## Function

Query details of all NE objects in a specified subnet.

## Parameters

Parameter	Input/Output	Description	Value
subnetName	Input	Indicates the subnet name.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the quantity of NEs that are returned for the first time. Do not query details about more than 100 NEs at a time.	unsigned long
meList	Output	Indicates the returned NE list.	managedElement::ManagedElementList_T For the element model, see: managedElement::ManagedElement_T.
meIt	Output	Indicates the iterator.	managedElement::ManagedElementIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

Do not query details about more than 100 NEs at a time.

Querying details about idle optical NEs is not supported, and querying details about virtual NEs can be enabled. This interface is a best-effort-mode interface.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.2 getAllManagedElementNames

---

This interface is used to query the names of all NE objects in a specified subnet.

### Definition

```
void getAllManagedElementNames (
    in globaldefs::NamingAttributes_T subnetName,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query the names of all NE objects in a specified subnet.

### Parameters

Parameter	Input/Output	Description	Value
subnetName	Input	Indicates the subnet name.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the maximum number of NEs that are returned for the first time.	unsigned long
nameList	Output	Indicates the returned NE list.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

The restriction on getAllManagedElementNames is the same as that on getAllManagedElements.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.3 getMultiLayerSubnetwork

---

This interface is used to query information about a subnet by subnet name.

### Definition

```
void getMultiLayerSubnetwork(
    in globaldefs::NamingAttributes_T subnetName,
    out MultiLayerSubnetwork_T subnetwork)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about a subnet by subnet name.

### Parameters

Parameter	Input/Output	Description	Value
subnetName	Input	Indicates the subnet name.	globaldefs::NamingAttributes_T
subnetwork	Output	Indicates the subnet information.	MultiLayerSubnetwork_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.4 getAllTopologicalLinks

---

This interface is used to query details of topological links between NEs in a subnet by subnet name.

### Definition

```
void getAllTopologicalLinks(
    in globaldefs::NamingAttributes_T subnetName,
    in unsigned long how_many,
    out topologicalLink::TopologicalLinkList_T topoList,
    out topologicalLink::TopologicalLinkIterator_I topoIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query topological links between NEs in a subnet.

### Parameters

Parameter	Input/Output	Description	Value
subnetName	Input	Indicates the subnet name.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the maximum quantity of the	unsigned long

Parameter	Input/Output	Description	Value
		data that is returned for the first time.	
topoList	Output	Indicates the returned list of topological links. For the element model, see <code>topologicalLink::TopologicalLink_T</code> .	<code>topologicalLink::TopologicalLinkList_T</code> For the element model, see <code>topologicalLink::TopologicalLink_T</code> .
topoIt	Output	Indicates the iterator	<code>topologicalLink::TopologicalLinkIterator_I</code>

## Abnormal Values

Abnormal Value	Description
<code>EXCPT_INVALID_INPUT</code>	Indicates an invalid input.
<code>EXCPT_ENTITY_NOT_FOUND</code>	Indicates that the input object does not exist.
<code>EXCPT_INTERNAL_ERROR</code>	Indicates an internal EMS error.
<code>EXCPT_TOO_MANY_OPEN_ITERATORS</code>	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

The information about internal topological links (fiber connections) to an optical NE is not returned.

**Parent topic:** [MultiLayerSubnetworkMgr](#)

## 9.4.4.5.5 getAllTopologicalLinkNames

---

This interface is used query names of topological links between NEs in a subnet by subnet name.

### Definition

```
void getAllTopologicalLinkNames(
in globaldefs::NamingAttributes_T subnetName,
```

```

in unsigned long how_many,
out globaldefs::NamingAttributesList_T nameList,
out globaldefs::NamingAttributesIterator_I nameIt)
raises(globaldefs::ProcessingFailureException);

```

## Function

Query the names of topological links between NEs in a subnet.

## Parameters

Parameter	Input/Output	Description	Value
subnetName	Input	Indicates the subnet name	globaldefs::NamingAttributes_T
how_many	Input	Indicates the maximum quantity of the data that is returned for the first time.	unsigned long
nameList	Output	Indicates the list of topological links' names.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

The information about internal topological links (fiber connections) to an optical NE is not returned.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.6 getAllInternalTopologicalLinks

---

This interface is used to query information about topological links in an NE by NE name.

### Definition

```
void getAllInternalTopologicalLinks(
    in globaldefs::NamingAttributes_T meName,
    in unsigned long how_many,
    out topologicalLink::TopologicalLinkList_T topoList,
    out topologicalLink::TopologicalLinkIterator_I topoIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about topological links in an NE.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	Indicates the NE name.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the maximum quantity of data that is returned for the first time.	unsigned long
topoList	Output	Indicates the list of topological links.	topologicalLink::TopologicalLinkList_T For the element model, see topologicalLink::TopologicalLink_T.
topoIt	Output	Indicates the iterator.	topologicalLink::TopologicalLinkIterator_I

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.7 getAllInternalTopologicalLinkNames

---

This interface is used query names of all topological links in an NE by NE name.

### Definition

```
void getAllInternalTopologicalLinkNames(
    in globaldefs::NamingAttributes_T meName,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of all topological links in an NE by NE name.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	Indicates the NE name	globaldefs::NamingAttributes_T
how_many	Input	Indicates the maximum quantity	unsigned long

Parameter	Input/Output	Description	Value
		of the data that is returned for the first time.	
nameList	Output	Indicates the names list of topological links.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

The information about the internal topological links (fiber connections) of an optical NE is not returned.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.8 getTopologicalLink

---

This interface is used to query information about a topological link by its name.

### Definition

```
void getTopologicalLink(
    in globaldefs::NamingAttributes_T topoLinkName,
```

```

out topologicalLink::TopologicalLink_T topoLink)
raises(globaldefs::ProcessingFailureException);

```

## Function

Query information about a topological link by its name.

## Parameters

Parameter	Input/Output	Description	Value
topoLinkName	Input	Indicates the topological link name.	globaldefs::NamingAttributes_T
topoLink	Output	Indicates the information about the topological link.	topologicalLink::TopologicalLink_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.9 getAllEdgePoints

---

This interface is used to query information about all edge points in a subnet by subnet name.

## Definition

```

void getAllEdgePoints(
in globaldefs::NamingAttributes_T subnetName,
in transmissionParameters::LayerRateList_T tpLayerRateList,
in transmissionParameters::LayerRateList_T connectionLayerRateList,
in unsigned long how_many,
out terminationPoint::TerminationPointList_T tpList,
out terminationPoint::TerminationPointIterator_I tpIt)
raises(globaldefs::ProcessingFailureException);

```

## Function

Query information about all edge points in a subnet.

An SDH tributary port is an edge point.

An SDH line port and a WDM port that are not connected to fibers are edge points.

An SDH line port and a WDM port that are connected to fibers are not edge points.

An FTP port is not an edge point.

## Parameters

Parameter	Input/Output	Description	Value
subnetName	Input	Indicates the subnet name.	globaldefs::NamingAttributes_T
tpLayerRateList	Input	Indicates the conditions for filtering layer rates.	transmissionParameters::LayerRateList_T
connectionLayerRateList	Input	Indicates the supported connection layer rates as filtering conditions.	transmissionParameters::LayerRateList_T
how_many	Input	Indicates the maximum number of PTPs that are returned for the first time	unsigned long
tpList	Output	Indicates the list of edge points. For the element model, see terminationPoint::TerminationPoint_T.	terminationPoint::TerminationPointList_T

Parameter	Input/Output	Description	Value
tpIt	Output	Indicates the iterator	terminationPoint::TerminationPointIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

If both tpLayerRateList and connectionLayerRateList are blank, all PTPs of an NE are returned; if only one of the two parameters is set, all PTPs that meet the requirement are returned.

Here, connectionLayerRateList refers to all the connection layer rates that the PTP may support, and it is not related to the current usage of the CTP in the PTP.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.10 getAllEdgePointNames

---

This interface is used to query names of all edge points in a subnet by subnet name.

### Definition

```
void getAllEdgePointNames(
    in globaldefs::NamingAttributes_T subnetName,
    in transmissionParameters::LayerRateList_T layerRateList,
    in transmissionParameters::LayerRateList_T connectionLayerRateList,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query names of all edge points in a subnet by subnet name.

## Parameters

Parameter	Input/Output	Description	Value
subnetName	Input	Subnet name	globaldefs::NamingAttributes_T
tpLayerRateList	Input	Indicates the layer rate filtering conditions.	transmissionParameters::LayerRateList_T
connectionLayerRateList	Input	Indicates the supported connection layer rates as filtering conditions.	transmissionParameters::LayerRateList_T
how_many	Input	Indicates the maximum number of PTPs that are returned for the first time	unsigned long
nameList	Output	List of the names of the edge points.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

Abnormal Value	Description
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

If both tpLayerRateList and connectionLayerRateList are blank, all the PTPs of the NE are returned; if only one of the two parameters is set, all the PTPs that meet the requirement are returned.

Here, connectionLayerRateList refers to all the connection layer rates that the PTP may support, and it is not related to the current usage of the CTP in the PTP.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.11 getAllSubnetworkConnections

---

This interface is used to query all subnet connections in a subnet.

### Definition

```
void getAllSubnetworkConnections(
    in globaldefs::NamingAttributes_T subnetName,
    in transmissionParameters::LayerRateList_T connectionRateList,
    in unsigned long how_many,
    out subnetworkConnection::SubnetworkConnectionList_T sncList,
    out subnetworkConnection::SNCIterator_I sncIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query tall subnet connections in a subnet.

The SDH supports E1 (VC12), E3 (VC3), E4 (VC4), VC4 (VC4 server), 4C, 8C, 16C, and 64C.

The WDM supports OCH, OCH client, ODU, and OTU.

### Parameters

Parameter	Input/Output	Description	Value
subnetName	Input	Indicates the subnet name.	globaldefs::NamingAttributes_T
connectionLayerRateList	Input	Indicates the supported connection layer rates as filtering conditions.	transmissionParameters::LayerRateList_T
how_many	Input	Indicates the maximum number of PTPs that is returned for the first time	unsigned long
sncList	Output	Indicates the list of the subnet connections.	subnetworkConnection::SubnetworkConnectionList_T For the element model, see subnetworkConnection::SubnetworkConnection_T.
sncIt	Output	Indicates the iterator.	subnetworkConnection::SNCIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

Some tpMappingMode values of the source and sink ends of subnet connections that are obtained through this interface is incorrect. For correct tpMappingMode values, see those that are obtained through the getSNC interface. In a distributed scenario, the value range of how\_many is [0,5000].

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.12 getAllSubnetworkConnectionNames

---

This interface is used to query names of all subnet connections in a specific subnet.

### Definition

```
void getAllSubnetworkConnectionNames(
    in globaldefs::NamingAttributes_T subnetName,
    in transmissionParameters::LayerRateList_T connectionRateList,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query the names of all subnet connections in a specific subnet.

### Parameters

Parameter	Input/Output	Description	Value
subnetName	Input	Indicates the subnet name.	globaldefs::NamingAttributes_T
connectionLayerRateList	Input	Indicates the connection layer rates as filtering conditions supported by the PTP.	transmissionParameters::LayerRateList_T
how_many	Input	Indicates the maximum quantity of the data that it	unsigned long

Parameter	Input/Output	Description	Value
		returned for the first time.	
nameList	Output	Indicates the SNC name list	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.13 getAllSubnetworkConnectionsWithTP

---

This interface is used to query details about all SNCsrelated to a TP by TP name.

### Definition

```
void getAllSubnetworkConnectionsWithTP(
in globaldefs::NamingAttributes_T tpName,
in transmissionParameters::LayerRateList_T connectionRateList,
in unsigned long how_many,
```

```

out subnetworkConnection::SubnetworkConnectionList_T sncList,
out subnetworkConnection::SNCIterator_I sncIt)
raises(globaldefs::ProcessingFailureException);

```

## Function

Query information about all SNCs related to a TP by TP name.

## Parameters

Parameter	Input/Output	Description	Value
tpName	Input	Indicates a TP name that you want to query.	globaldefs::NamingAttributes_T
connectionLayerRateList	Input	Indicates the list of queried SNC rate levels. If the parameter value is blank, it indicates that all rate levels are queried.	transmissionParameters::LayerRateList_T
how_many	Input	Indicates the maximum quantity of the data that is returned for the first time.	unsigned long
sncList	Output	Indicates the list of the SNCs.	subnetworkConnection::SubnetworkConnectionList_T For the element model, see subnetworkConnection::SubnetworkConnection_T.
sncIt	Output	Indicates the iterator.	subnetworkConnection::SNCIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.14 getAllSubnetworkConnectionNamesWithTP

---

This interface is used to query names of SNCs related to a TP by TP name.

### Definition

```
void getAllSubnetworkConnectionNamesWithTP(
    in globaldefs::NamingAttributes_T tpName,
    in transmissionParameters::LayerRateList_T connectionRateList,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

This interface is used to query names of all subnet connections (SNCs) that is carried on a termination point (TP)by TP name.

### Parameters

Parameter	Input/Output	Description	Value
tpName	Input	A TP name that you want to query.	globaldefs::NamingAttributesList_T
connectionRateList	Input	List of the levels of the SNC rate that you want to query. If the value is blank, the SNC rates of all the levels are queried.	transmissionParameters::LayerRateList_T
how_many	Input	Maximum quantity of SNCs that are returned for the first time.	unsigned long
nameList	Output	SNC name list	globaldefs::NamingAttributesList_T
nameIt	Output	Iterator	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr I](#)

## 9.4.4.5.15 getRoute

---

This interface is used to query routing information about an SNC.

## Definition

```
void getRoute(  
    in globaldefs::NamingAttributes_T sncName,  
    in boolean includeHigherOrderCCs,  
    out subnetworkConnection::Route_T route)  
raises(globaldefs::ProcessingFailureException);
```

## Function

Query routing information about an SNC.

## Parameters

Parameter	Input/Output	Description	Value
sncName	Input	An NE name that you want to query.	globaldefs::NamingAttributes_T
includeHigherOrderCCs	Input	Whether to query the routes of the server trail	boolean
route	Output	List of routes connected to the subnet.	subnetworkConnection::Route_T For the element model, see subnetworkConnection::CrossConnect_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

If the input trail is a client trail but the server trail does not have a route (such as the VC4 server trail between two points), the abnormal value is the same regardless of whether the value is includeHigherOrderCCs is false or true.

In the case of the OTN trail, the routes of all server trails are returned if the value of includeHigherOrderCCs is true.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.16 getSNC

---

This interface is used to query details of subnetwork connections (SNCs) by SNC name.

### Definition

```
void getSNC(  
    in globaldefs::NamingAttributes_T sncName,  
    out subnetworkConnection::SubnetworkConnection_T snc)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of SNCs by SNC name.

### Parameters

Parameter	Input/Output	Description	Value
sncName	Input	SNC name	globaldefs::NamingAttributes_T
snc	Input	SNC information	subnetworkConnection::SubnetworkConnection_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

### Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.17 getSNCsByUserLabel

---

This interface is used to query information about subnetwork connections (SNCs) by user label.

### Definition

```
void getSNCsByUserLabel(  
    in string userLabel,  
    out subnetworkConnection::SubnetworkConnectionList_T sncList)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about SNCs by user label.

### Parameters

Parameter	Input/Output	Description	Value
userLabel	Input	Label	globaldefs::NamingAttributesList_T
sncList	Output	SNC list	subnetworkConnection::SubnetworkConnectionList_T For the element model, see subnetworkConnection::SubnetworkConnection_T.

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

### Restrictions

The userLabel parameter does not support wildcards.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.18 getSNCsByEndObjectName

---

This interface is used to query subnetwork connection (SNC) details by source and sink names.

### Definition

```
void getSNCsByEndObjectName(  
    in globaldefs::NamingAttributes_T aEndObjectName,  
    in globaldefs::NamingAttributes_T zEndObjectName,  
    in transmissionParameters::LayerRateList_T connectionRateList,  
    out subnetworkConnection::SubnetworkConnectionList_T sncList)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query SNC details by source and sink names.

### Parameters

Parameter	Input/Output	Description	Value
aEndObjectName	Input	Indicates the object name of the source.	globaldefs::NamingAttributes_T
zEndObjectName	Input	Indicates the object name of the sink.	globaldefs::NamingAttributes_T
connectionRateList	Input	Indicates the list of SNC layer rates. All layer rates will be returned if this parameter is left blank.	transmissionParameters::LayerRateList_T
sncList	Output	Indicates the SNC list.	For the element model, see subnetworkConnection::SubnetworkConnection_T.

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_NOT_IMPLEMENTED	Indicates that the operation is not supported on the U2000.

## Restrictions

aEndObjectName and zEndObjectName cannot be left blank and they can be MEs, PTPs, and CTPs.

This interface is used to query only SDH and traditional WDM trails.

**Parent topic:** [MultiLayerSubnetworkMgr](#) |

## 9.4.4.5.19 getRouteAndTopologicalLinks

---

This interface is used to query information about routes and topological links in an SNC by SNC name.

### Definition

```
void getRouteAndTopologicalLinks(
    in globaldefs::NamingAttributes_T sncName,
    out subnetworkConnection::Route_T route,
    out topologicalLink::TopologicalLinkList_T topologicalLinkList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about routes and topological links in an SNC by SNC name.

### Parameters

Parameter	Input/Output	Description	Value
sncName	Input	SNC name	globaldefs::NamingAttributes_T

Parameter	Input/Output	Description	Value
route	Output	Route information	subnetworkConnection::Route_T
topologicalLinkList	Output	Information about the topological links.	topologicalLink::TopologicalLinkList_T For the element model, see topologicalLink::TopologicalLink_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

The userLabel parameter does not support wildcards.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.20 getWaveLengthStatusByEndObject

---

This interface is used to collect the statistics on the reachable resources of a WDM wavelength.

### Definition

```
void getWaveLengthStatusByEndObject(
    in globaldefs::NamingAttributes_T aEndName,
    in globaldefs::NamingAttributesList_T inclusionNameList,
    in globaldefs::NamingAttributesList_T exclusionNameList,
    in globaldefs::NamingAttributes_T zEndName,
    in globaldefs::ConnectionDirection_T direction,
    out subnetworkConnection:: WaveLengthStatusList_T waveLengthStatusList)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Collect the statistics on the reachable resources of a WDM wavelength.

## Parameters

Parameter	Input/Output	Description	Value
aEndName	Input	Indicates the source name.	Only NEs are supported.
inclusionNameList	Input	Indicates the explicit node.	NEs are supported. If this field is left blank, there is no restriction.
exclusionNameList	Input	Indicates the excluded node	This parameter is not supported currently.
zEndName	Input	Indicates the sink name	Only NEs are supported.
direction	Input	Indicates the direction.	1: (CD_BI)bidirectional, that is, from source to sink and from sink to source. 0: (CD_UNI)unidirectional, that is, from source to sink.
waveLengthStatusList	Output	Indicates the wavelength list.	subnetworkConnection::WaveLengthStatusList For the element model, see subnetworkConnection::WaveLengthStatus_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates the invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.21 getOrginalRoute

---

This interface is used to query information about the source route of an ASON SNC by ASON SNC name.

### Definition

```
void getOrginalRoute(  
    in globaldefs::NamingAttributes_T sncName,  
    in boolean includeHigherOrderCCs,  
    out subnetworkConnection::Route_T route)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about the source route of the specified ASON SNC.

### Parameters

Parameter	Input/Output	Description	Value
sncName	Input	Indicates the name of an ASON SNC.	globaldefs::NamingAttributes_T
includeHigherOrderCCs	Input	Specifies whether to query the route of the server trail.	boolean
route	Output	Indicates the route list of the subnet connection. For the element model, see: subnetworkConnection::CrossConnect_T.	subnetworkConnection::Route_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

### Restrictions

If the entered trail is a client trail but its server trail does not have a route, for example, the VC4 server trail between two points, the exception value is same no matter the includeHigherOrderCCs field is set to false or true.

Only the query of the source route information about the SDH ASON SNC is supported. The query of the source route information about the ASON WDM SNC is not supported.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.22 getAllSNCNamesWithHigherOrderSNC

---

This interface is used to query all trail names of client-side based on the name of server trails and supports filtering the information according to the later rate.

### Definition

```
void getAllSNCNamesWithHigherOrderSNC(
    in globaldefs::NamingAttributes_T name,
    in transmissionParameters::LayerRateList_T connectivityRateList,
    out globaldefs::NamingAttributesList_T nameList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query the corresponding routing information based on the service name and filter the information according to the layer rate.

### Parameters

Parameter	Input/Output	Description	Value
name	Input	Indicates the name of the server trail to be queried.	globaldefs::NamingAttributes_T
connectivityRateList	Input	Indicates the filtering list of the layer rate.	transmissionParameters::LayerRateList_T
nameList	Output	Indicates the list of the service	globaldefs::NamingAttributes_T

Parameter	Input/Output	Description	Value
		name which meet the filter criteria.	

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.23 getPresetRoute

---

This interface is used to query the information about specified preset restoration trails for the ASON SNC.

### Definition

```
void getPresetRoute(
    in globaldefs::NamingAttributes_T sncName,
    in unsigned long presetRouteID,
    out subnetworkConnection::PresetRoute_T route)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Specifies the ASON SNC name and preset restoration trail ID to query route information of the ASON preset restoration trail.

### Parameters

Parameter	Input/Output	Description	Value
sncName	Input	Indicates the name of the ASON SNC where preset restoration trails reside.	globaldefs::NamingAttributes_T
presetRouteID	Input	Indicates the ID of a preset restoration trail. Currently, only 1 and 2 are supported.	1, 2
route	Output	Indicates the route information of a preset restoration trail for the ASON SNC.	subnetworkConnection::PresetRoute_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

No constraint is provided.

**Parent topic:** [MultiLayerSubnetworkMgr](#) |

## 9.4.4.5.24 getSNCNamesByRouteModificationTime

---

This interface query all of the trails according the route modification time.

## Definition

```
void getSNCNamesByRouteModificationTime(
    in string utcBeginTime,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query all of the trails that their routes have changed after or on the specified time. The end time is the invoke time of this interface.

## Parameters

Parameter	Input/Output	Description	Value
utcBeginTime	Input	Indicates the start time.	string UTC time format
how_many	Input	Indicates the maximum quantity of the data that is returned for the first time.	unsigned long
nameList	Output	The list of trail name.	globaldefs::NamingAttributes_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_INTERNAL_ERROR	An error of the U2000 occurs during the processing.

## Restrictions

This function support SDH/WDM trail, can not support ASON trail.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.25 getRouteAndTopologicalLinksBySNCs

---

This interface is used to query information about routes and topological links in multiple SNCs by their name.

### Definition

```
void getRouteAndTopologicalLinksBySNCs (
    in globaldefs::NamingAttributesList_T sncNameList,
    in unsigned long how_many,
    out RouteAndTopologicalLinkList_T routeAndTlList,
    out RouteAndTopologicalLinkIterator_I routeAndTlIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about routes and topological links in an SNC Name list by SNC name.

### Parameters

Parameter	Input/Output	Description	Value
sncNameList	Input	Indicates the SNC name list.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the maximum quantity of the data that is returned for the first time.	unsigned long
routeAndTlList	Output	Indicates the list about the route and topological links.	RouteAndTopologicalLinkList_TFor the source and sink model, see RouteAndTopologicalLink_T.
routeAndTlIt	Output	Indicates the iterator.	RouteAndTopologicalLinkIterator

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.26 getAllMicrowaveLinksReport

---

This interface is used to query network-wide microwave links and save them to the specified server.

### Definition

```
void getAllMicrowaveLinksReport(
    in string destination,
    in string userName,
    in string password,
    in notifications::NVList_T filter)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query network-wide microwave links.

Attributes managed on the U2000: Link Name, Source NE Name, Source NE ID, Source Board, Source Port, Sink NE Name, Sink NE ID, Sink Board, Sink Port, Level, CaretSource Protect Type, Sink Protect Type, Source Protection Group ID, Sink Protection Group ID, Source Protect Unit Type, Sink Protect Unit Type, Source ODU Frequency Range(MHz), Sink ODU Frequency Range(MHz), Source Equipment Information, Sink Equipment Information, Source Station Type, Sink Station Type, Source NE Frequency (MHz), Sink NE Frequency (MHz), Source NE Radio Work Mode, Sink NE Radio Work Mode, Source NE Preset Value of Transmit Power, Sink NE Preset Value of Transmit Power, Source NE Guaranteed E1 Capacity, Sink NE Guaranteed E1 Capacity, Source NE Occupied E1 Capacity, Sink NE Occupied E1 Capacity,

Source NE E1 Capacity Usage (%), Sink NE E1 Capacity Usage (%), Source NE ATPC, Sink NE ATPC, Source NE AM Status, Sink NE AM Status, Highest-Order AM Scheme for Source NE, Highest-Order AM Scheme for Sink NE, Lowest-Order AM Scheme for Source NE, and Lowest-Order AM Scheme for Sink NE.

Attributes obtained from NEs in real time: Source NE Current Value of Transmit Power, Sink NE Current Value of Transmit Power, Source NE Current Value of Receive Power, Sink NE Current Value of Receive Power, Source NE Max Value of Transmit Power of 24-Hour PM, Sink NE Max Value of Transmit Power of 24-Hour PM, Source NE Min Value of Transmit Power of 24-Hour PM, Sink NE Min Value of Transmit Power of 24-Hour PM, Source NE Max Value of Receive Power of 24-Hour PM, Sink NE Max Value of Receive Power of 24-Hour PM, Source NE Min Value of Receive Power of 24-Hour PM, Sink NE Min Value of Receive Power of 24-Hour PM, Source NE Ethernet Capacity (Mbit/s), Sink NE Ethernet Capacity (Mbit/s), Source NE Max. Ethernet Throughput (kbps), Sink NE Max. Ethernet Throughput (kbps), Source NE Min. Ethernet Throughput (kbps), Sink NE Min. Ethernet Throughput (kbps), Source NE Average Ethernet Throughput (kbps), and Sink NE Average Ethernet Throughput (kbps).

## Parameters

Parameter	Input/Output	Description	Value
destination	Input	Indicates the FTP address and name of the exported microwave link file to be uploaded. For example, 10.70.73.96:/reportdate.csv.	It is recommended that the exported file be in *.csv format.
userName	Input	Indicates the user name of the FTP server.	string
password	Input	Indicates the password of the FTP server.	string
filter	Input	Indicates the filter criteria. The format is as follows: name forceUpload value {boolean 0}	notifications::NVList_T Value: boolean 0: Only attributes managed on the U2000 can be queried. boolean 1: All attributes can be queried, including attributes managed on the U2000 and attributes obtained from NEs in real time.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

This interface responds in asynchronous mode and uploads collected information to the FTP server in reports.

Invalid values in the exported file are displayed blank.

To obtain all attributes (filter is set to boolean 1), some attributes need to be queried from NEs in real time, which is time-consuming. It takes about 3s for each link.

In the value of the destination parameter, the file name extension must be one of the following: \*.pfm, \*.txt, \*.dat, \*.log, \*.xlsx, \*.csv, \*.xls, \*.xml, and \*.zip. If other file name extensions are used or the file name extension is blank, the error message Invalid file name extension is displayed.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.27 getAllConjunctionSNCs

---

This interface is used to query all associated OTN ASON trails.

### Definition

```
void getAllConjunctionSNCs (
    in unsigned long how_many,
    out HW_ConjunctionSNCList_T conjunctionSNCList,
    out HW_ConjunctionSNCIterator_I conjunctionSNCIT)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query all associated OTN ASON trails.

### Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the maximum volume of data returned upon the first query.	unsigned long
conjunctionSNCList	Output	Indicates the list of associated ASON trails.	HW_ConjunctionSNCList_T
conjunctionSNCIt	Output	Indicates the iterator.	HW_ConjunctionSNCIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.28 getConjunctionSNC

---

This interface is used to query associated trails of a specified ONT ASON trail.

### Definition

```
void getConjunctionSNC(
in globaldefs::NamingAttributes_T sncName1,
out globaldefs::NamingAttributes_T sncName2,
out globaldefs::NVSList_T additionalInfo)
raises(globaldefs::ProcessingFailureException);
```

### Function

Query associated trails of a specified OTN ASON trail.

## Parameters

Parameter	Input/Output	Description	Value
sncName1	Input	Indicates the OTN ASON trail.	globaldefs::NamingAttributes_T
sncName2	Output	Indicates the associated OTN ASON trail.	globaldefs::NamingAttributes_T
additionalInfo	Output	Indicates the parameter information of the associated trail.	globaldefs::NVSList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INVALID_INPUT	Indicates an invalid input.

## Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr](#) |

## 9.4.4.5.29 getSharedRoute

This interface is used to query the routing information of the shared restoration trail of a specified ASON SNC.

## Definition

```

void getSharedRoute(
in globaldefs::NamingAttributes_T sncName,
in unsigned long sharedRouteID,
out subnetworkConnection::SharedRoute_T route)
raises(globaldefs::ProcessingFailureException);

```

## Function

Query the routing information of the shared restoration trail of a specified ASON SNC.

## Parameters

Parameter	Input/Output	Description	Value
sncName	Input	Indicates the name of the ASON SNC where the shared restoration trail resides.	globaldefs::NamingAttributes_T
sharedRouteID	Input	Indicates the shared restoration trail number. The number can only be 1.	unsigned long
route	Output	Indicates the routing information of the shared restoration trail of ASON SNCs.	subnetworkConnection::SharedRoute_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.30 getOrginalPresetRoute

---

This interface is used to query the routing information of the original preset restoration trail of a specified ASON SNC.

### Definition

```
void getOrginalPresetRoute(  
    in globaldefs::NamingAttributes_T sncName,  
    in unsigned long presetRouteID,  
    out subnetworkConnection::PresetRoute_T route)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query the routing information of the original preset restoration trail of a specified ASON SNC.

### Parameters

Parameter	Input/Output	Description	Value
sncName	Input	Indicates the name of the ASON SNC where the original preset restoration trail resides.	globaldefs::NamingAttributes_T
presetRouteID	Input	Indicates the preset restoration trail number. The number can only be 1.	unsigned long
route	Output	Indicates the routing information of the original preset restoration trail of the ASON SNC.	subnetworkConnection::PresetRoute_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

This interface applies only to SDH ASON SNCs.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.5.31 getServerConnections

---

This interface is used to query the corresponding server trails (including ASON trails) of client trails (EPL/EVPL/EPLAN).

### Definition

```
void getServerConnections(
    in globaldefs::NamingAttributes_T clientName,
    out subnetworkConnection::ServerTrailList_T serverInfoList);
```

### Function

Query the corresponding server trails (including ASON trails) of client trails (EPL/EVPL/EPLAN).

### Parameters

Parameter	Input/Output	Description	Value
clientName	Input	Indicates the client trail name.	globaldefs::NamingAttributes_T
serverInfoList	Output	Indicates the list of server trails.	subnetworkConnection::ServerTrailList_T For the element model, see subnetworkConnection::ServerTrail_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The object entered does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

Currently, only EOS and EOW services can be queried. EOS services include EPL, EVPL, and EPLAN services, and EOW services include EPL and EPLAN services.

**Parent topic:** [MultiLayerSubnetworkMgr\\_I](#)

## 9.4.4.6 ProtectionMgr\_I

---

This interface is used to manage protection groups.

- [retrieveSwitchData](#)

This interface is used to query switching data of an SDH or SNCP protection group by name of the SDH or SNCP protection group.

- [retrieveESwitchData](#)

This interface is used to query switching data of equipment protection group by name of equipment protection group name.

- [retrieveWDMSwitchData](#)

This interface is used to query switching data of a WDM protection group by protection group name.

- [retrieveIPSwitchData](#)

This interface is used to query switching data of a specified tunnel aps protection group.

- [getAllProtectionGroups](#)

This interface is used to query all protection groups of an NE by NE name.

- [getProtectionGroup](#)

This interface is used to query details of an SDH protection group by SDH name.

- [getAllProtectedTPNames](#)  
This interface is used to query names of all protected TPs in a protection group by protection group name.
- [getAllPreemptibleTPNames](#)  
This interface is used to query names of TPs that an SDH protection group can forcibly occupy.
- [getAllWDMProtectionGroups](#)  
This interface is used to query all WDM protection groups on an NE by NE name.
- [getWDMProtectionGroup](#)  
This interface is used to query details of a WDM protection group by its name.
- [getAllIEProtectionGroups](#)  
This interface is used to query all equipment protection groups on an NE by NE name.
- [getEProtectionGroup](#)  
This interface is used to query details of equipment protection group by equipment protection group name.
- [getAllIPProtectionGroups](#)  
This interface is used to query all IP protection groups on an NE by NE name.
- [getIPProtectionGroup](#)  
This interface is used to query details of an IP protection group by IP protection group name.
- [HW\\_getAllERPSProtectionGroups](#)  
This interface is used to query all Ethernet ring protection switching (ERPS) protection groups on an NE by NE name.
- [HW\\_getERPSProtectionGroup](#)  
This interface is used to query details of an Ethernet ring protection switching (ERPS) protection group by ERPS protection group name.
- [HW\\_getAllIFProtectionGroups](#)  
This interface is used to query all intermediate frequency (IF) protection groups on an NE by NE name.
- [HW\\_getIFProtectionGroup](#)  
This interface is used to query details of an intermediate frequency (IF) protection group by IF protection group name.
- [HW\\_getAllXPICGroups](#)  
This interface is used to query all cross polarization interference cancellation (XPIC) groups on an NE by NE name.
- [HW\\_getXPICGroup](#)  
This interface is used to query details of a cross polarization interference cancellation (XPIC) group by XPIC group name.

- [getAllProtectionSubnetworks](#)  
This interface is used to query details about all protection subnets.
- [retrieveIFSwitchData](#)  
This interface is used to query switching data of a specified IF protection group.

**Parent topic:** [Interface Model](#)

## 9.4.4.6.1 retrieveSwitchData

---

This interface is used to query switching data of an SDH or SNCP protection group by name of the SDH or SNCP protection group.

### Definition

```
void retrieveSwitchData(
    in globaldefs::NamingAttributes_T reliableSinkCtpOrGroupName,
    out protection::SwitchDataList_T switchData)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query switching data of a specified WDM protection group.

### Parameters

Parameter	Input/Output	Description	Value
reliableSinkCtpOrGroupName	Input	Name of the specified SDH or SNCP protection group.	globaldefs::NamingAttributes_T
switchData	Output	Switching data of the specified SDH or SNCP protection group.	protection::SwitchDataList_T For the element model, see: SwitchData_T.

### Abnormal Values

Abnormal Value	Description
EXCPT_NOT_IMPLEMENTED	The manager is not supported in the network management system.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.2 retrieveESwitchData

---

This interface is used to query switching data of equipment protection group by name of equipment protection group name.

### Definition

```
void retrieveESwitchData(
    in globaldefs::NamingAttributes_T ePGPName,
    out protection::ESwitchDataList_T eSwitchDataList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query switching data of equipment protection group.

The SDH/PTN/WDM/OTN equipment are supported.

### Parameters

Parameter	Input/Output	Description	Value
ePGPName	Input	Name of the specified equipment protection group.	globaldefs::NamingAttributes_T

Parameter	Input/Output	Description	Value
eSwitchDataList	Output	Switching data of the specified equipment protection group.	protection::ESwitchDataList_T For the element model, see: ESwitchData_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	An error occurs on the input name.
EXCPT_ENTITY_NOT_FOUND	The specified protection group does not exist.
EXCPT_NE_COMM_LOSS	Abnormal NE communication.

## Restrictions

There is no restriction.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.3 retrieveWDMSwitchData

---

This interface is used to query switching data of a WDM protection group by protection group name.

### Definition

```
void retrieveWDMSwitchData(
    in globaldefs::NamingAttributes_T wpgpName,
    out protection::WDMswitchDataList_T wSwitchDataList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query switching data of a specified WDM protection group.

### Parameters

Parameter	Input/Output	Description	Value
wpgpName	Input	Name of the WDM protection group to be queried.	globaldefs::NamingAttributes_T
wSwitchDataList	Output	Switching data of a specified WDM protection group.	protection::WDMswitchDataList_T For the element model, see: WDMswitchData_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_NE_COMM_LOSS	Abnormal NE communication.

## Restrictions

There is no restriction.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.4 retrieveIPSwitchData

---

This interface is used to query switching data of a specified tunnel aps protection group.

### Definition

```
void retrieveIPSwitchData(
in globaldefs::NamingAttributes_T reliableSinkCtpOrGroupName,
out protection::IPSwitchDataList_T switchData)
raises(globaldefs::ProcessingFailureException);
```

### Function

Query switching data of a specified tunnel aps protection group.

## Parameters

Parameter	Input/Output	Description	Value
reliableSinkCtpOrGroupName	Input	Only the name of a tunnel protection group can be entered for query.	globaldefs::NamingAttributes_T
switchData	Output	Switching data of a specified tunnel protection group.	protection::IPSwitchDataList_T For the element model, see: IPSwitchData_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_NE_COMM_LOSS	Abnormal NE communication.

## Restrictions

There is no restriction.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.5 getAllProtectionGroups

This interface is used to query all protection groups of an NE by NE name.

### Definition

```
void getAllProtectionGroups (
```

```

in globaldefs::NamingAttributes_T meName,
in unsigned long how_many,
out ProtectionGroupList_T pgList,
out ProtectionGroupIterator_I pgpIt)
raises(globaldefs::ProcessingFailureException);

```

## Function

Ring protection group: two-fiber bidirectional MSP group and four-fiber bidirectional MSP group

Query all SDH protection groups of an NE.

Supported SDH protection groups are as follows:

Linear protection group: 1+1 multiplex section protection (MSP) and 1:N MSP

## Parameters

Parameter	Input/Output	Description	Value
meName	Input	Indicates an NE name that you want to query.	globaldefs::NamingAttributes_T
how_many	Input	Maximum quantity of the data that is returned for the first time.	unsigned long
pgList	Output	Indicate an SDH protection group list.	ProtectionGroupList_T For the element model, see ProtectionGroup_T.
pgpIt	Output	Indicates the iterator.	ProtectionGroupIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

Abnormal Value	Description
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

The four-fiber bidirectional MSP ring is adapted to a four-fiber bidirectional protection group and two 1:N protection groups.

The 1+1 MSP or 1:N MSP is adapted to one protection group when only west working/protection exists, and is adapted to two protection groups (east and west) when the east working/protection and the east working/protection exist.

The two-fiber bidirectional MSP ring is adapted to one two-fiber bidirectional ring protection group.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.6 getProtectionGroup

---

This interface is used to query details of an SDH protection group by SDH name.

### Definition

```
void getProtectionGroup(
    in globaldefs::NamingAttributes_T pgName,
    out protection::ProtectionGroup_T protectionGroup)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of an SDH protection group.

Supported SDH protection groups are as follows:

Linear protection group: 1+1 MSP group and 1:N MSP group

Ring MSP group: two-fiber bidirectional MSP group and four-fiber bidirectional MSP group

### Parameters

Parameter	Input/Output	Description	Value
pgName	Input	Name of the SDH protection group.	globaldefs::NamingAttributes_T
protectionGroup	Output	Details of the SDH protection group.	protection::ProtectionGroup_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.7 getAllProtectedTPNames

---

This interface is used to query names of all protected TPs in a protection group by protection group name.

### Definition

```
void getAllProtectedTPNames(
    in globaldefs::NamingAttributes_T pgName,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of an SDH protection group.

Supported SDH protection groups are as follows:

Linear protection group: 1+1 MSP group and 1:N MSP group

Ring MSP group: two-fiber bidirectional MSP group and four-fiber bidirectional MSP group

## Parameters

Parameter	Input/Output	Description	Value
pgName	Input	Indicates an SDH protection group's name.	globaldefs::NamingAttributes_T
how_many	Input	Quantity of data that is returned for the first time.	unsigned long
nameList	Output	List of the names of the TPs that contain the object specified by tpName.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

If a ring protection group is adapted to a four-fiber bidirectional ring, CTP names of the east and west working lines are returned. In addition, the CTP name of the east working line is ahead of the CTP name of the west working line. If an east 1:N protection group is used, the CTP name of the east working line is returned. If a west 1:N protection group is used, the CTP name of the west working line is returned.

In the case of the 1+1 protection group, the configuration of the working and the protection lines is static and is not classified into the configurations in the revertive mode and in the non-revertive mode. In the case of the TM 1+1 protection group, the CTP name of the west line 1 is returned. In the case of the ADM protection group, the CTP name of the west line 1 is returned in the west and the CTP name of the east line 1 is returned in the east.

In the case of the TM 1:N protection group, the CTP name of the west working line is returned. In the case of the ADM protection group, the CTP name of the west working line is returned in the west; the CTP name of the east working line is returned in the east.

In the case of the two-fiber bidirectional ring protection group, the CTP names of the west and east working lines are returned. In addition, the CTP name of the west working line is ahead of the CTP name of the east working line.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.8 getAllPreemptibleTPNames

---

This interface is used to query names of TPs that an SDH protection group can forcibly occupy.

### Definition

```
void getAllPreemptibleTPNames (
    in globaldefs::NamingAttributes_T pgName,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of TPs that an SDH protection group can forcibly occupy.

Supported WDM protection groups are as follows:

Linear protection group: 1+1 MSP group and 1:N MSP group

Ring MSP group: two-fiber bidirectional MSP group and four-fiber bidirectional MSP group

### Parameters

Parameter	Input/Output	Description	Value
pgName	Input	Name of the SDH protection group	globaldefs::NamingAttributes_T

Parameter	Input/Output	Description	Value
how_many	Input	Quantity of the data that is returned for the first time.	unsigned long
nameList	Output	List of the names of the TPs that contain the object specified by tpName.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

In the case of the 1+1 protection group, the returned information is blank.

In the case of the TM 1:1 protection group, the CTP name of the west protection line is returned.  
In the case of the ADM protection group, the CTP name of the west protection line is returned in the west; the CTP name of the east protection line is returned in the east.

In the case of the two-fiber bidirectional ring protection group, the CTP names that are adapted in the timeslots of the west and east protection lines are returned. In addition, the CTP name of the west protection line is ahead of the CTP name of the east protection line.

In the case of the ring protection group adapted for the four-fiber bidirectional ring, the CTP names of the east and west protection lines are returned. In addition, the CTP name of the east protection line is ahead of the CTP name of the west protection line.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.9 getAllWDMProtectionGroups

---

This interface is used to query all WDM protection groups on an NE by NE name.

### Definition

```
void getAllWDMProtectionGroups(
    in globaldefs::NamingAttributes_T meName,
    in unsigned long how_many,
    out WDMProtectionGroupList_T wpgpList,
    out WDMProtectionGroupIterator_I wpgpIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query all WDM protection groups on an NE.

The types of the supported WDM protection groups are as follows: 1:N, OLP optical line, intra-board 1+1, inter-board 1+1, client-side 1+1 and cross-subrack 1+1.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	ME name	globaldefs::NamingAttributes_T
how_many	Input	Quantity of data that is returned for the first time.	unsigned long
wpgpList	Output	List of the WDM protection groups. For the element model, see WDMProtectionGroup_T.	WDMProtectionGroupList_T
wpgpIt	Output	Iterator	WDMProtectionGroupIterator_I

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

Abnormal Value	Description
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

This interface is not applicable to WDM protection groups that are intelligently generated.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.10 getWDMProtectionGroup

---

This interface is used to query details of a WDM protection group by its name.

### Definition

```
void getWDMProtectionGroup(
    in globaldefs::NamingAttributes_T wpgpName,
    out protection::WDMProtectionGroup_T wProtectionGroup)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of a WDM protection group.

### Parameters

Parameter	Input/Output	Description	Value
wpgpName	Input	Name of the WDM protection group.	globaldefs::NamingAttributes_T
wProtectionGroup	Output	Details of the WDM protection group.	protection::WDMProtectionGroup_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.11 getAllEProtectionGroups

---

This interface is used to query all equipment protection groups on an NE by NE name.

### Definition

```
void getAllEProtectionGroups(
    in globaldefs::NamingAttributes_T meName,
    in unsigned long how_many,
    out EProtectionGroupList_T epgpList,
    out EProtectionGroupIterator_I epgpIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query all equipment protection groups on an NE by NE name.

The SDH/PTN/WDM/OTN equipment are supported.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	NE name	globaldefs::NamingAttributes_T
how_many	Input	Quantity of the data that is returned for the first time.	unsigned long

Parameter	Input/Output	Description	Value
epgpList	Output	List of the equipment protection groups. For the element model, see EProtectionGroup_T.	EProtectionGroupList_T
epgplIt	Output	Iterator	EProtectionGroupIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

Only equipment protection groups on the SDH and PTN equipment (excluding the PTN 6900) can be queried.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.12 getEProtectionGroup

---

This interface is used to query details of equipment protection group by equipment protection group name.

### Definition

```
void getEProtectionGroup(
    in globaldefs::NamingAttributes_T ePGPname,
    out protection::EProtectionGroup_T eProtectionGroup)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query the information about a specified equipment protection group.  
The SDH/PTN/WDM/OTN equipment are supported.

## Parameters

Parameter	Input/Output	Description	Value
ePGPname	Input	Name of the equipment protection group to be queried.	globaldefs::NamingAttributes_T
eProtectionGroup	Output	Information about the equipment protection group.	protection::EProtectionGroup_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.13 getAllIPProtectionGroups

---

This interface is used to query all IP protection groups on an NE by NE name.

### Definition

```
void getAllIPProtectionGroups(  
    in globaldefs::NamingAttributes_T meName,  
    in unsigned long how_many,
```

```

out IPProtectionGroupList_T pgList,
out IPProtectionGroupIterator_I ppgIt)
raises(globaldefs::ProcessingFailureException);

```

## Function

Query all IP protection groups on a specified NE.

## Parameters

Parameter	Input/Output	Description	Value
meName	Input	Name of the NE to be queried.	globaldefs::NamingAttributes_T
how_many	Input	Maximum number of IP protection groups that can be queried for the first time.	unsigned long
pgList	Output	List of information about all the protection groups on the NE.	IPProtectionGroupList_T For element model, see IPProtectionGroup_T.
ppgIt	Output	Iterator	IPProtectionGroupIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_NE_COMM_LOSS	Abnormal NE communication.

## Restrictions

Currently, only the tunnel APS protection group can be queried on the PTN and Hybrid MSTP equipment.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.14 getIPProtectionGroup

---

This interface is used to query details of an IP protection group by IP protection group name.

### Definition

```
void getIPProtectionGroup(  
    in globaldefs::NamingAttributes_T pgName,  
    out protection::IPProtectionGroup_T protectionGroup)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about a specified IP protection group.

### Parameters

Parameter	Input/Output	Description	Value
pgName	Input	Name of the specified IP protection group.	globaldefs::NamingAttributes_T
protectionGroup	Output	Obtained information about the specified IP protection group.	protection::IPProtectionGroup_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_NE_COMM_LOSS	Abnormal NE communication.

### Restrictions

There is no restriction.

**Parent topic:** [ProtectionMgr I](#)

## **9.4.4.6.15 HW\_getAllERPSProtectionGroups**

---

This interface is used to query all Ethernet ring protection switching (ERPS) protection groups on an NE by NE name.

### **Definition**

```
void HW_getAllERPSProtectionGroups(  
    in globaldefs::NamingAttributes_T meName,  
    out HW_ERPSProtectionGroupList_T pgList)  
raises(globaldefs::ProcessingFailureException);
```

### **Function**

Query all ERPS protection groups on an NE.

### **Parameters**

Parameter	Input/Output	Description	Value
meName	Input	Indicates the NE name to be queried.	globaldefs::NamingAttributes_T
pgList	Output	Indicates the list of all ERPS groups on the NE.	HW_ERPSProtectionGroupList_T For the element model, see HW_ERPSProtectionGroup_T.

### **Abnormal Values**

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_NE_COMM_LOSS	Indicates that the communication between the U2000 and the NE is interrupted.

### **Restrictions**

Only ERPS protection groups on the OptiX RTN 900 can be queried through this interface.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.16 HW\_getERPSProtectionGroup

---

This interface is used to query details of an Ethernet ring protection switching (ERPS) protection group by ERPS protection group name.

### Definition

```
void HW_getERPSProtectionGroup (
    in globaldefs::NamingAttributes_T pgName,
    out HW_ERPSProtectionGroup_T protectionGroup)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of the specified ERPS protection group.

### Parameters

Parameter	Input/Output	Description	Value
pgName	Input	Indicates the ERPS protection group name.	globaldefs::NamingAttributes_T
protectionGroup	Output	Indicates details of the ERPS protection group that has been queried.	HW_ERPSProtectionGroup_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

Abnormal Value	Description
EXCPT_NE_COMM_LOSS	Indicates that the communication between the U2000 and the NE is interrupted.

## Restrictions

Only ERPS protection groups on the OptiX RTN 900 can be queried through this interface.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.17 HW\_getAllIFProtectionGroups

---

This interface is used to query all intermediate frequency (IF) protection groups on an NE by NE name.

### Definition

```
void HW_getAllIFProtectionGroups(
    in globaldefs::NamingAttributes_T meName,
    out HW_IFProtectionGroupList_T pgList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query all IF protection groups on an NE.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	Indicates the NE name to be queried.	globaldefs::NamingAttributes_T
pgList	Output	Indicates the list of all IF protection groups on the NE.	HW_IFProtectionGroupList_T For element model, see HW_IFProtectionGroup_T .

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_NE_COMM_LOSS	Indicates that the communication between the U2000 and the NE is interrupted.

## Restrictions

Only IF protection groups on the OptiX RTN 900 can be queried through this interface.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.18 HW\_getIFProtectionGroup

---

This interface is used to query details of an intermediate frequency (IF) protection group by IF protection group name.

### Definition

```
void HW_getIFProtectionGroup(
    in globaldefs::NamingAttributes_T pgName,
    out protection::HW_IFProtectionGroup_T protectionGroup)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of the specified IF protection group.

### Parameters

Parameter	Input/Output	Description	Value
pgName	Input	Indicates the specified IF protection group name.	globaldefs::NamingAttributes_T

Parameter	Input/Output	Description	Value
protectionGroup	Output	Indicates details of the IF protection group that has been queried.	HW_IFProtectionGroup_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_NE_COMM_LOSS	Indicates that the communication between the U2000 and the NE is interrupted.

## Restrictions

Only IF protection groups on the OptiX RTN 900 can be queried through this interface.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.19 HW\_getAllXPICGroups

---

This interface is used to query all cross polarization interference cancellation (XPIC) groups on an NE by NE name.

### Definition

```
void HW_getAllXPICGroups(
    in globaldefs::NamingAttributes_T meName,
    in unsigned long how_many,
    out HW_XPICGroupList_T xpicList,
    out HW_XPICGroupIterator_I xpicIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query all XPIC groups on an NE.

## Parameters

Parameter	Input/Output	Description	Value
meName	Input	Indicates the NE name to be queried.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the number of XPIC groups that are returned for the first time.	unsigned long
xpicList	Output	Indicates the list of all XPIC groups on the NE.	HW_XPICGroupList_T For the element model, see HW_XPICGroup_T.
xpicIt	Output	Indicates the XPIC iterator.	HW_XPICGroupIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_NE_COMM_LOSS	Indicates that the communication between the U2000 and the NE is interrupted.

## Restrictions

Only XPIC groups on the OptiX RTN 900 can be queried through this interface.

**Parent topic:** [ProtectionMgr I](#)

## 9.4.4.6.20 HW\_getXPICGroup

This interface is used to query details of a cross polarization interference cancellation (XPIC) group by XPIC group name.

## Definition

```
void HW_getXPICGroup(
    in globaldefs::NamingAttributes_T xpicGroupName,
    out protection::HW_XPICGroup_T xpicGroup)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query details of the specified XPIC group.

## Parameters

Parameter	Input/Output	Description	Value
xpicGroupName	Input	Indicates the XPIC group name to be queried.	globaldefs::NamingAttributes_T
xpicGroup	Output	Indicates details of the XPIC group that has been queried.	HW_XPICGroup_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_NE_COMM_LOSS	Indicates that the communication between the U2000 and the NE is interrupted.

## Restrictions

Only XPIC groups on the OptiX RTN 900 can be queried through this interface.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.21 getAllProtectionSubnetworks

---

This interface is used to query details about all protection subnets.

### Definition

```
void getAllProtectionSubnetworks (
    in unsigned long how_many,
    out ProtectionSubnetworkList_T psnList,
    out ProtectionSubnetworkIterator_I psnIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

This interface is used to query details about all protection subnets.

### Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the maximum number of data items returned upon the first query.	unsigned long
psnList	Output	Indicates the protection subnet information list. For the element model, see ProtectionSubnetwork_T.	protection::ProtectionSubnetworkList_T
psnIt	Output	Indicates the event iterator.	protection::ProtectionSubnetworkIterator_I

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the object does not exist.

## Restrictions

This interface supports only SDH protection subnets.

**Parent topic:** [ProtectionMgr\\_I](#)

## 9.4.4.6.22 retrieveIFSwitchData

---

This interface is used to query switching data of a specified IF protection group.

### Definition

```
void retrieveIFSwitchData(
    in globaldefs::NamingAttributes_T pgName,
    out protection::IFSwitchDataList_T switchData)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query switching data of a specified IF protection group.

### Parameters

Parameter	Input/Output	Description	Value
pgName	Input	Indicates the name of a specified IF protection group.	globaldefs::NamingAttributes_T
switchData	Output	Indicates the list of queried switching data of an IF protection group.	protection::IFSwitchDataList_T

### Abnormal Values

Abnormal Value	Description
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INVALID_INPUT	Indicates invalid input.

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

Only RTN NEs are supported.

**Parent topic:** [ProtectionMgr](#) |

## 9.4.4.7 HW\_MSTPInventoryMgr

---

This interface is used to manage MSTP inventories.

- [getAllMstpEndPoints](#)

This interface is used to query all MSTP endpoints on an NE by NE name, Ethernet and trunk ports on an WDM NE.

- [getAllMstpEndPointNames](#)

This interface is used to query names of all MSTP endpoints on an NE by NE name,Ethernet and trunk ports on WDM NE.

- [getMstpEndPoint](#)

This interface is used to query an MSTP endpoint by its name.

- [getAllVBs](#)

This interface is used to query information about all virtual bridges on an NE by NE name.

- [getAllVBNames](#)

This interface is used to query names of all virtual bridges on an NE by NE name.

- [getVirtualBridge](#)

This interface is used to query information about a virtual bridge by virtual bridge name.

- [getAllVLANs](#)

This interface is used to query information about all VLANs on a virtual bridge by virtual bridge name.

- [getAllVLANNames](#)

This interface is used to query names of all VLANs on a virtual bridge by virtual bridge name.

- [getVLAN](#)

This interface is used to query a VLAN by its name.

- [getBindingPath](#)  
This interface is used to query information about paths bound to a VCTRUNK port.
- [getLCASState](#)  
This interface is used to query the enable state of LCAS protocol for a VCTRUNK port.
- [getAllQosRules](#)  
This interface is used to query information about all QoS rules for an NE by NE name.
- [getQosRule](#)  
This interface is used to query details of a QoS rule by its name.
- [getAllFlows](#)  
This interface is used to query information about all flows on an NE by NE name.
- [getAllFlowNames](#)  
This interface is used to query names of all flows on an NE by NE name.
- [getFlow](#)  
This interface is used to query details of a flow by its name.
- [getAllLinkAggregationGroupNames](#)  
This interface is used to query names of all link aggregation groups (LAGs) on an NE by NE name.
- [getAllLinkAggregationGroups](#)  
This interface is used to query information about all link aggregation groups (LAGs) on an NE by NE name.
- [getMstpEndPointShapingQueue](#)  
This interface is used to query shaping queues for an MSTP port by port name.
- [getLinkAggregationGroup](#)  
This interface is used to query information about a link aggregation group (LAG) by LAG name.
- [getAllSpanningTreeNames](#)  
This interface is used to query names of all spanning trees on equipment by equipment name.
- [getAllSpanningTrees](#)  
This interface is used to query information about all spanning trees on equipment by equipment name.
- [getSpanningTree](#)  
This interface is used to query details of a spanning tree by its name.
- [getAllContainedInUseTPNames](#)  
This interface is used to query the names of connection termination points (CTPs) that are being used on ATM or ATM trunk ports.
- [getAllQosRuleNames](#)  
This interface is used to query the names of all QoS rules on an NE.

- [getAvailablePortNames](#)

This interface is used to query the names of ports available for the link aggregation function on a specified board.

**Parent topic:** [Interface Model](#)

## 9.4.4.7.1 getAllMstpEndPoints

---

This interface is used to query all MSTP endpoints on an NE by NE name, Ethernet and trunk ports on an WDM NE.

### Definition

```
void getAllMstpEndPoints(
    in globaldefs::NamingAttributes_T meName,
    in HW_MSTPEndPointTypeList_T typeList,
    in unsigned long how_many,
    out HW_MSTPEndPointList_T endPointList,
    out HW_MSTPEndPointIterator_I endPointIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about all MSTP endpoints on an NE. An endpoint can be a MAC port, VCTRUNK port, RPR port, logical port, ATM port, or ATM trunk port.

Query Ethernet and trunk ports of all WDM NEs.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	Indicates the NE name to be queried.	globaldefs::NamingAttributes_T
typeList	Input	Indicates the list of port types.	HW_mstpInventory::HW_MSTPEndPointTypeList_T The supported types are as follows: HW_MEPT_NA HW_MEPT_ATM HW_MEPT_ATMTRUNK HW_MEPT_ETH HW_MEPT_ETHTRUNK HW_MEPT_LP

Parameter	Input/Output	Description	Value
			HW_MEPT_RPR
how_many	Input	Indicates the quantity of data that is returned for the first time.	unsigned long
endPointList	Output	Indicates the list of endpoints. For the element model, see HW_mstpInventory::HW_MSTPEndPoint_T.	HW_mstpInventory::HW_MSTPEndPointList_T
endPointIt	Output	Indicates the iterator.	HW_mstpInventory::HW_MSTPEndPointIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the quantity of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW MSTPInventoryMgr](#)

## 9.4.4.7.2 getAllMstpEndPointNames

---

This interface is used to query names of all MSTP endpoints on an NE by NE name,Ethernet and trunk ports on WDM NE.

## Definition

```
void getAllMstpEndPointNames(
    in globaldefs::NamingAttributes_T meName,
    in HW_MSTPEndPointTypeList_T typeList,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query names of all MSTP endpoints, such MAC ports, VCTRUNK ports, RPR ports, logical ports, ATM ports, and ATM trunk port, on an NE by NE name.

Query names of Ethernet and trunk ports of all WDM NEs.

## Parameters

Parameter	Input/Output	Description	Value
meName	Input	Indicates the NE name to be queried.	globaldefs::NamingAttributes_T
typeList	Input	Indicates the type list of ports.	HW_mstpInventory::HW_MSTPEndPointTypeList_T The supported types are as follows: HW_MEPT_NA HW_MEPT_ATM HW_MEPT_ATMTRUNK HW_MEPT_ETH HW_MEPT_ETHTRUNK HW_MEPT_LP HW_MEPT_RPR
how_many	Input	Indicates the quantity of data that is returned for the first time.	unsigned long
nameList	Output	Indicates the name list of endpoints.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the quantity of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.3 getMstpEndPoint

---

This interface is used to query an MSTP endpoint by its name.

### Definition

```
void getMstpEndPoint(
    in globaldefs::NamingAttributes_T endPointName,
    out HW_MSTPEndPoint_T endPoint)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query an MSTP endpoint.

### Parameters

Parameter	Input/Output	Description	Value
endPointName	Input	Name of the MSTP endpoint to be queried	globaldefs::NamingAttributes_T

Parameter	Input/Output	Description	Value
endPoint	Output	Information about the endpoint queried	HW_mstpInventory::HW_MSTPEndPoint_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.4 getAllVBs

---

This interface is used to query information about all virtual bridges on an NE by NE name.

### Definition

```
void getAllVBs(
    in globaldefs::NamingAttributes_T meName,
    in unsigned long how_many,
    out HW_VirtualBridgeList_T vbList,
    out HW_VirtualBridgeIterator_I vbIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about all virtual bridges on an NE.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	An NE name to be queried.	globaldefs::NamingAttributes_T
how_many	Input	Quantity of the data that is returned for the first time	unsigned long
vbList	Output	List of virtual bridges that has been got.	HW_mstpInventory::HW_VirtualBridgeList_T For the element model, see HW_mstpInventory::HW_VirtualBridge_T.
vbIt	Output	Iterator	HW_mstpInventory::HW_VirtualBridgeIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.5 getAllVBNames

---

This interface is used to query names of all virtual bridges on an NE by NE name.

### Definition

```

void getAllVBNames(
in globaldefs::NamingAttributes_T meName,
in unsigned long how_many,
out globaldefs::NamingAttributesList_T nameList,
out globaldefs::NamingAttributesIterator_I nameIt)
raises(globaldefs::ProcessingFailureException);

```

## Function

Query names of all virtual bridges on a specified NE.

## Parameters

Parameter	Input/Output	Description	Value
meName	Input	Name of the NE to be queried	globaldefs::NamingAttributes_T
how_many	Input	Quantity of the data that is returned for the first time	unsigned long
nameList	Output	List of the names for the virtual bridges queried	globaldefs::NamingAttributesList_T
nameIt	Output	Iterator	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.6 getVirtualBridge

---

This interface is used to query information about a virtual bridge by virtual bridge name.

### Definition

```
void getVirtualBridge(  
    in globaldefs::NamingAttributes_T vbName,  
    out HW_VirtualBridge_T vb)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about a specific virtual bridge.

### Parameters

Parameter	Input/Output	Description	Value
vbName	Input	Name of the bridge to be queried	globaldefs::NamingAttributes_T
vb	Output	Information about the bridge queried	HW_mstpInventory::HW_VirtualBridge_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

### Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.7 getAllVLANs

---

This interface is used to query information about all VLANs on a virtual bridge by virtual bridge name.

### Definition

```
void getAllVLANs(
    in globaldefs::NamingAttributes_T vbName,
    in unsigned long how_many,
    out HW_VirtualLANList_T vlanList,
    out HW_VirtualLANIterator_I vlanIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about all VLANs on a specified virtual bridge.

### Parameters

Parameter	Input/Output	Description	Value
vbName	Input	Name of the bridge to be queried	globaldefs::NamingAttributes_T
how_many	Input	Quantity of pieces of the data that is returned for the first time	unsigned long
vlanList	Output	List of VLANs queried	HW_mstpInventory::HW_VirtualBridgeList_T For the element model, see HW_mstpInventory::HW_VirtualLAN_T.
vlanIt	Output	Iterator	HW_mstpInventory::HW_VirtualBridgeIterator_I

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.8 getAllVLANNames

---

This interface is used to query names of all VLANs on a virtual bridge by virtual bridge name.

### Definition

```
void getAllVLANNames(
    in globaldefs::NamingAttributes_T vbName,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of all VLANs on a specified virtual bridge.

### Parameters

Parameter	Input/Output	Description	Value
vbName	Input	A bridge name to be queried	globaldefs::NamingAttributes_T
how_many	Input	Quantity of pieces of the data that is	unsigned long

Parameter	Input/Output	Description	Value
		returned for the first time	
nameList	Output	List of names for the VLANs queried	globaldefs::NamingAttributesList_T
nameIt	Output	Iterator	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.9 getVLAN

---

This interface is used to query a VLAN by its name.

### Definition

```
void getVLAN(
    in globaldefs::NamingAttributes_T vlanName,
    out HW_VirtualLAN_T vlan)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query a specified VLAN.

## Parameters

Parameter	Input/Output	Description	Value
vlanName	Input	A VLAN name to be queried	globaldefs::NamingAttributes_T
vlan	Output	Returned VLAN data	HW_mstpInventory::HW_VirtualLAN_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.10 getBindingPath

---

This interface is used to query information about paths bound to a VCTRUNK port.

### Definition

```
void getBindingPath(  
    in globaldefs::NamingAttributes_T endPointName,  
    out HW_MSTPBindingPathList_T bindingPathList)  
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about paths bound to a VCTRUNK port.

## Parameters

Parameter	Input/Output	Description	Value
endPointName	Input	Name of the port to be queried	globaldefs::NamingAttributes_T
bindingPathList	Output	Returned information about paths bound to a VCTRUNK port	HW_mstpInventory::HW_MSTPBindingPathList_T For the element model, see HW_mstpInventory::HW_MSTPBindingPath_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr](#)

## 9.4.4.7.11 getLCASState

---

This interface is used to query the enable state of LCAS protocol for a VCTRUNK port.

### Definition

```
void getLCASState(  
    in globaldefs::NamingAttributes_T endPointName,
```

```

    out boolean enableState)
    raises(globaldefs::ProcessingFailureException);

```

## Function

Query the enable state of LCAS protocol for a VCTRUNK port.

## Parameters

Parameter	Input/Output	Description	Value
endPointName	Input	Name of the port to be queried	globaldefs::NamingAttributes_T
enableState	Output	Returned enable state of the LCAS protocol	boolean

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW MSTPInventoryMgr\\_I](#)

## 9.4.4.7.12 getAllQosRules

---

This interface is used to query information about all QoS rules for an NE by NE name.

### Definition

```

void getAllQosRules(
    in globaldefs::NamingAttributes_T meName,

```

```

in unsigned long how_many,
out HW_mstpInventory::HW_QosRuleList_T qosRuleList,
out HW_mstpInventory::HW_QosRuleIterator_I qosRuleIt)
raises(globaldefs::ProcessingFailureException);

```

## Function

Query information about all QoS rules for an NE by NE name.

## Parameters

Parameter	Input/Output	Description	Value
meName	Input	Name of the NE to be queried	globaldefs::NamingAttributes_T
how_many	Input	Quantity of the QoS rules that are returned for the first time	unsigned long
qosRuleList	Output	List of QoS rules queried	HW_mstpInventory::HW_QosRuleList_T For the element model, see HW_mstpInventory::HW_QosRule_T.
qosRuleIt	Output	Iterator	HW_mstpInventory::HW_QosRuleIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.13 getQosRule

---

This interface is used to query details of a QoS rule by its name.

### Definition

```
void getQosRule(  
    in globaldefs::NamingAttributes_T qosRuleName,  
    out HW_mstpInventory::HW_QosRule_T qosRule)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of a QoS rule by its name.

### Parameters

Parameter	Input/Output	Description	Value
qosRuleName	Input	Name of the QoS rule to be queried	globaldefs::NamingAttributes_T
qosRule	Output	QoS rules queried	HW_mstpInventory::HW_QosRule_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

### Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.14 getAllFlows

---

This interface is used to query information about all flows on an NE by NE name.

### Definition

```
void getAllFlows(
    in globaldefs::NamingAttributes_T meName,
    in unsigned long how_many,
    out HW_mstpInventory::HW_FlowList_T flowList,
    out HW_mstpInventory::HW_FlowIterator_I flowIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about all flows on an NE by NE name.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	An NE name to be queried	globaldefs::NamingAttributes_T
how_many	Input	Quantity of the pieces of the data that is returned for the first time	unsigned long
flowList	Output	List of flows queried	HW_mstpInventory::HW_QosFlowList_T For the element model, see HW_mstpInventory::HW_Flow_T.
flowIt	Output	Iterator	HW_mstpInventory::HW_QosFlowIterator_I

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

Abnormal Value	Description
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW MSTPInventoryMgr\\_I](#)

## 9.4.4.7.15 getAllFlowNames

---

This interface is used to query names of all flows on an NE by NE name.

### Definition

```
void getAllFlowNames(
    in globaldefs::NamingAttributes_T meName,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of all flows on a specified NE.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	An NE name to be queried	globaldefs::NamingAttributes_T
how_many	Input	Quantity of the data that is returned for the first time	unsigned long
nameList	Output	List of names of the flows queried	globaldefs::NamingAttributesList_T

Parameter	Input/Output	Description	Value
nameIt	Output	Iterator	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.16 getFlow

---

This interface is used to query details of a flow by its name.

### Definition

```
void getFlow(
    in globaldefs::NamingAttributes_T flowName,
    out HW_mstpInventory::HW_Flow_T flow)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of a flow by its name.

### Parameters

Parameter	Input/Output	Description	Value
flowName	Input	A flow name to be queried	globaldefs::NamingAttributes_T
flow	Output	Details of the flow queried	HW_mstpInventory::HW_Flow_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.17 getAllLinkAggregationGroupNames

---

This interface is used to query names of all link aggregation groups (LAGs) on an NE by NE name.

### Definition

```
void getAllLinkAggregationGroupNames(
in globaldefs::NamingAttributes_T meName,
in unsigned long how_many,
out globaldefs::NamingAttributesList_T nameList,
out globaldefs::NamingAttributesIterator_I nameIt)
raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of all LAGs on an NE.

## Parameters

Parameter	Input/Output	Description	Value
meName	Input	An NE name to be queried	globaldefs::NamingAttributes_T
how_many	Input	Quantity of the data that is returned for the first time	unsigned long
nameList	Output	List of names for LAGs queried	globaldefs::NamingAttributesList_T
nameIt	Output	Iterator	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.18 getAllLinkAggregationGroups

---

This interface is used to query information about all link aggregation groups (LAGs) on an NE by NE name.

## Definition

```
void getAllLinkAggregationGroups(
    in globaldefs::NamingAttributes_T meName,
    in unsigned long how_many,
    out HW_mstpInventory::HW_LinkAggregationGroupList_T lagList,
    out HW_mstpInventory::HW_LinkAggregationGroupIterator_I lagIt)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query information about all LAGs on a specified NE.

## Parameters

Parameter	Input/Output	Description	Value
meName	Input	An NE name to be queried	globaldefs::NamingAttributes_T
how_many	Input	Quantity of the pieces of data that is returned for the first time	unsigned long
lagList	Output	List of LAGs queried	HW_mstpInventory::HW_LinkAggregationGroupList_T For the element model, see HW_mstpInventory::HW_LinkAggregationGroup_T.
lagIt	Output	Iterator	HW_mstpInventory::HW_LinkAggregationGroupIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

Abnormal Value	Description
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.19 getMstpEndPointShapingQueue

---

This interface is used to query shaping queues for an MSTP port by port name.

### Definition

```
void getMstpEndPointShapingQueue(
in globaldefs::NamingAttributes_T endPointName,
out HW_mstpInventory::ShapingQueueList_T shapingQueueList)
raises(globaldefs::ProcessingFailureException);
```

### Function

Query shaping queues for an MSTP port.

### Parameters

Parameter	Input/Output	Description	Value
endPointName	Input	A port name to be queried	globaldefs::NamingAttributes_T
shapingQueueList	Output	Shaping queue for the specified port to be queried	HW_mstpInventory::ShapingQueueList_T For the element model, see HW_mstpInventory::ShapingQueue.

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.20 getLinkAggregationGroup

---

This interface is used to query information about a link aggregation group (LAG) by LAG name.

### Definition

```
void getLinkAggregationGroup(
    in globaldefs::NamingAttributes_T lagName,
    out HW_mstpInventory::HW_LinkAggregationGroup_T lag)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about a specified LAG.

### Parameters

Parameter	Input/Output	Description	Value
lagName	Input	A LAG name to be queried	globaldefs::NamingAttributes_T
lag	Output	Information about the specified link	HW_mstpInventory::HW_LinkAggregationGroup_T

Parameter	Input/Output	Description	Value
		aggregation group queried.	

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.21 getAllSpanningTreeNames

---

This interface is used to query names of all spanning trees on equipment by equipment name.

### Definition

```
void getAllSpanningTreeNames(
    in globaldefs::NamingAttributes_T equipmentName,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of all spanning tree on specified equipment.

## Parameters

Parameter	Input/Output	Description	Value
equipmentName	Input	An equipment name to be queried	globaldefs::NamingAttributes_T
how_many	Input	Quantity of the pieces of data that is returned for the first time	unsigned long
nameList	Output	List of the names of the spanning trees queried.	globaldefs::NamingAttributesList_T
nameIt	Output	Iterator	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW MSTPInventoryMgr\\_I](#)

## 9.4.4.7.22 getAllSpanningTrees

---

This interface is used to query information about all spanning trees on equipment by equipment name.

### Definition

```

void getAllSpanningTrees(
    in globaldefs::NamingAttributes_T equipmentName,
    in unsigned long how_many,
    out HW_mstpInventory::HW_SpanningTreeList_T spanningTreeList,
    out HW_mstpInventory::HW_SpanningTreeIterator_I spanningTreeIt)
    raises(globaldefs::ProcessingFailureException);

```

## Function

Query information about all spanning trees on specified equipment.

## Parameters

Parameter	Input/Output	Description	Value
equipmentName	Input	An equipment name to be queried.	globaldefs::NamingAttributes_T
how_many	Input	Quantity of the pieces of data that is returned for the first time	unsigned long
spanningTreeList	Output	List of the names of the spanning trees queried.	HW_mstpInventory::HW_SpanningTreeList_T For the element model, see HW_mstpInventory::HW_SpanningTree_T.
spanningTreeIt	Output	Iterator	HW_mstpInventory::HW_SpanningTreeIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.23 getSpanningTree

---

This interface is used to query details of a spanning tree by its name.

### Definition

```
void getSpanningTree(  
    in globaldefs::NamingAttributes_T spanningTreeName,  
    out HW_mstpInventory::HW_SpanningTree_T spanningTree)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about a specified spanning tree.

### Parameters

Parameter	Input/Output	Description	Value
spanningTreeName	Input	A spanning tree name to be queried	globaldefs::NamingAttributes_T
spanningTree	Output	Information about the specified spanning tree queried.	HW_mstpInventory::HW_SpanningTree_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

### Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.24 getAllContainedInUseTPNames

---

This interface is used to query the names of connection termination points (CTPs) that are being used on ATM or ATM trunk ports.

### Definition

```
void getAllContainedInUseTPNames (
    in globaldefs::NamingAttributes_T endPointName,
    in transmissionParameters::LayerRateList_T layerRateList,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

This interface is used to query the names of ATM VP/VC CTPs that are being used on ATM or ATM trunk ports. CTPs that are being used refer to the CTPs that are occupied or mapped by ATM cross-connections. For example, if a VC CTP of a CTP is occupied by a connection, the VP CTP is considered being used.

### Parameters

Parameter	Input/Output	Description	Value
endPointName	Input	Indicates the end point name of ATM or ATMTrunk.	globaldefs::NamingAttributes_T
layerRateList	Input	Indicates the layer rate list.	transmissionParameters::LayerRateList_T
how_many	Input	Quantity of the data that is returned for the first time.	unsigned long

Parameter	Input/Output	Description	Value
nameList	Output	Indicates the returned TP list.	globaldefs::NamingAttributesList_T
nameIt	Output	Iterator	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

N/A

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.25 getAllQosRuleNames

---

This interface is used to query the names of all QoS rules on an NE.

### Definition

```
void getAllQosRuleNames(
    in globaldefs::NamingAttributes_T meName,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

This interface is used to query the names of all QoS rules on an NE.

## Parameters

Parameter	Input/Output	Description	Value
meName	Input	Indicates the NE name.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the maximum number of data items returned upon the first query.	unsigned long
nameList	Output	Indicates the name list of QoS rules.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the event iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

N/A

**Parent topic:** [HW\\_MSTPInventoryMgr\\_I](#)

## 9.4.4.7.26 getAvailablePortNames

---

This interface is used to query the names of ports available for the link aggregation function on a specified board.

## Definition

```
void getAvailablePortNames(
in globaldefs::NamingAttributes_T equipmentName,
in unsigned long how_many,
out globaldefs::NamingAttributesList_T nameList,
out globaldefs::NamingAttributesIterator_I nameIt)
throws(globaldefs::ProcessingFailureException);
```

## Function

This interface is used to query the names of ports available for the link aggregation function on a specified board.

## Parameters

Parameter	Input/Output	Description	Value
equipmentName	Input	Indicates the NE name.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the maximum number of data items returned upon the first query.	unsigned long
nameList	Output	Indicates the port name list.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the event iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.

Abnormal Value	Description
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

N/A

**Parent topic:** [HW MSTPInventoryMgr\\_I](#)

## 9.4.4.8 HW\_MSTPProtectionMgr\_I

---

This interface is used to manage the MSTP protection.

- [\*\*getAllRPRNode\*\*](#)

This interface is used to query information about all RPR nodes on an NE by NE name.

- [\*\*getRPRNode\*\*](#)

This interface is used to query information about an RPR node by its name.

- [\*\*getRPRTopoPara\*\*](#)

This interface is used to query topology parameters on an RPR node by RPR node name.

- [\*\*getAllAtmProtectGroup\*\*](#)

This interface is used to query information about all ATM protection groups on an NE by NE name.

- [\*\*getAtmProtectGroup\*\*](#)

This interface is used to query information about an ATM protection group by its name.

- [\*\*retrieveRPRSwitchData\*\*](#)

This interface is used to query the switching data of a specified RPR node.

- [\*\*getAllRPRLinkInfo\*\*](#)

This interface is used to query information about all RPR links on a specified NE.

- [\*\*retrieveAtmPGSwitchData\*\*](#)

This interface is used to query switching data of a specified ATM protection group.

**Parent topic:** [Interface Model](#)

## 9.4.4.8.1 getAllRPRNode

---

This interface is used to query information about all RPR nodes on an NE by NE name.

### Definition

```
void getAllRPRNode(
    in globaldefs::NamingAttributes_T meName,
    in unsigned long how_many,
    out HW_RPRNodeList_T nodeList,
    out HW_RPRNodeIterator_I nodeIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query the characteristic information about all RPR nodes on a specified NE.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	An NE name to be queried	globaldefs::NamingAttributes_T
how_many	Input	Quantity of the pieces of data that is returned for the first time	unsigned long
nodeList	Output	List of nodes queried	HW_RPRNodeList_T For element model, see HW_RPRNode_T.
nodeIt	Output	Iterator	HW_RPRNodeIterator_I

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

Abnormal Value	Description
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPPProtectionMgr\\_I](#)

## 9.4.4.8.2 getRPRNode

---

This interface is used to query information about an RPR node by its name.

### Definition

```
void getRPRNode(
    in globaldefs::NamingAttributes_T nodeName,
    out HW_RPRNode_T node)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about a specified RPR node.

### Parameters

Parameter	Input/Output	Description	Value
nodeName	Input	An RPR node name to be queried	globaldefs::NamingAttributes_T
node	Output	Returned details of the node	HW_RPRNode_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPProtectionMgr\\_I](#)

## 9.4.4.8.3 getRPRTopoPara

---

This interface is used to query topology parameters on an RPR node by RPR node name.

### Definition

```
void getRPRTopoPara(
    in globaldefs::NamingAttributes_T nodeName,
    out HW_RPRTopoInfo_T topoInfo)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query topology parameters on a specified RPR node.

### Parameters

Parameter	Input/Output	Description	Value
nodeName	Input	An RPR node name to be queried	globaldefs::NamingAttributes_T
topoInfo	Output	Returned topology parameter information	HW_RPRTopoInfo_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPPProtectionMgr\\_I](#)

## 9.4.4.8.4 getAllAtmProtectGroup

---

This interface is used to query information about all ATM protection groups on an NE by NE name.

### Definition

```
void getAllAtmProtectGroup(
    in globaldefs::NamingAttributes_T meName,
    in unsigned long how_many,
    out HW_AtmProtectGroupList_T atmPGList,
    out HW_AtmProtectGroupIterator_I pgIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about all ATM protection groups on a specified NE.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	An NE name to be queried	globaldefs::NamingAttributes_T
how_many	Input	Quantity of the data that is returned for the first time	unsigned long

Parameter	Input/Output	Description	Value
atmPGList	Output	List of returned ATM protection groups For the element model, see HW_AtmProtectGroup_T.	HW_AtmProtectGroupList_T
pgIt	Output	Iterator	HW_AtmProtectGroupIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPPProtectionMgr\\_I](#)

## 9.4.4.8.5 getAtmProtectGroup

---

This interface is used to query information about an ATM protection group by its name.

### Definition

```
void getAtmProtectGroup(
    in globaldefs::NamingAttributes_T atmpgName,
    out HW_AtmProtectGroup_T atmPG)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query characteristic information about a specified ATM protection group.

## Parameters

Parameter	Input/Output	Description	Value
atmpgName	Input	An ATM protection group name to be queried	globaldefs::NamingAttributes_T
atmPG	Output	Returned details of the ATM protection group	HW_AtmProtectGroup_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPPProtectionMgr\\_I](#)

## 9.4.4.8.6 retrieveRPRSwitchData

---

This interface is used to query the switching data of a specified RPR node.

### Definition

```
void retrieveRPRSwitchData(  
    in globaldefs::NamingAttributes_T nodeName,  
    out HW_RPRSwitchData_T switchData)  
raises(globaldefs::ProcessingFailureException);
```

### Function

This interface is used to query the switching data of a specified RPR node.

## Parameters

Parameter	Input/Output	Description	Value
nodeName	Input	Indicates the RPR node name.	globaldefs::NamingAttributes_T
switchData	Output	Indicates the switching data of an RPR node.	HW_mstpProtection::HW_RPRSwitchData_T For the element model, see HW_RPRSwitchData_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

N/A

**Parent topic:** [HW\\_MSTPProtectionMgr\\_I](#)

## 9.4.4.8.7 getAllRPRLinkInfo

---

This interface is used to query information about all RPR links on a specified NE.

### Definition

```
void getAllRPRLinkInfo(
    in globaldefs::NamingAttributes_T meName,
    in unsigned long how_many,
    out HW_RPRLinkInfoList_T linkList,
    out HW_RPRLinkIterator_I rprLinkIt)
    raises(globaldefs::ProcessingFailureException);
```

## Function

This interface is used to query information about all RPR links on a specified NE.

## Parameters

Parameter	Input/Output	Description	Value
meName	Input	Indicates the NE name.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the maximum number of data items returned upon the first query.	unsigned long
linkList	Output	Indicates the RPR link information.	HW_mstpProtection::HW_RPRLinkInfoList_T For the element model, see HW_RPRLinkInfo_T.
rprLinkIt	Output	Indicates the switching data of an RPR node.	HW_mstpProtection::HW_RPRLinkIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

N/A

**Parent topic:** [HW\\_MSTPPProtectionMgr\\_I](#)

## 9.4.4.8.8 retrieveAtmPGSwitchData

---

This interface is used to query switching data of a specified ATM protection group.

### Definition

```
void retrieveAtmPGSwitchData(
    in globaldefs::NamingAttributes_T atmpgName,
    out HW_AtmPGSwitchData_T switchData)
    raises(globaldefs::ProcessingFailureException);
```

### Function

This interface is used to query switching data of a specified ATM protection group.

### Parameters

Parameter	Input/Output	Description	Value
atmpgName	Input	Indicates the name of the ATM protection group.	globaldefs::NamingAttributes_T
switchData	Output	Indicates the switching data of the ATM protection group.	HW_mstpProtection::HW_AtmPGSwitchData_T For the element model, see HW_AtmPGSwitchData_T.

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

### Restrictions

N/A

**Parent topic:** [HW\\_MSTPProtectionMgr\\_I](#)

## 9.4.4.9 HW\_MSTPServicesMgr\_I

---

This interface is used to manage MSTP services.

- [getAllETHService](#)

This interface is used to query information about all Ethernet services on an NE by NE name.

- [getETHService](#)

This interface is used to query information about an Ethernet service by its name.

- [getAllATMService](#)

This interface is used to query information about all ATM VP/VC cross-connections on an NE by NE name.

- [getAtmService](#)

This interface is used to query information about an ATM VP/VC cross-connection by its name.

**Parent topic:** [Interface Model](#)

### 9.4.4.9.1 getAllETHService

---

This interface is used to query information about all Ethernet services on an NE by NE name.

#### Definition

```
void getAllEthService(
    in globaldefs::NamingAttributes_T meName, in HW_EthServiceTypeList_T
    typeList, in unsigned long how_many, out HW_EthServiceList_T serviceList, out
    HW_EthServiceIterator_I serviceIt)
    raises(globaldefs::ProcessingFailureException);
```

#### Function

Query information about all Ethernet services on a specified NE.

#### Parameters

Parameter	Input/Output	Description	Value
meName	Input	Name of the NE to be queried	globaldefs::NamingAttributes_T
typeList	Input	Limitations on service types.	HW_EthServiceTypeList_T Type of a service: HW_EST_NA HW_EST_EPL HW_EST_EVPL HW_EST_EPLAN HW_EST_EVPLAN
how_many	Input	Quantity of the data that is returned for the first time	unsigned long
serviceList	Output	List of returned Ethernet services	HW_EthServiceList_T For the element model, see HW_EthService_T.
serviceIt	Output	Iterator	HW_EthServiceIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPServicesMgr\\_I](#)

## **9.4.4.9.2 getETHService**

---

This interface is used to query information about an Ethernet service by its name.

### **Definition**

```
void getEthService(  
    in globaldefs::NamingAttributes_T serviceName,  
    out HW_EthService_T ethService)  
raises(globaldefs::ProcessingFailureException);
```

### **Function**

Query information about a specified Ethernet service.

### **Parameters**

Parameter	Input/Output	Description	Value
serviceName	Input	Name for the Ethernet service to be queried	globaldefs::NamingAttributes_T
ethService	Output	Returned details of the Ethernet service	HW_EthService_T

### **Abnormal Values**

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

### **Restrictions**

There is no restriction.

**Parent topic:** [HW\\_MSTPServiceMgr\\_I](#)

## **9.4.4.9.3 getAllATMService**

---

This interface is used to query information about all ATM VP/VC cross-connections on an NE by NE name.

### **Definition**

```
void getAllAtmService(  
    in globaldefs::NamingAttributes_T meName,  
    in HW_AtmServiceTypeList_T typeList,  
    in unsigned long how_many,  
    out HW_AtmServiceList_T serviceList,  
    out HW_AtmServiceIterator_I serviceIt)  
raises(globaldefs::ProcessingFailureException);
```

### **Function**

Query information about all ATM VP/VC cross-connections on a specified NE.

### **Parameters**

Parameter	Input/Output	Description	Value
meName	Input	Name of the NE to be queried	globaldefs::NamingAttributes_T
typeList	Input	Limitations on service types.  Type of the service: HW_AST_NA HW_AST_PVP HW_AST_PVC	HW_AtmServiceTypeList_T
how_many	Input	Quantity of the data that is returned for the first time	unsigned long
serviceList	Output	List of the returned characteristic information about the ATM VP/VC cross-connection	HW_AtmServiceList_T  For the element model, see HW_AtmService_T.
serviceIt	Output	Iterator	HW_AtmServiceIterator_I

### **Abnormal Values**

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPServicesMgr\\_I](#)

## 9.4.4.9.4 getAtmService

---

This interface is used to query information about an ATM VP/VC cross-connection by its name.

### Definition

```
void getAtmService(
    in globaldefs::NamingAttributes_T serviceName,
    out HW_AtmService_T atmService)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query the information about a specified ATM VP/VC cross-connection.

### Parameters

Parameter	Input/Output	Description	Value
serviceName	Input	Name for the ATM VP/VC cross-connection to be queried	globaldefs::NamingAttributes_T

Parameter	Input/Output	Description	Value
atmService	Output	Returned details of the ATM VP/VC cross-connection	HW_AtmService_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_MSTPServicesMgr\\_I](#)

## 9.4.4.10 TrafficDescriptorMgr\_I

---

This interface is used to manage traffic descriptors and supported in only the MSTP equipment.

- [HW\\_getAllTrafficDescriptors](#)

This interface is used to query information about all ATM traffic descriptors on an NE by NE name.

- [HW\\_getAllTrafficDescriptorNames](#)

This interface is used to query names of all ATM traffic descriptors on an NE by NE name.

- [getTrafficDescriptor](#)

This interface is used to query information about a traffic descriptor by its name.

**Parent topic:** [Interface Model](#)

## **9.4.4.10.1 HW\_getAllTrafficDescriptors**

---

This interface is used to query information about all ATM traffic descriptors on an NE by NE name.

### **Definition**

```
void HW_getAllTrafficDescriptors(
    in globaldefs::NamingAttributes_T meName,
    in unsigned long how_many,
    out TrafficDescriptorList_T trafficDescList,
    out TrafficDescriptorIterator_I trafficDescIt)
    raises(globaldefs::ProcessingFailureException);
```

### **Function**

Query characteristic information about all ATM traffic descriptors on the NE.

### **Parameters**

Parameter	Input/Output	Description	Value
meName	Input	Name of the NE to be queried	globaldefs::NamingAttributes_T
how_many	Input	Quantity of the data that is returned for the first time	unsigned long
trafficDescList	Output	List of returned characteristic information about the traffic descriptors	HW_AtmServiceList_T For the element model, see TrafficDescriptor_T.
trafficDescIt	Output	Iterator	HW_AtmServiceIterator_I

### **Abnormal Values**

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

Abnormal Value	Description
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [TrafficDescriptorMgr\\_I](#)

## 9.4.4.10.2 HW\_getAllTrafficDescriptorNames

---

This interface is used to query names of all ATM traffic descriptors on an NE by NE name.

### Definition

```
void HW_getAllTrafficDescriptorNames (
    in globaldefs::NamingAttributes_T meName,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names for all ATM traffic descriptors on a specified NE.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	Name of the NE to be queried	globaldefs::NamingAttributes_T
how_many	Input	Quantity of the data that is returned for the first time	unsigned long
nameList	Output	List of returned names for the traffic descriptors	globaldefs::NamingAttributesList_T

Parameter	Input/Output	Description	Value
nameIt	Output	Iterator	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [TrafficDescriptorMgr\\_I](#)

## 9.4.4.10.3 getTrafficDescriptor

---

This interface is used to query information about a traffic descriptor by its name.

### Definition

```
void getTrafficDescriptor(
    in globaldefs::NamingAttributes_T tdName,
    out TrafficDescriptor_T td)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about a specified traffic descriptor.

### Parameters

Parameter	Input/Output	Description	Value
tdName	Input	Name for the traffic descriptor to be queried	globaldefs::NamingAttributes_T
td	Output	Returned characteristic information about the traffic descriptor	TrafficDescriptor_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [TrafficDescriptorMgr\\_I](#)

## 9.4.4.11 HW\_controlPlaneMgr\_I

---

This interface is used to manage the route control plane, including querying route names, route node names, and SNPP links.

- [getAllRoutingAreaNames](#)  
This interface is used to query names of all routing areas.
- [getAllSnppLinks](#)  
This interface is used to query details of all SNPP links in a routing area according to routing area name.
- [getAllRoutingNodeNames](#)  
This interface is used to query names of all routing nodes in a routing area by routing area name.

- [getAllSnppNames](#)  
This interface is used to query names of all SNPPs at a routing node by routing node name.
- [getAllContainedSnpNames](#)  
This interface is used to query names of all SNPs of an SNPP by SNPP name.
- [getNodeIDByMENName](#)  
This interface is used to query IDs of nodes on an SDH or WDM ASON NE by NE name.
- [getMENNameByNodeID](#)  
This interface is used to query the name of an SDH or WDM ASON NE by node ID.
- [getSnppLink](#)  
This interface is used to query the details about the specified SNPPLink.

**Parent topic:** [Interface Model](#)

## 9.4.4.11.1 getAllRoutingAreaNames

---

This interface is used to query names of all routing areas.

### Definition

```
void getAllRoutingAreaNames (
    out globaldefs::NamingAttributesList_T nameList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query the list of the names of all routing areas.

### Parameters

Parameter	Input/Output	Description	Value
nameList	Output	Query the list of the names for all routing areas.	globaldefs::NamingAttributesList_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_controlPlaneMgr\\_I](#)

## 9.4.4.11.2 getAllSnppLinks

---

This interface is used to query details of all SNPP links in a routing area according to routing area name.

### Definition

```
void getAllSnppLinks(
    in globaldefs::NamingAttributes_T routingAreaName,
    in unsigned long how_many,
    out HW_SnppLinkList_T snppLinkList,
    out HW_SnppLinkIterator_I snppLinkIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of all SNPP links in a specific routing area.

### Parameters

Parameter	Input/Output	Description	Value
routingAreaName	Input	Indicates the name of the routing area to be queried	globaldefs::NamingAttributes_T
how_many	Input	Indicates the quantity of the data that is returned for the first time	unsigned long

Parameter	Input/Output	Description	Value
snppLinkList	Output	Indicates the data that is returned for the first time	HW_SnppLinkList_T For the element model, see HW_SnppLink_T.
snppLinkIt	Output	Indicates the iterator	HW_SnppLinkIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_controlPlaneMgr\\_I](#)

## 9.4.4.11.3 getAllRoutingNodeNames

---

This interface is used to query names of all routing nodes in a routing area by routing area name.

### Definition

```
void getAllRoutingNodeNames(
    in globaldefs::NamingAttributes_T routingAreaName,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nodeNameList,
    out globaldefs::NamingAttributesIterator_I nodeIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of routing nodes in a specified routing area.

## Parameters

Parameter	Input/Output	Description	Value
routingAreaName	Input	Indicates the name of the routing area to be queried	globaldefs::NamingAttributes_T
how_many	Input	Indicates the quantity of pieces of the data that is returned for the first time	unsigned long
nodeNameList	Output	Indicates the data that is returned for the first time	globaldefs::NamingAttributesList_T
nodeIt	Output	Indicates the iterator	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_controlPlaneMgr\\_I](#)

## **9.4.4.11.4 getAllSnppNames**

---

This interface is used to query names of all SNPPs at a routing node by routing node name.

### **Definition**

```
void getAllSnppNames(  
    in globaldefs::NamingAttributes_T routingNodeName,  
    raises(globaldefs::ProcessingFailureException);
```

### **Function**

Query names of all SNPPs at a specified routing node.

### **Parameters**

Parameter	Input/Output	Description	Value
routingNodeName	Input	Indicates the name of the routing node to be queried	globaldefs::NamingAttributes_T
how_many	Input	Indicates the quantity of the pieces of data that is returned for the first time	unsigned long
nameList	Output	Indicates the data that is returned for the first time	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator	globaldefs::NamingAttributesIterator_I

### **Abnormal Values**

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

Abnormal Value	Description
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_controlPlaneMgr\\_I](#)

## 9.4.4.11.5 getAllContainedSnpNames

---

This interface is used to query names of all SNPs of an SNPP by SNPP name.

### Definition

```
void getAllContainedSnpNames (
    in globaldefs::NamingAttributes_T snppName,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of all SNPs of a specified SNPP.

### Parameters

Parameter	Input/Output	Description	Value
snppName	Input	Indicates an SNPP name to be queried.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the quantity of the data that is returned for the first time.	unsigned long

Parameter	Input/Output	Description	Value
nameList	Output	Indicates the data that is returned for the first time.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_controlPlaneMgr\\_I](#)

## 9.4.4.11.6 getNodeIDByMENName

---

This interface is used to query IDs of nodes on an SDH or WDM ASON NE by NE name.

### Definition

```
void getNodeIDByMENName (
    in globaldefs::NamingAttributes_T meOrHolderName,
    out nodeIDList_T nodeID)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query IDs of nodes on an SDH or WDM ASON NE by NE name.

## Parameters

Parameter	Input/Output	Description	Value
meOrHolderName	Input	Indicates the name of the SDH or WDM ASON NE.	globaldefs::NamingAttributes_T
nodeID	Output	Indicates the IDs of nodes on the ASON NE.	nodeIDList_T (string, for example, 10.41.25.63)

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_NOT_IMPLEMENTED	The operation is not supported by the EMS.

## Restrictions

Currently, only IDs of nodes on WDM or SDH ASON NEs can be queried.

**Parent topic:** [HW\\_controlPlaneMgr\\_I](#)

## 9.4.4.11.7 getMENNameByNodeID

---

This interface is used to query the name of an SDH or WDM ASON NE by node ID.

### Definition

```
void getMENNameByNodeID(
    in string nodeID,
    out globaldefs:: NamingAttributesList_T meOrHolderNameList)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query the name of an SDH or WDM ASON NE by node ID.

## Parameters

Parameter	Input/Output	Description	Value
nodeID	Input	Indicates the node ID of the ASON NE.	string
meOrHolderNameList	Output	Indicates the returned name of the SDH or WDM ASON NE.	NamingAttributesList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The SDH or WDM NE does not exist.
EXCPT_NOT_IMPLEMENTED	The operation is not supported by the EMS.

## Restrictions

Currently, only names of WDM or SDH ASON NEs can be queried.

**Parent topic:** [HW\\_controlPlaneMgr\\_I](#)

## 9.4.4.11.8 getSnppLink

---

This interface is used to query the details about the specified SNPPLink.

### Definition

```
void getSnppLink(  
in globaldefs::NamingAttributes_T snppLinkName,
```

```

out HW_SnppLink_T snppLink)
raises(globaldefs::ProcessingFailureException);

```

## Function

Query the details about the specified SNPPLink.

## Parameters

Parameter	Input/Output	Description	Value
snppLinkName	Input	Indicates the name of the SNPPLink.	globaldefs::NamingAttributes_T
snppLink	Output	Indicates the details about the SNPPLink.	HW_SnppLink_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	EXCPT_INTERNAL_ERROR
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_controlPlaneMgr\\_I](#)

## 9.4.4.12 EncapsulationLayerLinkMgr\_I

---

This interface is used to query information about encapsulation layer links (ELLs).

- [getAllELLNames](#)

This interface is used to query names of all encapsulation layer links (ELLs) on the U2000.

- [getAllELLLinks](#)  
This interface is used to query details of all encapsulation layer links (ELLs) on the U2000.
- [getELLLink](#)  
This interface is used to query details of an encapsulation layer link (ELL) by its name.

**Parent topic:** [Interface Model](#)

## 9.4.4.12.1 getAllELLLinkNames

---

This interface is used to query names of all encapsulation layer links (ELLs) on the U2000.

### Definition

```
void getAllELLLinkNames (
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of all ELLs on the U2000.

### Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the quantity of the data that is returned for the first time	unsigned long
nameList	Output	Indicates the data that is returned for the first time	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator	globaldefs::NamingAttributesIterator_I

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [EncapsulationLayerLinkMgr\\_I](#)

## 9.4.4.12.2 getAllELLinks

---

This interface is used to query details of all encapsulation layer links (ELLs) on the U2000.

### Definition

```
void getAllELLinks(
    in unsigned long how_many,
    out ELLinkList_T ells,
    out ELLinkIterator_I ellIt)
raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of all ELLs on the U2000.

### Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the quantity of the data that is returned for the first time	unsigned long
ells	Output	Indicates the data that is returned for the first time	ELLinkList_T For the element model, see EncapsulationLayerLink_T.

Parameter	Input/Output	Description	Value
ellIt	Output	Indicates the ELL iterator	ELLinkIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [EncapsulationLayerLinkMgr\\_I](#)

## 9.4.4.12.3 getELLink

---

This interface is used to query details of an encapsulation layer link (ELL) by its name.

### Definition

```
void getELLink(
    in globaldefs::NamingAttributes_T ellName,
    out EncapsulationLayerLink_T ell)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of a specified ELL by its name.

### Parameters

Parameter	Input/Output	Description	Value
ellName	Input	Name of the ELL to be queried	globaldefs::NamingAttributes_T
ell	Output	Returned details of the ELL	EncapsulationLayerLink_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [EncapsulationLayerLinkMgr\\_I](#)

## 9.4.4.13 FlowDomainMgr\_I

---

This interface is used to query information about flow domain fragments and matrix flow domain fragments. The MSTP equipment is supported only.

- [getAllFlowDomainNames](#)  
This interface is used to query names of all flow domains on the U2000.
- [getAllFlowDomains](#)  
This interface is used to query information about all flow domains on the U2000.
- [getFlowDomain](#)  
This interface is used to query details of a flow domain by its name.
- [getAlIFDFrNames](#)  
This interface is used to query names of all flow domain fragments (FDFrs) in a flow domain by flow domain name.

- [getAllFDFr](#)  
This interface is used to query information about all flow domain fragments (FDFrs) in a flow domain by flow domain name.
- [getFDFr](#)  
This interface is used to query details of a flow domain fragment (FDFr) by its name.
- [getFDFrServerTrail](#)  
This interface is used to query details of server trails on a flow domain fragment (FDFr) by FDFr name.
- [getAllEthernetOAMPoint](#)  
This interface is used to query details of Ethernet OAM points on a flow domain fragment by FDFr name.

**Parent topic:** [Interface Model](#)

## 9.4.4.13.1 getAllFlowDomainNames

---

This interface is used to query names of all flow domains on the U2000.

### Definition

```
void getAllFlowDomainNames (
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of all flow domains on the U2000.

### Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Indicates quantity of the data that is returned for the first time	unsigned long
nameList	Output	Indicates the data that is returned for the first time	globaldefs::NamingAttributesList_T

Parameter	Input/Output	Description	Value
nameIt	Output	Indicates the iterator	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [FlowDomainMgr\\_I](#)

## 9.4.4.13.2 getAllFlowDomains

---

This interface is used to query information about all flow domains on the U2000.

### Definition

```
void getAllFlowDomains(
    in unsigned long how_many,
    out FDList_T flowDomains,
    out FDIerator_I fdIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about all flow domains on the U2000.

### Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the quantity of data that is returned for the first time	unsigned long
flowDomains	Output	Indicates the data that is returned for the first time	FDList_T For the element model, see FlowDomain_T.
fdIt	Output	Indicates the iterator	FDIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [FlowDomainMgr\\_I](#)

## 9.4.4.13.3 getFlowDomain

---

This interface is used to query details of a flow domain by its name.

### Definition

```
void getFlowDomain(
  in globaldefs::NamingAttributes_T fdName,
  out FlowDomain_T flowDomain)
  raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of a specified flow domain by its name.

## Parameters

Parameter	Input/Output	Description	Value
fdName	Input	Name of the flow domain to be queried	globaldefs::NamingAttributes_T
flowDomain	Output	Returned details of the flow domain	FlowDomain_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [FlowDomainMgr\\_I](#)

## 9.4.4.13.4 getAllFDFrNames

---

This interface is used to query names of all flow domain fragments (FDFrs) in a flow domain by flow domain name.

### Definition

```
void getAllFDFrNames(
    in globaldefs::NamingAttributes_T fdName,
    in unsigned long how_many,
    in transmissionParameters::LayerRateList_T connectivityRateList,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query names of all FDFrs in a specified flow domain.

## Parameters

Parameter	Input/Output	Description	Value
fdName	Input	Indicates the name of the flow domain to be queried	globaldefs::NamingAttributes_T
how_many	Input	Indicates the quantity of the data that is returned for the first time	unsigned long
connectivityRateList	Input	Indicates the connection layer rate	transmissionParameters::LayerRateList_T
nameList	Output	Indicates the data that is returned for the first time	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates the invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [FlowDomainMgr\\_I](#)

## 9.4.4.13.5 getAllFDFrs

---

This interface is used to query information about all flow domain fragments (FDFRs) in a flow domain by flow domain name.

### Definition

```
void getAllFDFrs(
    in globaldefs::NamingAttributes_T fdName,
    in unsigned long how_many,
    in transmissionParameters::LayerRateList_T connectivityRateList,
    out FlowDomainFragmentList_T fdfrList,
    out FDFrIterator_I fdfrIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about all FDFRs in a specified flow domain.

### Parameters

Parameter	Input/Output	Description	Value
fdName	Input	Indicates a flow domain name to be queried.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the quantity of the data that is returned for the first time.	unsigned long
connectivityRateList	Input	Indicates the connection layer rate.	transmissionParameters::LayerRateList_T
fdfrList	Output	Indicates the data that is returned for the first time.	FlowDomainFragmentList_T For details, see section flowDomain::FlowDomainFragment_T.

Parameter	Input/Output	Description	Value
fdfrIt	Output	Indicates the FDFr iterator	FDFrIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates the invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [FlowDomainMgr\\_I](#)

## 9.4.4.13.6 getFDFr

---

This interface is used to query details of a flow domain fragment (FDFr) by its name.

### Definition

```
void getFDFr(
    in globaldefs::NamingAttributes_T fdfrName,
    out FlowDomainFragment_T fdfr)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of an FDFr by its name.

### Parameters

Parameter	Input/Output	Description	Value
fdfrName	Input	Name of the FDFr to be queried	globaldefs::NamingAttributes_T
fdf	Output	Returned details of the FDFr	FlowDomainFragment_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [FlowDomainMgr\\_I](#)

## 9.4.4.13.7 getFDFrServerTrail

---

This interface is used to query details of server trails on a flow domain fragment (FDFr) by FDFr name.

### Definition

```
void getFDFrServerTrail(
    in globaldefs::NamingAttributes_T fdfrName,
    out globaldefs::NamingAttributesList_T serverNameList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of server trails on a specified FDFr by FDFr name.

### Parameters

Parameter	Input/Output	Description	Value
fdfrName	Input	Name of the FDFr to be queried	globaldefs::NamingAttributes_T
serverNameList	Output	Returned list of details of the server trails	globaldefs::NamingAttributesList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no reason.

**Parent topic:** [FlowDomainMgr\\_I](#)

## 9.4.4.13.8 getAllEthernetOAMPoint

---

This interface is used to query details of Ethernet OAM points on a flow domain fragment by FDFr name.

### Definition

```
void getAllEthernetOAMPoint(
    in globaldefs::NamingAttributes_T Fdfrname,
    out EthernetOAMPointList_T oamPointList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of Ethernet OAM points on an FDFr by FDFr name.

## Parameters

Parameter	Input/Output	Description	Value
fdfrName	Input	Name of the FDFr to be queried	globaldefs::NamingAttributes_T
serverNameList	Output	Returned list of details of Ethernet OAM points	EthernetOAMPointList_T For the element model, see EthernetOAMPoint_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [FlowDomainMgr\\_I](#)

## 9.4.4.14 MaintenanceMgr\_I

This interface is used to manage maintenance functions.

- [\*\*getActiveMaintenanceOperations\*\*](#)

This interface is used to query all active maintenance operations.

- [\*\*getPRBSTestResult\*\*](#)

This interface is used to query the result of a PRBS test.

- [\*\*getAllMaintenanceDomains\*\*](#)

This interface is used to query information about all maintenance domains (MDs) on an NE by NE name.

- **[getAllMaintenanceAssociations](#)**

This interface is used to query details of all maintenance associations (MAs) in a maintenance domain (MD) by MD name.

- **[getAllMaintenancePoints](#)**

This interface is used to query details of all maintenance points (MPs) in a maintenance domain (MD) or maintenance association (MA) by MD or MA name.

- **[getOAMParameters](#)**

This interface is used to query OAM parameters and monitoring thresholds.

**Parent topic:** [Interface Model](#)

## 9.4.4.14.1 getActiveMaintenanceOperations

---

This interface is used to query all active maintenance operations.

### Definition

```
void getActiveMaintenanceOperations(
    in globaldefs::NamingAttributes_T tpOrMeName,
    in unsigned long how_many,
    out CurrentMaintenanceOperationList_T currentMaintenanceOpeationList,
    out CurrentMaintenanceOperationIterator_I cmoIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query all active maintenance operations.

### Parameters

Parameter	Input/Output	Description	Value
tpOrMeName	Input	Indicates the name of the TP or NE to be queried	globaldefs::namingAttributes_T
how_many	Output	Indicates the quantity of the data that is returned for	unsigned long

Parameter	Input/Output	Description	Value
		the first time	
currentMaintenanceOpeationList	Output	Indicates the data that is returned for the first time	CurrentMaintenanceOperationList_T For the element model, see CurrentMaintenanceOperation_T.
nameIt	Output	Indicates the iterator	CurrentMaintenanceOperationIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates an invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [MaintenanceMgr\\_I](#)

## 9.4.4.14.2 getPRBSTestResult

---

This interface is used to query the result of a PRBS test.

### Definition

```
void getPRBSTestResult(
    in globaldefs::NamingAttributesList_T tpNameList,
    out PRBSTestResultList_T resultList)
```

```
raises(globaldefs::ProcessingFailureException);
```

## Function

Query the result of a PRBS test.

## Parameters

Parameter	Input/Output	Description	Value
tpNameList	Input	List of TP names to be queried	globaldefs::namingAttributesList_T
resultList	Output	Returned list of results of the PRBS test	PRBSTestResultList_T For the element model, see PRBSTestResult_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [MaintenanceMgr\\_I](#)

## 9.4.4.14.3 getAllMaintenanceDomains

---

This interface is used to query information about all maintenance domains (MDs) on an NE by NE name.

## Definition

```
void getAllMaintenanceDomains(
```

```

in globaldefs::NamingAttributes_T meName,
in unsigned long how_many,
out HW_MaintenanceDomainList_T mdList,
out HW_MaintenanceDomainIterator_I mdIt)
raises(globaldefs::ProcessingFailureException);

```

## Function

Query MDs.

## Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	Indicates an NE name to be queried.	globaldefs::namingAttributes_T
how_many	Input	Indicates quantity of data that is returned for the first time.	unsigned long
mdList	Output	Indicates data that is returned for the first time. For element model, see HW_MaintenanceDomain_T.	HW_MaintenanceDomainList_T
mdIt	Output	Indicates the MD iterator	HW_MaintenanceDomainIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that an input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [MaintenanceMgr\\_I](#)

## 9.4.4.14.4 getAllMaintenanceAssociations

---

This interface is used to query details of all maintenance associations (MAs) in a maintenance domain (MD) by MD name.

### Definition

```
void getAllMaintenanceAssociations(
    in globaldefs::NamingAttributes_T mdName,
    in unsigned long how_many,
    out HW_MaintenanceAssociationList_T maList,
    out HW_MaintenanceAssociationIterator_I maIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query MAs.

### Parameters

Parameter	Input/Output	Description	Value
mdName	Input	Indicates an MD name to be queried.	globaldefs::namingAttributes_T
how_many	Input	Indicates quantity of data that is returned for the first time.	unsigned long
maList	Output	Indicates data that is returned for the first time.	HW_MaintenanceAssociationList_T For element model, see HW_MaintenanceAssociation_T.
maIt	Output	Indicates the MA Iterator	HW_MaintenanceAssociationIterator_I

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates invalid input.

Abnormal Value	Description
EXCPT_ENTITY_NOT_FOUND	Indicates that an input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [MaintenanceMgr I](#)

## 9.4.4.14.5 getAllMaintenancePoints

---

This interface is used to query details of all maintenance points (MPs) in a maintenance domain (MD) or maintenance association (MA) by MD or MA name.

### Definition

```
void getAllMaintenancePoints(
    in globaldefs::NamingAttributes_T mdOrMaName,
    in unsigned long how_many,
    out HW_MaintenancePointList_T mpList,
    out HW_MaintenancePointIterator_I mpIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query maintenance points.

### Parameters

Parameter	Input/Output	Description	Value
mdOrMaName	Input	Indicates an MD or MA name to be queried.	globaldefs::namingAttributes_T
how_many	Input	Indicates quantity of data that is returned for the first time.	unsigned long

Parameter	Input/Output	Description	Value
mpList	Output	Indicates data that is returned for the first time. For element model, see <a href="#">HW_MaintenancePoint_T</a> .	HW_MaintenancePointList_T
mpIt	Output	Indicates the MP Iterator	HW_MaintenancePointIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that an input object does not exist.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [MaintenanceMgr\\_I](#)

## 9.4.4.14.6 getOAMParameters

---

This interface is used to query OAM parameters and monitoring thresholds.

### Definition

```
void getOAMParameters(
in globaldefs::NamingAttributes_T name,
out transmissionParameters::LayeredParameterList_T ParamList)
throws(globaldefs::ProcessingFailureException);
```

### Function

Query OAM parameters and monitoring thresholds.

## Parameters

Parameter	Input/Output	Description	Value
name	Input	Indicates object names to be queried.	name
ParamList	Output	Information about OAM parameters and monitoring thresholds that have been queried.	transmissionParameters::LayeredParameterList_T the following parameters are valid: EnableOAMPacketProtocol OAMWorkingMode LinkEventNotification RemoteLBEnabledRsp ErrorFrameMonitorWindow ErrorFrameMonitorThreshold ErrorFramePeriodWindow ErrorFramePeriodThreshold ErrorFrameSecondWindow ErrorFrameSecondThreshold ErrorFrameSignalPeriodicMonitorWindow ErrorFrameSignalPeriodicMonitorThreshold LoopbackStatus OAMDiscoveryStatus PortTransmitStatus PortReceiveStatus

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that an input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [MaintenanceMgr\\_I](#)

## 9.4.4.15 TopoMgr\_I

---

This interface is used to manage network topologies.

- [getTopoSubnetworkViewInfo](#)

This interface is used to query the information about NEs and subnets in the topology view.

- [getProtectSubnetworkViewInfo](#)

This interface is used to query information about NEs and subnets in the topology view.

- [getViewInfoByTopoSubnetwork](#)

This interface is used to query NEs and subnets in a specified topology subnet.

**Parent topic:** [Interface Model](#)

### 9.4.4.15.1 getTopoSubnetworkViewInfo

---

This interface is used to query the information about NEs and subnets in the topology view.

#### Definition

```
void getTopoSubnetworkViewInfo(  
    in unsigned long how_many,  
    out NodeList_T nodeList,  
    out NodeIterator_I NodeIt)  
raises(globaldefs::ProcessingFailureException);
```

#### Function

Query information about NEs and subnets in the topology view of the U2000.

#### Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the quantity of the data that is returned for the first time	unsigned long

Parameter	Input/Output	Description	Value
nodeList	Output	Indicates the data that is returned for the first time	NodeList_T For the element model, see Node_T.
NodeIt	Output	Indicates the iterator	NodeIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [TopoMgr\\_I](#)

## 9.4.4.15.2 getProtectSubnetworkViewInfo

---

This interface is used to query information about NEs and subnets in the topology view.

### Definition

```
void getProtectSubnetworkViewInfo(
    in unsigned long how_many,
    out NodeList_T nodeList,
    out NodeIterator_I NodeIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

The function is the same as the function of the getTopoSubnetworkViewInfo interface.

### Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Quantity of the data that is returned for the first time	unsigned long
nodeList	Output	Data that is returned for the first time	NodeList_T For the element model, see Node_T.
NodeIt	Output	Iterator	NodeIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [TopoMgr\\_I](#)

## 9.4.4.15.3 getViewInfoByTopoSubnetwork

---

This interface is used to query NEs and subnets in a specified topology subnet.

### Definition

```
void getViewInfoByTopoSubnetwork(
    in globaldefs::NamingAttributes_T topoSubnetwork, in unsigned long
    how_many, out NodeList_T nodeList, out NodeIterator_I NodeIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query NEs and subnets in a specified topology subnet.

## Parameters

Parameter	Input/Output	Description	Value
topoSubnetwork	Input	Indicates the name of the topology subnet.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the volume of data returned upon the first query.	unsigned long
nodeList	Output	Indicates the data returned upon the first query.	NodeList_T For the element model, see Node_T.
NodeIt	Output	Indicates an iterator.	NodeIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [TopoMgr\\_I](#)

## 9.4.4.16 TCProfileMgr\_I

---

This interface is used to manage traffic policy profiles. Traffic policy profiles include port, Ethernet V-UNI ingress or egress, PW, ATM, ATM COS mapping and DS domain mapping policy profiles. PTN equipment is supported.

- [HW\\_getAllTCProfileNames](#)

This interface is used to query names of all traffic policy profiles.

- [HW\\_getTCProfile](#)  
This interface is used to query details of a traffic policy profile by its name.
- [HW\\_getAllTCProfiles](#)  
This interface is used to query details of all traffic policy profiles.
- [getTCPProfileAssociatedResouces](#)  
This interface is used to query objects where a traffic policy profile is applied by traffic policy profile name.

**Parent topic:** [Interface Model](#)

## 9.4.4.16.1 HW\_getAllTCProfileNames

---

This interface is used to query names of all traffic policy profiles.

### Definition

```
void HW_getAllTCProfileNames(
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of all traffic policy profiles.

### Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Quantity of the data that is returned for the first time	unsigned long
nameList	Output	List of traffic policy profile names.	globaldefs::NamingAttributesList_T
nameIt	Output	Iterator	globaldefs::NamingAttributesIterator_I

### Abnormal Values

Abnormal Value	Description
EXCPT_NOT_IMPLEMENTED	The manager is not supported on the U2000.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [TCPProfileMgr\\_I](#)

## 9.4.4.16.2 HW\_getTCProfile

---

This interface is used to query details of a traffic policy profile by its name.

### Definition

```
void HW_getTCProfile(
    in globaldefs::NamingAttributes_T tcProfileName,
    out HW_TCProfile_T tcProfile)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of a specified traffic policy profile.

### Parameters

Parameter	Input/Output	Description	Value
tcProfileName	Input	Name of the specified traffic policy profile.	globaldefs::NamingAttributes_T
tcProfile	Output	Returned details of the specified traffic policy profile.	HW_TCProfile_T

## Abnormal Values

Abnormal Value	Description
EXCPT_NOT_IMPLEMENTED	The manager is not supported on the U2000.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [TCPProfileMgr\\_I](#)

## 9.4.4.16.3 HW\_getAllTCProfiles

---

This interface is used to query details of all traffic policy profiles.

### Definition

```
void HW_getAllTCProfiles(
    in unsigned long how_many,
    out HW_TCProfileList_T tcProfileList,
    out HW_TCProfileIterator_I tcProfileIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of all traffic policy profiles.

### Parameters

Parameter	Input/Output	Description	Value
how_many	Input	Number of traffic policy profiles that are returned for the first time.	unsigned long

Parameter	Input/Output	Description	Value
tcProfileList	Output	List of information about traffic policy profiles.	HW_TCProfileList_T For element model, see HW_TCProfile_T.
tcProfileIt	Output	Iterator	HW_TCProfileIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_NOT_IMPLEMENTED	The manager is not supported in the network management system.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

Currently, the port policy, Ethernet V-UNI ingress and egress policy, PW policy, ATM policy, ATM CoS mapping, and DS domain mapping can be queried.

**Parent topic:** [TCProfileMgr\\_I](#)

## 9.4.4.16.4 getTCProfileAssociatedResources

---

This interface is used to query objects where a traffic policy profile is applied by traffic policy profile name.

### Definition

```
void getTCProfileAssociatedResources(
in globaldefs::NamingAttributes_T tcProfileName,
out TrafficConditioningProfileAssignList_T resourceList)
```

```
raises(globaldefs::ProcessingFailureException);
```

## Function

Query objects where a traffic policy profile is applied.

## Parameters

Parameter	Input/Output	Description	Value
tcProfileName	Input	Name of a traffic policy profile.	globaldefs::NamingAttributes_T
resourceList	Output	Returned list of objects where the traffic policy profile is applied.	TrafficConditioningProfileAssignList_T For element model, see TrafficConditioningProfileAssign_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_NOT_IMPLEMENTED	The manager is not supported in the network management system.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [TCProfileMgr\\_I](#)

## 9.4.4.17 EmsSession\_I

---

This interface is used to query NMS managers and check the network communication.

- [getSupportedManagers](#)  
This interface is used to query names of managers that run on the U2000.
- [getManager](#)  
This interface is used to query all manager interfaces by manager name.
- [getEventChannel](#)  
This interface is used to query event channels.

**Parent topic:** [Interface Model](#)

## 9.4.4.17.1 getSupportedManagers

---

This interface is used to query names of managers that run on the U2000.

### Definition

```
void getSupportedManagers(
    out managerNames_T supportedManagerList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of managers that run on the U2000.

### Parameters

Parameter	Input/Output	Description	Value
supportedManagerList	Output	List of the names of the managers supported in the network management system	managerNames_T For the element model, see string.

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.

### Restrictions

There is no restriction.

**Parent topic:** [EmsSession\\_I](#)

## 9.4.4.17.2 getManager

---

This interface is used to query all manager interfaces by manager name.

### Definition

```
void getManager(  
    in string managerName,  
    out common::Common_I managerInterface)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query manager interfaces.

### Parameters

Parameter	Input/Output	Description	Value
managerName	Input	Name of the manager to be queried	string
managerInterface	Output	Returned interface of the manager	common::Common_I

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_NOT_IMPLEMENTED	The manager is not supported in the network management system.

### Restrictions

There is no restriction.

**Parent topic:** [EmsSession\\_I](#)

## 9.4.4.17.3 getEventChannel

---

This interface is used to query event channels.

### Definition

```
void getEventChannel(  
    out CosNotifyChannelAdmin::EventChannel eventChannel)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query event channels.

### Parameters

Parameter	Input/Output	Description	Value
eventChannel	Output	Event channel	CosNotifyChannelAdmin::EventChannel

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.

### Restrictions

There is no restriction.

**Parent topic:** [EmsSession\\_I](#)

## 9.4.4.18 EmsSessionFactory\_I

---

This interface is used to query the object reference of a target interface.

- [getEmsSession](#)

This interface is used to query the object reference of a target interface.

**Parent topic:** [Interface Model](#)

## 9.4.4.18.1 getEmsSession

---

This interface is used to query the object reference of a target interface.

### Definition

```
void getEmsSession(  
    in string user,  
    in string password,  
    in nmsSession::NmsSession_I client,  
    out emsSession::EmsSession_I emsSessionInterface)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query the object reference of a target interface.

### Parameters

Parameter	Input/Output	Description	Value
user	Input	User name	string
password	Input	Password	string
client	Input	Object of the client interface	nmsSession::NmsSession_I
emsSessionInterface	Output	Returned object reference of the target interface	emsSession::EmsSession_I

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.

## Restrictions

There is no restriction.

**Parent topic:** [EmsSessionFactory\\_I](#)

## 9.4.4.19 Version\_I

---

This interface is used to query information about IDL versions.

- [getVersion](#)  
This interface is used to query information about IDL versions.

**Parent topic:** [Interface Model](#)

## 9.4.4.19.1 getVersion

---

This interface is used to query information about IDL versions.

### Definition

```
string getVersion( ) ;
```

### Function

Query information about IDL versions.

### Parameters

None

### Abnormal Values

None

### Restrictions

There is no restriction.

**Parent topic:** [Version 1](#)

## 9.4.4.20 HW\_VPNMgr\_I

---

This interface is used to manage services, such as, PWE3 (ATM, CES, and EES services), VPLS, NativeEth and tunnel services. The supported equipment is as follows: PTN, Hybrid MSTP, and RTN900 series equipment. NativeEth services are applicableonly to RTN equipment of V100R002 version.

- [getAllTrafficTrunksWithME](#)

This interface is used to query information about all traffic trunks on an NE by NE name. A traffic trunk can be an MPLS dynamic tunnel or IP tunnel.

- [getAllTrafficTrunkNamesWithME](#)

This interface is used to query names of all traffic trunks consisting of RSVP tunnels and IP tunnels on an NE by NE name.

- [getAllIPCrossConnections](#)

This interface is used to query information about all IP cross-connections on an NE by NE name. An IP cross-connection can be a static tunnels or a PW Switch object in PWE3 service

- [getAllIPCrossConnectionNames](#)

This interface is used to query names of all IP cross-connections on an NE by NE name. An IP cross-connection can be a static tunnel or a PW Switch object in PWE3 services.

- [getAllMFDFrs](#)

This interface is used to query information about all services on an NE, such as PWE3, VPLS and native Ethernet services, by NE name.

- [getAllMFDFrNames](#)

This interface is used to query names of all services in an NE, such as PWE3, VPLS and native Ethernet services, by NE name.

- [getMFDFr](#)

This interface is used to query details of an MFDFr by its name.

- [getIPCrossConnection](#)

This interface is used to query details about a specified IP cross-connection by name. You can obtain information about static tunnels and PW switch objects in PWE3 services.

- [getTrafficTrunk](#)

This interface is used to query details about a specified traffic trunk by name. You can obtain information about dynamic MPLS tunneltrails, static tunneltrails and PWtrails.

- [getTrafficTrunksByNativeEmsName](#)

This interface is used to query all traffic trunks (including E2E tunnels) with a specified value NativeEmsName.

- [getAllTrafficTrunkNames](#)

This interface is used to query the names of all traffic trunks in a specified flow domain (FD), including dynamic MPLS tunneltrails, static tunneltrails and PWtrails.

- [getAllTrafficTrunks](#)

This interface is used to query the information of all traffic trunks in a specified flow domain (FD), including dynamic MPLS tunneltrails, static tunneltrails and PWtrails.

- [getAllFDFrNames](#)

This interface is used to query the names of all PWE3 (AES, CES, and EES) and VPLS trails in a specified flow domain (FD).

- [getAllFDFrss](#)

This interface is used to query the details of all PWE3 (AES, CES, and EES) and VPLS trails in a specified flow domain (FD).

- [getFDFr](#)

This interface is used to query details about a PWE3 (AES, CES, EES) and VPLS trail in a specified flow domain (FD).

- [getFDFrRoute](#)

This interface is used to query routing information about a specified flow domain fragment (FDFr), such as a PWE3 (AES, CES, and EES) or VPLS service.

- [getIPRoutes](#)

This interface is used to query the route information of PWs and tunnels. Supported service types include PWE3 and tunnel.

- [getSelfLearningMACAddressTable](#)

This interface is used to query the self-learning MAC addresses of a specified service.

- [getIPRoutesByTrafficTrunks](#)

This interface is used to query IP routes of E2E tunnel trails and PW trails in batches.

- [getFDFrRoutes](#)

This interface is used to query routes of IP E2E PWE3 services (including AES, CES, and EES services) and VPLS services in batches.

**Parent topic:** [Interface Model](#)

## **9.4.4.20.1 getAllTrafficTrunksWithME**

---

This interface is used to query information about all traffic trunks on an NE by NE name. A traffic trunk can be an MPLS dynamic tunnel or IP tunnel.

## Definition

```
void getAllTrafficTrunksWithME(
    in globaldefs::NamingAttributes_T managedElementName,
    in transmissionParameters::LayerRateList_T connectionRateList,
    in unsigned long how_many,
    out HW_vpnManager::TrafficTrunkList_T trafficTrunkList,
    out HW_vpnManager::TrafficTrunkIterator_I trafficTrunkIt)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query information about all RSVP tunnels and IP tunnels on a specified NE.

## Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	Name of the NE to be queried	globaldefs::NamingAttributes_T
connectionRateList	Input	Connection layer rate	transmissionParameters::LayerRateList_T
how_many	Input	Quantify of data returned in the first batch	unsigned long
trafficTrunkList	Output	Data returned in the first batch	HW_vpnManager::TrafficTrunkList_T For element model, see TrafficTrunk_T.
trafficTrunkIt	Output	Iterator	HW_vpnManager::TrafficTrunkIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

Abnormal Value	Description
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.2 getAllTrafficTrunkNamesWithME

---

This interface is used to query names of all traffic trunks consisting of RSVP tunnels and IP tunnels on an NE by NE name.

### Definition

```
void getAllTrafficTrunkNamesWithME(
    in globaldefs::NamingAttributes_T managedElementName,
    in transmissionParameters::LayerRateList_T connectionRateList,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of all RSVP tunnels and IP tunnels on a specified NE.

### Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	The name of the NE to be queried	globaldefs::NamingAttributes_T
connectionRateList	Input	Connection layer rate	transmissionParameters::LayerRateList_T

Parameter	Input/Output	Description	Value
how_many	Input	Quantify of data returned in the first batch	unsigned long
nameList	Output	Names returned in the first batch	globaldefs::NamingAttributesList_T
nameIt	Output	Iterator	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.3 getAllIPCrossConnections

---

This interface is used to query information about all IP cross-connections on an NE by NE name. An IP cross-connection can be a static tunnels or a PW Switch object in PWE3 service

### Definition

```
void getAllIPCrossConnections(
in globaldefs::NamingAttributes_T managedElementName,
in transmissionParameters::LayerRateList_T connectionRateList,
in unsigned long how_many,
```

```

out HW_vpnManager::IPCrossConnectionList_T ipCCList,
out HW_vpnManager::IPCrossConnectionIterator_I ipCCIt)
raises(globaldefs::ProcessingFailureException);

```

## Function

Query information about all static tunnels and PW Switch objects in PWE3 services on the specified NE.

## Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	Name of the NE to be queried	globaldefs::NamingAttributes_T
connectionRateList	Input	Connection layer rate	transmissionParameters::LayerRateList_T
how_many	Input	Quantify of data returned in the first batch	unsigned long
ipCCList	Output	Names returned in the first batch	HW_vpnManager For element model, see IPCrossConnection_T.
ipCCIt	Output	Iterator	HW_vpnManager::IPCrossConnectionIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.4 getAllIPCrossConnectionNames

---

This interface is used to query names of all IP cross-connections on an NE by NE name. An IP cross-connection can be a static tunnel or a PW Switch object in PWE3 services.

### Definition

```
void getAllIPCrossConnectionNames (
    in globaldefs::NamingAttributes_T managedElementName,
    in transmissionParameters::LayerRateList_T connectionRateList,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query names of all static tunnels and PW Switch objects in PWE3 services on the specified NE.

### Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	The name of the NE to be queried	globaldefs ::NamingAttributes_T
connectionRateList	Input	Connection layer rate	transmissionParameters ::LayerRateList_T
how_many	Input	Quantify of data returned in the first batch	unsigned long
nameList	Output	Names returned in the first batch	globaldefs::NamingAttributesList_T
nameIt	Output	Iterator	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.5 getAllMFDFrs

---

This interface is used to query information about all services on an NE, such as PWE3, VPLS and native Ethernet services, by NE name.

### Definition

```
void getAllMFDFrs(  
    in globaldefs::NamingAttributes_T meName,  
    in transmissionParameters::LayerRateList_T connectionRateList,  
    in unsigned long how_many,  
    out HW_vpnManager::MatrixFlowDomainFragmentList_T mfdfrList,  
    out HW_vpnManager::MFDFRIterator_I mfdfrIt)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query information about all PWE3, VPLS and native Ethernet services on a specified NE.

### Parameters

Parameter	Input/Output	Description	Value
meName	Input	The name of the NE to be queried	globaldefs::NamingAttributes_T
connectionRateList	Input	Connection layer rate	transmissionParameters::LayerRateList_T
how_many	Input	Quantify of data returned in the first batch	unsigned long
mfdfrList	Output	Names returned in the first batch	HW_vpnManager For element model, see MatrixFlowDomainFragment_T.
mfdfrIt	Output	Iterator	HW_vpnManager::MFDFrIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.6 getAllMFDFrNames

---

This interface is used to query names of all services in an NE, such as PWE3, VPLS and native Ethernet services, by NE name.

## Definition

```
void getAllMFDFrNames(
    in globaldefs::NamingAttributes_T meName,
    in transmissionParameters::LayerRateList_T connectionRateList,
    in unsigned long how_many,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query names of all PWE3, VPLS and native Ethernet services on a specified NE.

## Parameters

Parameter	Input/Output	Description	Value
meName	Input	The name of the NE to be queried	globaldefs::NamingAttributes_T
connectionRateList	Input	Connection layer rate	transmissionParameters::LayerRateList_T
how_many	Input	Quantify of data returned in the first time	unsigned long
nameList	Output	Names returned in the first time	globaldefs::NamingAttributesList_T
nameIt	Output	Iterator	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.7 getMFDFr

---

This interface is used to query details of an MFDFr by its name.

### Definition

```
void getMFDFr(  
    in globaldefs::NamingAttributes_T mfdfrName,  
    out MatrixFlowDomainFragment_T theMFDFr)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of a specified MFDFr by its name.

### Parameters

Parameter	Input/Output	Description	Value
mfdfrName	Input	The name of the FDFr to be queried	globaldefs::NamingAttributes_T
theMFDFr	Output	details of a specified MFDFr	MatrixFlowDomainFragment_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.8 getIPCrossConnection

---

This interface is used to query details about a specified IP cross-connection by name. You can obtain information about static tunnels and PW switch objects in PWE3 services.

### Definition

```
void getIPCrossConnection(  
    in globaldefs::NamingAttributes_T ipCCName,  
    out IPCrossConnection_T ipCC)  
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of an IP cross-connection by its name.

### Parameters

Parameter	Input/Output	Description	Value
ipCCName	Input	Indicates the name of the IP cross-connection to be queried.	globaldefs::NamingAttributes_T
ipCC	Output	Indicates the returned details of the IP cross-connection.	IPCrossConnection_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.

Abnormal Value	Description
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr I](#)

## 9.4.4.20.9 getTrafficTrunk

---

This interface is used to query details about a specified traffic trunk by name. You can obtain information about dynamic MPLS tunneltrails, static tunneltrails and PWtrails.

### Definition

```
void getTrafficTrunk(
    in globaldefs::NamingAttributes_T trafficTrunkName,
    out TrafficTrunk_T trafficTrunk)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query details of an IP cross-connection by its name.

### Parameters

Parameter	Input/Output	Description	Value
trafficTrunkName	Input	Indicates the name of the traffic trunk to be queried	globaldefs::NamingAttributes_T
trafficTrunk	Output	Indicates the returned details of the object.	TrafficTrunk_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.10 getTrafficTrunksByNativeEmsName

---

This interface is used to query all traffic trunks (including E2E tunnels) with a specified value NativeEmsName.

### Definition

```
void getTrafficTrunksByNativeEmsName (
    in string nativeEmsName,
    out TrafficTrunkList_T trafficTrunkList)
    raises(globaldefs::ProcessingFailureException);
```

### Function

This interface can be used to query all traffic trunks with a specified value NativeEmsName.

### Parameters

Parameter	Input/Output	Description	Value
nativeEmsName	Input	Indicates the value of the NativeEmsName for the queried object.	String
trafficTrunkList	Output	Indicates the returned details of the queried object.	TrafficTrunkList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

None.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.11 getAllTrafficTrunkNames

---

This interface is used to query the names of all traffic trunks in a specified flow domain (FD), including dynamic MPLS tunneltrails, static tunneltrails and PWtrails.

### Definition

```
void getAllTrafficTrunkNames(  
    in globaldefs::NamingAttributes_T fdName,  
    in transmissionParameters::LayerRateList_T connectionRateList,  
    in unsigned long how_many,  
    out globaldefs::NamingAttributesList_T nameList,  
    out globaldefs::NamingAttributesIterator_I nameIt)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query the names of all dynamic MPLS tunneltrails, static tunneltrails and PWtrails in a specified FD.

### Parameters

Parameter	Input/Output	Description	Value
fdName	Input	Indicates the FD name.	globaldefs::NamingAttributes_T

Parameter	Input/Output	Description	Value
connectionRateList	Input	Indicates the connection layer rate.	transmissionParameters::LayerRateList_T
how_many	Input	Indicates the number of data records to be returned first.	unsigned long
nameList	Output	Indicates the name of data records to be returned first.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The iterator count exceeds the threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.12 getAllTrafficTrunks

---

This interface is used to query the information of all traffic trunks in a specified flow domain (FD), including dynamic MPLS tunneltrails, static tunneltrails and PWtrails.

## Definition

```
void getAllTrafficTrunks(
    in globaldefs::NamingAttributes_T fdName,
    in transmissionParameters::LayerRateList_T connectionRateList,
    in unsigned long how_many,
    out TrafficTrunkList_T trafficTrunkList,
    out TrafficTrunkIterator_I trafficTrunkIt)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query the information of all dynamic MPLS tunneltrails, static tunneltrails and PWtrails in a specified FD.

## Parameters

Parameter	Input/Output	Description	Value
fdName	Input	Indicates the FD name.	globaldefs::NamingAttributes_T
connectionRateList	Input	Indicates the connection layer rate.	transmissionParameters::LayerRateList_T
how_many	Input	Indicates the number of data records to be returned first.	unsigned long
trafficTrunkList	Output	Indicates the list of data records to be returned first.	HW_vpManager::TrafficTrunkList_T For details, see TrafficTrunk_T.
trafficTrunkIt	Output	Indicates the iterator.	HW_vpManager::TrafficTrunkIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

Abnormal Value	Description
EXCPT_TOO_MANY_OPEN_ITERATORS	The iterator count exceeds the threshold.

## Restrictions

In a distributed scenario, the value range of how\_many is [0,5000].

**Parent topic:** [HW\\_VPNMgr I](#)

## 9.4.4.20.13 getAllFDNames

---

This interface is used to query the names of all PWE3 (AES, CES, and EES) and VPLS trails in a specified flow domain (FD).

### Definition

```
void getAllFDNames(
    in globaldefs::NamingAttributes_T fdName,
    in unsigned long how_many,
    in transmissionParameters::LayerRateList_T connectionRateList,
    out globaldefs::NamingAttributesList_T nameList,
    out globaldefs::NamingAttributesIterator_I nameIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query the names of all PWE3 (AES, CES, and EES) and VPLS trails in a specified FD.

### Parameters

Parameter	Input/Output	Description	Value
fdName	Input	Indicates the FD name.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the number of data records to be returned first.	unsigned long

Parameter	Input/Output	Description	Value
connectionRateList	Input	Indicates the connection layer rate.	transmissionParameters::LayerRateList_T
nameList	Output	Indicates the list of data records to be returned first.	globaldefs::NamingAttributesList_T
nameIt	Output	Indicates the iterator.	globaldefs::NamingAttributesIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The iterator count exceeds the threshold.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.14 getAllFDFrS

---

This interface is used to query the details of all PWE3 (AES, CES, and EES) and VPLS trails in a specified flow domain (FD).

### Definition

```
void getAllFDFrS(
in globaldefs::NamingAttributes_T fdName,
in unsigned long how_many,
```

```

in transmissionParameters::LayerRateList_T connectionRateList,
out FlowDomainFragmentList_T fdfrList,
out FDFrIterator_I fdfrIt)
raises(globaldefs::ProcessingFailureException);

```

## Function

Query the names of all PWE3 (AES, CES, and EES) and VPLS trails in a specified FD.

## Parameters

Parameter	Input/Output	Description	Value
fdName	Input	Indicates the FD name.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the number of data records to be returned first.	unsigned long
connectionRateList	Input	Indicates the connection layer rate.	transmissionParameters::LayerRateList_T
fdfrList	Output	Indicates the list of data records to be returned first.	FlowDomainFragmentList_T For details, see section HW_vpnManager::FlowDomainFragment_T.
fdfrIt	Output	Indicates the iterator.	HW_vpnManager::FDFrIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	The iterator count exceeds the threshold.

## Restrictions

In a distributed scenario, the value range of how\_many is [0,5000].

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.15 getFDFr

---

This interface is used to query details about a PWE3 (AES, CES, EES) and VPLS trail in a specified flow domain (FD).

### Definition

```
void getFDFr(  
    in globaldefs::NamingAttributes_T fdfrName,  
    out FlowDomainFragment_T theFDFr)  
raises(globaldefs::ProcessingFailureException);
```

### Function

Query the names of all PWE3 (AES, CES, and EES) and VPLS trails in a specified FD.

### Parameters

Parameter	Input/Output	Description	Value
fdfrName	Input	Indicates the FD name.	globaldefs::NamingAttributes_T
theFDFr	Output	Indicates the trail details to be returned.	HW_vpnManager::FlowDomainFragment_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.16 getFDFrRoute

---

This interface is used to query routing information about a specified flow domain fragment (FDFr), such as a PWE3 (AES, CES, and EES) or VPLS service.

### Definition

```
void getFDFrRoute(  
    in globaldefs::NamingAttributes_T fdfrName,  
    in boolean includeHigherOrderCCs,  
    out FDFrRoute_T route)  
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query routing information about a specified FDFr.

### Parameters

Parameter	Input/Output	Description	Value
fdfrName	Input	Indicates the FDFr name.	globaldefs::NamingAttributes_T
includeHigherOrderCCs	Input	Specifies whether higher order routes are included.	FALSE
route	Output	Indicates the FDFr routing information to be returned.	FDFrRoute_T

### Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.17 getIPRoutes

---

This interface is used to query the route information of PWs and tunnels. Supported service types include PWE3 and tunnel.

### Definition

```
void getIPRoutes(
    in globaldefs::NamingAttributes_T trafficTrunkName,
    out IPCrossConnectionList_T routes)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query route information by service name.

### Parameters

Parameter	Input/Output	Description	Value
trafficTrunkName	Input	Indicates the service names to be queried.	globaldefs::NamingAttributes_T
routes	Output	Indicates the returned service route information.	IPCrossConnectionList_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

## Restrictions

Only Static-CR Tunnel is supported. Rsvp Tunnel and IP Tunnel are not supported.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.18 getSelfLearningMACAddressTable

---

This interface is used to query the self-learning MAC addresses of a specified service.

### Definition

```
void getSelfLearningMACAddressTable(
    in globaldefs::NamingAttributesList_T nameList,
    in unsigned long how_many,
    out SelfLearningMACAddressTableList_T tableList,
    out SelfLearningMACAddressTableIterator_I tableIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query the self-learning MAC addresses of a specified service.

### Parameters

Parameter	Input/Output	Description	Value
nameList	Input	Indicates the IDs of E-LAN services.	globaldefs::NamingAttributesList_T

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the maximum volume of data returned upon the first query.	unsigned long
tableList	Output	Indicates the list of self-learning MAC addresses.	SelfLearningMACAddressTableList_T
tableIt	Output	Indicates the iterator for returning the self-learning MAC addresses.	SelfLearningMACAddressTableIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

Only the following types of NEs are supported: RTN, PTN, and MSTP+.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.19 getIPRoutesByTrafficTrunks

---

This interface is used to query IP routes of E2E tunnel trails and PW trails in batches.

### Definition

```
void getIPRoutesByTrafficTrunks (
```

```

in globaldefs::NamingAttributesList_T trafficTrunkNameList,
out IPRouteInfoList_T routeInfoList)
raises(globaldefs::ProcessingFailureException);

```

## Function

Query IP routes of tunnel trails and PW trails in batches.

## Parameters

Parameter	Input/Output	Description	Value
trafficTrunkNameList	Input	Indicates the entered list of tunnel trails and PW trails.	globaldefs::NamingAttributesList_T
routeInfoList	Output	Indicates the returned route list of the tunnel trails and PW trails.	IPRouteInfoList_T For details, see HW_vpManager::IPRouteInfo_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.20.20 getFDFrRoutes

---

This interface is used to query routes of IP E2E PWE3 services (including AES, CES, and EES services) and VPLS services in batches.

## Definition

```
void getFDFrRoutes(
    in globaldefs::NamingAttributesList_T fdfrNameList,
    out FDFrRouteInfoList_T routeInfoList)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query routes of IP E2E PWE3 services (including AES, CES, and EES services) and VPLS services in batches.

## Parameters

Parameter	Input/Output	Description	Value
fdfrNameList	Input	Indicates the list of IP E2E PWE3 services (including AES, CES, and EES services) and VPLS services.	globaldefs::NamingAttributesList_T
routeInfoList	Output	Indicates the route list of the IP E2E PWE3 services (including AES, CES, and EES services) and VPLS services.	FDFrRouteInfoList_T For details, see HW_vpnManager::FDFrRouteInfo_T.

## Abnormal Values

Abnormal Value	Description
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_INVALID_INPUT	Indicates invalid input.
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [HW\\_VPNMgr\\_I](#)

## 9.4.4.21 TrailNtwProtMgr\_I

---

This interface provides protection for network trails, including tunnels.

- [getAllTrailNtwProtections](#)  
This interface is used to query E2E tunnel APS protection information for a specified resource, such as an NE, a protection group, or subnetwork connection.
- [getTrailNtwProtection](#)  
This interface is used to query E2E tunnel APS protection information by E2E tunnel APS name.

**Parent topic:** [Interface Model](#)

### 9.4.4.21.1 getAllTrailNtwProtections

---

This interface is used to query E2E tunnel APS protection information for a specified resource, such as an NE, a protection group, or subnetwork connection.

#### Definition

```
void getAllTrailNtwProtections (
    in globaldefs::NamingAttributes_T resourceName,
    in unsigned long how_many,
    out TrailNtwProtectionList_T tnpList,
    out TrailNtwProtectionIterator_I tnpIt)
    raises(globaldefs::ProcessingFailureException);
```

#### Function

Query E2E tunnel APS protection information for a specified resource.

#### Parameters

Parameter	Input/Output	Description	Value
resourceName	Input	Indicates the resource name.	globaldefs::NamingAttributes_T

Parameter	Input/Output	Description	Value
how_many	Input	Indicates the maximum number of data records to be returned first.	unsigned long
tnpList	Output	Indicates the name of data records to be returned first.	trailNtwProtection::TrailNtwProtectionList_T For details, see section TrailNtwProtection_T.
tnpIt	Output	Indicates the iterator.	trailNtwProtection::TrailNtwProtectionIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [TrailNtwProtMgr\\_I](#)

## 9.4.4.21.2 getTrailNtwProtection

---

This interface is used to query E2E tunnel APS protection information by E2E tunnel APS name.

### Definition

```

void getTrailNtwProtection(
in ::globaldefs::NamingAttributes_T tnpName,
out ::trailNtwProtection::TrailNtwProtection_T trailNtwProtection)
raises(globaldefs::ProcessingFailureException);

```

## Function

This interface is used to query E2E tunnel APS protection information by E2E tunnel APS name.

## Parameters

Parameter	Input/Output	Description	Value
tnpName	Input	Indicates the name of the E2E tunnel APS protection to be queried	globaldefs::NamingAttributes_T
trailNtwProtection	Output	Indicates the returned details of the object.	trailNtwProtection::TrailNtwProtection_T

## Abnormal Values

Abnormal Value	Description
EXCPT_INVALID_INPUT	Invalid input.
EXCPT_ENTITY_NOT_FOUND	The input object does not exist.
EXCPT_INTERNAL_ERROR	Internal EMS error.

## Restrictions

There is no restriction.

**Parent topic:** [TrailNtwProtMgr\\_I](#)

## 9.4.4.22 IPMgr\_I

---

This interface is used for the NMS to query the configurations of L2 and L3 interface bridging, static routes, VRF, FRR, and VRRP protection.

- **[getAllBridges](#)**

This interface is used to query the bridging configuration information of Layer 2 and Layer 3 interfaces.

- **[getAllStaticRoutings](#)**

This interface is used to query static route configuration information of specified NEs.

- **[getAllVRFs](#)**

This interface is used to query the VRF configurations of specified NEs.

- **[getFDFrVRFs](#)**

This interface is used to query the virtual routing and forwarding (VRF) configuration information of specified E2E L3VPN services.

- **[getAllFRRs](#)**

This interface is used to query the protection configuration of fast reroute (FRR) including VPN FRR and IP FRR.

- **[getAllVRRPs](#)**

This interface is used to query the virtual router redundancy protocol (VRRP) protection information.

**Parent topic:** [Interface Model](#)

---

## 9.4.4.22.1 getAllBridges

This interface is used to query the bridging configuration information of Layer 2 and Layer 3 interfaces.

### Definition

```
void getAllBridges(
    in globaldefs::NamingAttributes_T managedElementName,
    in unsigned long how_many,
    out BridgeList_T bridgeList,
    out BridgeIterator_I bridgeIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query the bridging configuration information of Layer 2 and Layer 3 interfaces of specified NEs.

### Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	Indicates the identifier of the NE to be queried.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the data volume that is returned in the first batch.	unsigned long
bridgeList	Output	Indicates the bridging configuration information list of Layer 2 and Layer 3 interfaces that is returned in the first batch.	ipMgr::BridgeList_T For the element model, see "ipMgr::Bridge_T."
bridgeIt	Output	Indicates the iterator.	ipMgr::BridgeIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [IPMgr](#)

## 9.4.4.22.2 getAllStaticRoutings

---

This interface is used to query static route configuration information of specified NEs.

## Definition

```
void getAllStaticRoutings(
in globaldefs::NamingAttributes_T managedElementName,
in unsigned long how_many,
out StaticRoutingList_T srList,
out StaticRoutingIterator_I srIt)
raises(globaldefs::ProcessingFailureException);
```

## Function

Query all static route configuration information of specified NEs.

## Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	Indicates the identifier of the NE to be queried.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the data volume that is returned in the first batch.	unsigned long
srList	Output	Indicates the static route configuration information list that is returned.	ipMgr::StaticRoutingList_T See "ipMgr::StaticRouting_T."
srIt	Output	Indicates the iterator.	ipMgr::StaticRoutingIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

Abnormal Value	Description
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [IPMgr\\_I](#)

## 9.4.4.22.3 getAllVRFs

---

This interface is used to query the VRF configurations of specified NEs.

### Definition

```
void getAllVRFs(
    in globaldefs::NamingAttributes_T managedElementName,
    in unsigned long how_many,
    out VRFList_T vrfList,
    out VRFIterator_I vrfIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query the VRF configurations of specified NEs.

### Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	Indicates the name of the NE to be queried.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the data volume that is returned in the first batch.	unsigned long

Parameter	Input/Output	Description	Value
vrfList	Output	Indicates the VRF information list that is returned.	ipMgr::VRFList_T. See ipMgr::VRF_T.
vrfIt	Output	Indicates the iterator.	ipMgr::VRFIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [IPMgr\\_I](#)

## 9.4.4.22.4 getFDFrVRFs

---

This interface is used to query the virtual routing and forwarding (VRF) configuration information of specified E2E L3VPN services.

### Definition

```
void getFDFrVRFs (
    in globaldefs::NamingAttributes_T fdfrName,
    in unsigned long how_many,
    out VRFList_T vrfList,
    out VRFIterator_I vrfIt)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query the VRF configuration information of specified L3VPN services

## Parameters

Parameter	Input/Output	Description	Value
fdfrName	Input	Indicates the name of the flow domain to be queried.	globaldefs::NamingAttributes_
how_many	Input	Indicates the data volume that is returned in the first batch.	unsigned long
vrfList	Output	Indicates the returned VRF information list.	ipMgr::VRFList_T. See ipMgr::VRF_T.
vrfIt	Output	Indicates the iterator.	ipMgr::VRFIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

Parent topic: [IPMgr\\_I](#)

## 9.4.4.22.5 getAllFRRs

This interface is used to query the protection configuration of fast reroute (FRR) including VPN FRR and IP FRR.

## Definition

```
void getAllFRRs(
    in globaldefs::NamingAttributes_T managedElementName,
    in unsigned long how_many,
    out FRRLList_T frrList,
    out FRRIterator_I frrIt)
    raises(globaldefs::ProcessingFailureException);
```

## Function

Query the FRR protection information of specified NEs.

## Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	Indicates the name of the NE to be queried.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the data volume that is returned in the first batch.	unsigned long
frrList	Output	Indicates the FRR protection list that is returned in the first batch.	ipMgr::FRRLList_T. See ipMgr::FRRProtection_T.
frrIt	Output	Indicates the iterator.	ipMgr::FRRIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.

Abnormal Value	Description
EXCPT_TOO_MANY_OPEN_ITERATORS	

## Restrictions

There is no restriction.

**Parent topic:** [IPMgr I](#)

## 9.4.4.22.6 getAllVRRPs

---

This interface is used to query the virtual router redundancy protocol (VRRP) protection information.

### Definition

```
void getAllVRRPs(
    in globaldefs::NamingAttributes_T managedElementName,
    in unsigned long how_many,
    out VRRPList_T vrrpList,
    out VRRPIterator_I vrrpIt)
    raises(globaldefs::ProcessingFailureException);
```

### Function

Query the VRRP protection information of specified NEs.

### Parameters

Parameter	Input/Output	Description	Value
managedElementName	Input	Indicates the name of the NE to be queried.	globaldefs::NamingAttributes_T
how_many	Input	Indicates the data volume that is returned in the first batch.	unsigned long
vrrpList	Output	Indicates the VRRP protection list that is	ipMgr::VRRPList_T

Parameter	Input/Output	Description	Value
		returned in the first batch.	
vrrpIt	Output	Indicates the iterator.	ipMgr::VRRPIterator_I

## Abnormal Values

Abnormal Value	Description
EXCPT_INTERNAL_ERROR	Indicates an internal EMS error.
EXCPT_INVALID_INPUT	Indicates that the input is invalid.
EXCPT_ENTITY_NOT_FOUND	Indicates that the input object does not exist.
EXCPT_TOO_MANY_OPEN_ITERATORS	Indicates that the number of iterators reaches the upper threshold.

## Restrictions

There is no restriction.

**Parent topic:** [IPMgr\\_I](#)

## 9.4.5 Information Model

---

This topic describes information models supported by the CORBA NBI, including TMF 814 recommendation-based models and customized models.

- **[emsMgr](#)**  
This topic describes EMS information models.
- **[equipment](#)**  
This topic describes the information model of equipment and boards.
- **[managedElement](#)**  
This topic describes information models of NE management processes.

- [subnetworkConnection](#)

This topic describes the information model of subnet connections (SNCs).

- [multiLayerSubnetwork](#)

This topic describes the information model of subnet connections (SNCs).

- [topologicalLink](#)

This topic describes the information model of topological links.

- [terminationPoint](#)

This topic describes information models of terminationpoint (TP) management. TPs consist of physical ports, such as SDH, PDH, E1 and Ethernet ports, and logical ports, such asIMA groups, MP groups and logical serial ports.

- [protection](#)

This topic describes information models ofprotection groups and protection group switching.

- [HW\\_mstpInventory](#)

This topic describes information models ofMSTP inventories.

- [HW\\_mstpProtection](#)

This topic describes information models ofMSTP protection groups and protection switching.

- [HW\\_mstpService](#)

This topic describes information models ofMSTP services.

- [trafficDescriptor](#)

This topic describes information models of traffic descriptors. These information models are applicable to PTN devices of the transport domain.

- [encapsulationLayerLink](#)

This topic describes information models ofencapsulation layer links.

- [flowDomain](#)

This topic describes information models offlow domains, flow domain fragments and Ethernet OAM operations.

- [HW\\_controlPlane](#)

This topic describes information models of SNPP links.

- [maintenanceOps](#)

This topic describes information models of traffic descriptors. These information models are applicable to PTN equipment and RTN equipment.

- [TopoManagementManager](#)

This topic describes the information model of topologymanagement.

- [HW\\_vpnManager](#)

This topic describes information models of virtual private network (VPN) services. Tunnels and services carried by these tunnels are necessary for successful VPN service transport. The model

for MPLS static tunnels and PW switches is IPCrossConnection. The model for dynamic MPLS tunnels and IP tunnels is TrafficTrunk. The model for PWE3 (that is, ATM services, CES services, and EES services), VPLS and NativeEth services is MFDFr. PTN, Hybrid MSTP and RTN 900 series equipment is supported. NativeEthservices are applicable only to RTN equipment of V100R002 version.

- [\*\*trafficConditioningProfile\*\*](#)  
This topic describes information models of traffic control policy profiles.
- [\*\*trailNtwProtection\*\*](#)  
This topic describes the information models of network trail protection.
- [\*\*ipMgr\*\*](#)  
This topic describes the data model of the configurations of L2 and L3 interface bridging, static routes, VRF, FRR, and VRRP protection.

**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)

## 9.4.5.1 emsMgr

---

This topic describes EMS information models.

- [\*\*EMS\\_T\*\*](#)  
This topic describes the data structure of EMSs.
- [\*\*ClockSourceStatusList\\_T\*\*](#)  
This topic describes the information models of available clock sources.

**Parent topic:** [Information Model](#)

### 9.4.5.1.1 EMS\_T

---

This topic describes the data structure of EMSs.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of an EMS.

Name	Type	Description
userLabel	String	"iManager U2000" by default. This field can be set through the setUserLabel interface.
nativeEMSName	string	The value of this field is consistent with the name of the EMS in the name field mentioned above. The default value is Huawei/U2000. This field can be set through the Msuite.
owner	String	"HUAWEI" by default. This field can be set through the setOwner interface.
emsVersion	string	Version (in the form of VxxRxxxCxx) of the EMS, for example, U2000 V100R007C00.
type	string	For the U2000, the default value is U2000. This field cannot be set.
addtionalInfo	globaldefs::NVSLList_T	Additional information. For details, see additionalInfo::EMS_T.

**Parent topic:** [emsMgr](#)

## 9.4.5.1.2 ClockSourceStatusList\_T

---

This topic describes the information models of available clock sources.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of clock source.
nativeEMSName	string	Local name of clock source.
status	string	Status of clock source.

Name	Type	Description
timingMode	string	Timing mode of clock source.
quality	string	Quality of clock source.
workingMode	string	Work mode of clock source.
additionalInfo	globaldefs::NVSList_T	Indicates the additional information. This parameter is blank.

**Parent topic:** [emsMgr](#)

## 9.4.5.2 equipment

---

This topic describes the information model of equipment and boards.

- [\*\*Equipment T\*\*](#)

This topic describes the data structure of boards.

- [\*\*EquipmentHolder T\*\*](#)

This topic describes the data structure of equipment holders.

- [\*\*ObjectAdditionalInfo T\*\*](#)

This topic describes additional information about a specified object.

- [\*\*PhysicalLocationInfo T\(Subrack\)\*\*](#)

This topic describes network-wide physical location information, including structure descriptions of subracks.

- [\*\*PhysicalLocationInfo T\(Equipment Room\)\*\*](#)

This topic describes network-wide physical location information, including structure descriptions of equipment rooms.

- [\*\*PhysicalLocationInfo T\(Rack\)\*\*](#)

This topic describes network-wide physical location information, including structure descriptions of racks.

**Parent topic:** [Information Model](#)

## 9.4.5.2.1 Equipment\_T

---

This topic describes the data structure of boards.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of a board.
userLabel	string	User label of a board. This field is blank by default.
nativeEMSName	string	Name of a board displayed on the GUI of the network management system.
owner	string	Owner of a board. This field is blank by default and can be set through the setOwner interface.(This parameter is set to HUAWEI for BITS NEs by default.)
alarmReportingIndicator	boolean	Specifies whether to enable the function of reporting alarms. This value is always set to true.
serviceState	ServiceState_T	Working state of a board.
expectedEquipmentObjectType	EquipmentObjectType_T	Type of a board configured on the network management system.
installedEquipmentObjectType	EquipmentObjectType_T	Type of a board on the NE.
installedPartNumber	string	Part number of a board, which is a part of the bar code of the board.
installedVersion	string	Version number of a board.
installedSerialNumber	string	Serial number of a board, which is a part of the bar code of the board.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. For details, see additionalInfo::Equipment_T.

**Parent topic:** [equipment](#)

## **9.4.5.2.2 EquipmentHolder\_T**

---

This topic describes the data structure of equipment holders.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of a holder.
userLabel	string	User label of the holder.
nativeEMSName	string	Name of the holder displayed on the GUI of the network management system.
owner	string	Name of a holder. This field is blank by default. In the case of a WDM subrack, the value can be set through the interface. In the case of other equipment, the value cannot be modified.
alarmReportingIndicator	boolean	Whether reporting alarms of the holder is enabled. The value is always true.
holderType	EquipmentHolderType_T	Type of the holder. The value is rack, shelf, or slot, or sub_slot.
expectedOrInstalledEquipment	globaldefs::NamingAttributes_T	If the holder is a slot where a board is installed, the value is the name of the board. Otherwise, this field is blank.
acceptableEquipmentTypeList	EquipmentObjectTypeList_T	If the holder is a slot, the value is the list of the boards that can be installed in the slot. Otherwise, this field is blank.(This parameter is blank for BITS NEs.)
holderState	HolderState_T	State of the holder.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. For details, see additionalInfo::EquipmentHolder_T.

**Parent topic:** [equipment](#)

## **9.4.5.2.3 ObjectAdditionalInfo\_T**

---

This topic describes additional information about a specified object.

Name	Type	Description
objectName	globaldefs::NamingAttributes_T	Indicates the object name.
additionalInfo	globaldefs::NVSList_T	Indicates the additional information about an object.

**Parent topic:** [equipment](#)

## **9.4.5.2.4 PhysicalLocationInfo\_T(Subrack)**

---

This topic describes network-wide physical location information, including structure descriptions of subracks.

Name	Type	Description
name	string	Subrack name
equipmentRoomName	string	Name of the equipment room where the subrack locates
cabinetName	string	Name of the rack where the subrack locates
numbering	string	Subrack ID
locationOfCabinet	string.	Rack location
memo	string	Remarks,The options are NA, Up, Down, and Middle.

**Parent topic:** [equipment](#)

## 9.4.5.2.5 PhysicalLocationInfo\_T(Equipment Room)

---

This topic describes network-wide physical location information, including structure descriptions of equipment rooms.

Name	Type	Description
name	string	Equipment room name
containedCabinet	string	Names of racks in the equipment room
containedNMManager	string	Name of the NMS in the equipment room
country	string	Country
province	string	Province
city	string	City
site	string	Site name
location	string	Location
cableArrange	string	Cabling mode: 1: Overhead cabling 2: Underfloor cabling 0: Unknown
defendStaticFloor	string	ESD floor: 1: Yes 2: No 0: Unknown
floorHeight	ULONG.[1,1000]	Height of ESD floor
memo	string	Remarks

**Parent topic:** [equipment](#)

## **9.4.5.2.6 PhysicalLocationInfo\_T(Rack)**

---

This topic describes network-wide physical location information, including structure descriptions of racks.

Name	Type	Description
name	string	Rack name
equipmentRoomName	string	Name of the equipment room where the rack locates
containedShelfList	string	Name list of subracks contained in a rack
type	string	Rack type
height	ULONG. [1,3000]	Height
width	ULONG.[1,1000]	Width
depth	ULONG.[1,1000]	Depth
voltage	LONG.	Voltage.The value -65535 indicates an invalid value.
powerBoxType	string	Power box type
memo	string	Remarks

**Parent topic:** [equipment](#)

## **9.4.5.3 managedElement**

---

This topic describes information models of NE management processes.

- [ManagedElement\\_T](#)  
This topic describes the data structure of NEs.

**Parent topic:** [Information Model](#)

## 9.4.5.3.1 ManagedElement\_T

---

This topic describes the data structure of NEs.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of an NE.
userLabel	string	User label of the NE. The value is blank by default; the value is always blank for BITS.
nativeEMSName	string	Name of the NE displayed on the GUI.
owner	string	Owner of the NE. The value is blank by default and can be set through the setOwner interface.
location	string	Equipment room where the NE resides; the value is always blank for BITS.
version	string	Software version of the NE; the value is always blank for BITS.
productName	string	For the U2000, the value is the name of the NE type.
communicationState	CommunicationState_T	State of communications between the NE and the network management system.
emsInSyncState	boolean	State of data synchronization between the NE and the network management system.
supportedRates	transmissionParameters::LayerRateList_T	List of the cross connection rates supported by the NE; the value is always blank for BITS.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. For details, see additionalInfo::ManagedElement_T.

**Parent topic:** [managedElement](#)

## 9.4.5.4 subnetworkConnection

---

This topic describes the information model of subnet connections (SNCs).

- [CrossConnect\\_T](#)

This object is used to specify the data of a cross-connection.

- [TPData\\_T](#)

This topic describes the data structure of termination points (TPs).

- [SubnetworkConnection\\_T](#)

This topic describes the data structure of subnetwork connections (SNCs).

- [WaveLengthStatus\\_T](#)

This topic describes the data structure of wavelength status.

- [ServerTrail\\_T](#)

This object is used to describe the information about server trails of client trails.

- [PresetRoute\\_T](#)

This information model describes the route information about preset restoration trails for the ASON SNC.

**Parent topic:** [Information Model](#)

### 9.4.5.4.1 CrossConnect\_T

---

This object is used to specify the data of a cross-connection.

Name	Type	Description
active	boolean	Indicates the cross-connection status (active or inactive).
direction	globaldefs::ConnectionDirection_T	Indicates the cross-connection direction. The options are as follows: CD_UNI CD BI
ccType	SNCType_T	Indicates the cross-connection type. The options are as follows: ST_SIMPLE

Name	Type	Description
		ST_ADD_DROP_A ST_ADD_DROP_Z ST_INTERCONNECT ST_DOUBLE_INTERCONNECT ST_DOUBLE_ADD_DROP ST_OPEN_ADD_DROP ST_EXPLICIT
aEndNameList	globaldefs::NamingAttributesList_T	Indicates the list of the source termination points (TPs).
zEndNameList	globaldefs::NamingAttributesList_T	Indicates the list of sink TPs.
addtionalInfo	globaldefs::NVSLList_T	Indicates the additional information. For details, see additionalInfo::CrossConnect_T.

**Parent topic:** [subnetworkConnection](#)

## 9.4.5.4.2 TPData\_T

---

This topic describes the data structure of termination points (TPs).

Name	Type	
tpName	globaldefs::NamingAttributes_T	Name of a TP.
tpMappingMode	terminationPoint::TerminationMode_T	Mapping mode.
transmissionParams	transmissionParameters::LayeredParameterList_T	Transmission parameters. The parameters and other attributes of the layer rate.
ingressTrafficDescriptorName	globaldefs::NamingAttributes_T	Ingress traffic descriptor. This parameter is used to identify the CTP structure (e.g., 6900), RTN, and MSTP+ NEs, if one or more of the CTP structure with the QoS policy is configured in the current attribute of the CTP structure (the QoS policy is configured in the IngressTCProfileName parameter). QoS policy is defined by the \name=EMS\value=Huawei/U2000\named parameter. Scenario: When you invoke the modify operation on the CTP structure, the CTP structure is modified according to the specified QoS policy.

Name	Type	
		operation, only one policy can be applied at a time. the following format:EMS Huawei/U
egressTrafficDescriptorName	globaldefs::NamingAttributes_T	Egress traffic descriptor. This parameter specifies the direction, fill in the current attribute or the previous attribute. If multiple policies are applied, fill in the current attribute. The policies (excluding egressTmdRef) are configured here. The direction involved are also configured here. Format: \name=EMS\value=Huawei\U
additionalInfo	globaldefs::NVSLList_T	Extension field.

## **Parent topic:** [subnetworkConnection](#)

#### **9.4.5.4.3 SubnetworkConnection T**

This topic describes the data structure of subnetwork connections (SNCs).

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of the SNC object.
userLabel	string	Indicates the user label.
nativeEMSName	string	Indicates the native NMS name.
owner	string	Indicates the owner of the object.
sncState	SNCState_T	Indicates the activation of the SNC.
direction	globaldefs::ConnectionDirection_T	Indicates the direction. The value are CD_UNI, CD_BI.
rate	transmissionParameters::LayerRate_T	Indicates the layer rate level of the SNC.
staticProtectionLevel	StaticProtectionLevel_T	Indicates the static protection level. Value Range: PREEMPTIBLE UNPROTECTED PARTIALLY_PROTECTED FULLY_PROTECTED

Name	Type	Description
		HIGHLY_PROTECTED
sncType	SNCType_T	Indicates the SNC type. Currently, only ST_SIMPLE (one source and one sink), ST_ADD_DROP_A (two sources and one sink), and ST_ADD_DROP_Z (one source and two sinks) are supported.
aEnd	TPDataList_T	Indicates the TP list of the SNC source. For the source and sink model, see TPData_T.
zEnd	TPDataList_T	Indicates the TP list of the SNC sink. For the source and sink model, see TPData_T.
rerouteAllowd	Reroute_T	Indicates the RR indication. The values are RR_NA, RR_NO, and RR_YES.
neworkRouted	NetworkRouted_T	Indicates the NR indication. The values are NR_NA, NR_NO, and NR_YES.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. For details, see additionalInfo::SubnetworkConnection_T.

**Parent topic:** [subnetworkConnection](#)

## 9.4.5.4.4 WaveLengthStatus\_T

---

This topic describes the data structure of wavelength status.

Name	Type	Description
frequency	string	Frequency of a wavelength, in terms of Ghz.
used	short	Count of wavelengths that are used.
unused	short	Count of wavelengths that are free.

Name	Type	Description
addtionalInfo	globaldefs:: NamingAttributes_T	Additional information.

**Parent topic:** [subnetworkConnection](#)

## 9.4.5.4.5 ServerTrail\_T

---

This object is used to describe the information about server trails of client trails.

Name	Type	Description
sncName	globaldefs::NamingAttributes_T	Indicates the server trail name.
isASON	Boolean	Specifies whether the trail is an ASON trail.

**Parent topic:** [subnetworkConnection](#)

## 9.4.5.4.6 PresetRoute\_T

---

This information model describes the route information about preset restoration trails for the ASON SNC.

Name	Type	Description
presetRouteID	Number[1,2]	Indicates the ID of a preset restoration trail.
priority	Number[1,2]	Indicates the priority of a preset restoration trail.
route	Route_T	Indicates the route information of a preset restoration trail. The route of ASON preset restoration trails has different cross-connections from common trails. Its source and sink ends

Name	Type	Description
		are on two NEs and support ports only. Route_T, namely List<CrossConnect_T>.

**Parent topic:** [subnetworkConnection](#)

## 9.4.5.5 multiLayerSubnetwork

---

This topic describes the information model of subnet connections (SNCs).

- [\*\*MultiLayerSubnetwork\\_T\*\*](#)  
This object is used to specify the data of a subnetwork.
- [\*\*RouteAndTopologicalLink\\_T\*\*](#)  
This topic describes the data structure of route and topological link.
- [\*\*HW\\_ConjunctionSNC\\_T\*\*](#)  
This topic describes the data model of the associated OTN ASON trails.

**Parent topic:** [Information Model](#)

### 9.4.5.5.1 MultiLayerSubnetwork\_T

---

This object is used to specify the data of a subnetwork.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the subnetwork name.
userLabel	string	Indicates the user label. The default value is SubnetWork_1.
nativeEMSName	string	Indicates the name of the subnetwork on the EMS GUI. The default value is SubnetWork_1.

Name	Type	Description
owner	string	Indicates the object owner. This parameter is left blank by default.
subnetworkType	Topology_T	Indicates the subnetwork type. The value is always multiLayerSubnetwork::TOPO_MESH.
supportedRates	transmissionParameters::LayerRateList_T	Indicates the supported rate levels.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information.

**Parent topic:** [multiLayerSubnetwork](#)

## 9.4.5.2 RouteAndTopologicalLink\_T

---

This topic describes the data structure of route and topological link.

Name	Type	Description
sncName	globaldefs::NamingAttributes_T	Indicates the SNC name.
route	subnetworkConnection::Route_T	Indicates the route information of the SNC.
topologicalLinkList	topologicalLink::TopologicalLinkList_T	Indicates the topological link information of the SNC.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information.

**Parent topic:** [multiLayerSubnetwork](#)

## 9.4.5.3 HW\_ConjunctionSNC\_T

---

This topic describes the data model of the associated OTN ASON trails.

Name	Type	Description
sncName1	globaldefs::NamingAttributes_T	Indicates the associated OTN ASON trail.
sncName2	globaldefs::NamingAttributes_T	Indicates the associated OTN ASON trail.
additionalInfo	globaldefs::NVSList_T	Indicates the parameter information of the associated trail.

**Parent topic:** [multiLayerSubnetwork](#)

## 9.4.5.6 topologicalLink

---

This topic describes the information model of topological links.

- [TopologicalLink\\_T](#)  
This topic describes the data structure of topological links.

**Parent topic:** [Information Model](#)

### 9.4.5.6.1 TopologicalLink\_T

---

This topic describes the data structure of topological links.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of topological links.
userLabel	string	User label. This field is blank by default.
nativeEMSName	string	Local name.
owner	string	Name of the owner of the object. This field is blank by default.

Name	Type	Description
direction	"globaldefs ::ConnectionDirection_T"	Direction. The value are: CD_UNI, CD_BI.
rate	transmissionParameters::LayerRate_T	Layer rate.
aEndTP	globaldefs::NamingAttributes_T	Source.
zEndTP	globaldefs::NamingAttributes_T	Sink.
additionalInfo	globaldefs::NVSList_T	Additional information. For details, see addtionalInfo::TopologicalLink_T.

**Parent topic:** [topologicalLink](#)

## 9.4.5.7 terminationPoint

---

This topic describes information models of terminationpoint (TP) management. TPs consist of physical ports, such as SDH, PDH, E1 and Ethernet ports, and logical ports, such asIMA groups, MP groups and logical serial ports.

- [TerminationPoint\\_T](#)  
This topic describes the data structure of termination points (TPs).

**Parent topic:** [Information Model](#)

### 9.4.5.7.1 TerminationPoint\_T

---

This topic describes the data structure of termination points (TPs).

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of a TP.
userLabel	String	Indicates the user label of a TP. This parameter is blank by default.

Name	Type	Description
nativeEMSName	String	Indicates the name of a TP displayed in the GUI of the network management system. This field cannot be set.
owner	String	Indicates the owner of a TP. This parameter is blank by default. For a PTP or FTP, the value can be set by the setOwner interface.
ingressTrafficDescriptorName	globaldefs::NamingAttributes_T	Indicates the descriptor of the incoming traffic. This parameter is blank by default.
egressTrafficDescriptorName	globaldefs::NamingAttributes_T	Indicates the descriptor of the outgoing traffic. This parameter is blank by default.
type	TPType_T	Indicates the type of a TP. The options are as follows: TPT_PTP (indicates a PTP or FTP) TPT_CTP (indicates a CTP)
connectionState	TPConnectionState_T	Indicates the connection state. The value is TPCS_NA for PTP objects and inverse multiplexing FTP objects. The values are as follows for non-inverse multiplexing FTP objects and CTP objects:  TPCS_SOURCE_CONNECTED: The TP is connected as a source. TPCS_SINK_CONNECTED: The TP is connected as a sink. TPCS_BI_CONNECTED: The TP is connected in two directions. TPCS_NOT_CONNECTED: The TP is not connected.
tpMappingMode	TerminationMode_T	Indicates the mapping mode of a TP.
direction	Directionality_T	Indicates the direction of a TP. The options are as follows:  D_BIDIRECTIONAL (bidirectional) D_SOURCE (source)

Name	Type	Description
		D_SINK (sink) DIR_NA (unknown)
transmissionParams	transmissionParameters::LayeredParameterList_T	Indicates the transmission parameters.
tpProtectionAssociation	TPProtectionAssociation_T	This parameter is not supported and its value is always TPPA_NA.
edgePoint	Boolean	Indicates the flag of edge point. For a CTP or an FTP, the value is always false. For a PTP, the value is false if the PTP is occupied by fibers, otherwise, the value is true.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. For details, see additionalInfo::TerminationPoint_T.

**Parent topic:** [terminationPoint](#)

## 9.4.5.8 protection

---

This topic describes information models of protection groups and protection group switching.

- [\*\*ProtectionGroup\\_T\*\*](#)  
This object is used to specify the data of a protection group.
- [\*\*SwitchData\\_T\*\*](#)  
This topic describes the data structure for switching protection groups.
- [\*\*WDMProtectionGroup\\_T\*\*](#)  
This object is used to specify the data of a WDM protection group.
- [\*\*WDMSwitchData\\_T\*\*](#)  
This object is used to specify the data for switching WDM protection groups.
- [\*\*EProtectionGroup\\_T\*\*](#)  
This object is used to specify the data of the equipment protection group.
- [\*\*ESwitchData\\_T\*\*](#)  
This topic describes the data structure for protection switching in equipment protection groups.

- [IPProtectionGroup\\_T](#)  
This object is used to specify the data of a tunnel APS protection group.
- [IPSwitchData\\_T](#)  
This topic describes the data structure of protection switchingin tunnel protection groups.
- [HW\\_ERPSProtectionGroup\\_T](#)  
This topic describes the data structure of Ethernet ring protection switching (ERPS) protection groups.
- [HW\\_IFProtectionGroup\\_T](#)  
This object is used to specify the data of an intermediate frequency (IF) protection group.
- [HW\\_XPICGroup\\_T](#)  
This topicdescribes the data structure of cross polarization interference cancellation(XPIC) groups.
- [ProtectionSubnetworkLink\\_T](#)  
This topic describes information about protection subnet links.
- [ProtectionSubnetwork\\_T](#)  
This topic describes information about SDH protection subnets.
- [IFSwitchData\\_T](#)  
This topic describes the switching status of an IF protection group.

**Parent topic:** [Information Model](#)

## 9.4.5.8.1 ProtectionGroup\_T

---

This object is used to specify the data of a protection group.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the protection group name, in the form of {name EMS value XXXX} {name ManagedElement value YYYY} {name PGP value subrack ID/protection group ID/protection group location ID} For normal NE, the subrack ID is always 1. For optical NE, the subrack ID is the ID of the subrack that the protection group belongs to. Location IDs of protection groups and the

Name	Type	Description
		corresponding meanings are as follows:11 indicates 1+1 TM protection group.12 indicates west 1+1 ADM protection group.13 indicates east 1+1 ADM protection group.14 indicates 1:N TM protection group.15 indicates west 1:N ADM protection group.16 indicates east 1:N ADM protection group.17 indicates two-fiber ring protection group.18 indicates west two-fiber ring protection group. This is available for notification events only.19 indicates east two-fiber ring protection group. This is available for notification events only.20 indicates four-fiber ring protection group.21 indicates west four-fiber 1:N protection group.22 indicates east four-fiber 1:N protection group.
userLabel	string	Indicates the user label. This parameter is left blank by default. You can set this parameter through the setUserLabel interface.
nativeEMSName	string	Indicates the native name of the protection group.
owner	string	Indicates the object owner. This parameter is left blank by default. You can set this parameter through the setOwner interface.
protectionGroupType	ProtectionGroupType_T	The types of the supported protection groups are as follows: For a 1+1 protection group, the value is PGT_MSP_1_PLUS_1. For a 1:N protection group, the value is PGT_MSP_1_FOR_N. For a two-fiber bidirectional protection group, the value is PGT_2_FIBER_BLSR. For a four-fiber bidirectional protection group, the value is PGT_4_FIBER_BLSR.

Name	Type	Description
protectionSchemeState	ProtectionSchemeState_T	<p>Indicates the protection scheme status. The options are as follows:</p> <p>PSS_UNKNOWN: indicates that the protection group is in the idle state, normal state or unknown state.</p> <p>PSS_FORCED_OR_LOCKED_OUT: indicates that the protection group is in the locked state, forced switching state or manual switching state.</p> <p>PSS_AUTOMATIC: indicates that the protection group is in the automatic switching state.</p>
reversionMode	ReversionMode_T	<p>Indicates the reversion mode. The options are as follows:</p> <p>RM_REVERTIVE: revertive mode</p> <p>RM_NON_REVERTIVE: non-revertive mode</p> <p>RM_UNKNOWN: unknown</p>
rate	transmissionParameters::LayerRate_T	Indicates the transmission rate.
pgpTPList	globaldefs::NamingAttributesList_T	<p>Indicates the list of TPs that belong to the protection group. The list of TPs is partially ordered. A protection TP always trails its working TPs.</p> <p>1. For a 1+1 TM protection group, the TPs are listed in the following order: west working PTP, west protection PTP.</p> <p>For a west 1+1 ADM protection group, the TPs are listed in the following order: west working PTP, west protection PTP.</p> <p>For an east 1+1 ADM protection group, the TPs are listed in the following order: east working PTP, east protection PTP.</p> <p>2. For a 1:N TM protection group, the TPs are listed in the following order: west working PTPs (PTP 1 to PTP N), west protection PTP.</p> <p>For a west 1:N ADM protection group, the TPs are listed in the following order: west working PTPs</p>

Name	Type	Description
		<p>(PTP 1 to PTP N), west protection PTP.</p> <p>For an east 1:N ADM protection group, the TPs are listed in the following order: east working PTPs (PTP 1 to PTP N), east protection PTP.</p> <p>3. For a two-fiber ring protection group, the TPs are listed in the following order: west working PTP, east protection PTP.</p> <p>4. For a four-fiber ring protection group, the TPs are listed in the following order: west working PTP, west protection PTP, east working PTP, east protection PTP.</p> <p>For a west four-fiber ring 1:N protection group, the TPs are listed in the following order: west working PTP, west protection PTP.</p> <p>For an east four-fiber ring 1:N protection group, the TPs are listed in the following order: east working PTP, east protection PTP.</p>
pgpParameters	globaldefs::NVSLList_T	<p>Contains a name value list for the known parameters of the protection group. The supported parameters are as follows:</p> <p>SwitchMode: switching mode. For a 1+1 protection group, the value is SingleEnded (indicates switching at a single end) or DualEnded (indicates switching at two ends).</p> <p>For other protection modes, the value is DualEnded.</p> <p>wtrTime: wait-to-restore time.</p> <p>HoldOffTime: hold-off time.</p> <p>LODNumSwitches: number of switches. Currently, this parameter is not supported and is always set to Unknown.</p> <p>LODDuration: works with LODNumSwitches. Currently, this</p>

Name	Type	Description
		<p>parameter is not supported and is always set to Unknown.</p> <p>SPRINGProtocol: a ring switching protocol. This parameter is available for two-fiber rings and four-fiber rings only. The value is Standard.</p> <p>SPRINGNodeId: ID of a ring switching node. This parameter is available for two-fiber rings and four-fiber rings only.</p> <p>SwitchPosition: switching position.</p> <p>nonPre-EmptibleTraffic: determines whether non-preemptible traffic can be configured on protection. This parameter is available for only two-fiber ring and 1:N protection groups. The value is NOT_ALLOWED.</p>
additionalInfo	globaldefs::NVSLList_T	This parameter is left blank.

**Parent topic:** [protection](#)

## 9.4.5.8.2 SwitchData\_T

---

This topic describes the data structure for switching protection groups.

Name	Type	Description
protectionType	ProtectionType_T	For a 1+1, 1:N, two-fiber, or four-fiber protection group, the value is PT_MSP_APS. For an SNCP protection group, the value is PT_SNCP.
switchReason	SwitchReason_T	<p>Switching cause.</p> <ol style="list-style-type: none"> <li>In case of the idle state, the value is SR_RESTORED.</li> <li>In the case of the lockout, forced switching, or manual switching state, the value is SR_MANUAL.</li> </ol>

Name	Type	Description
		<p>3. In the case of the wait-to-restore or automatic switching state, the value is SR_AUTOMATIC_SWITCH.</p> <p>4. In the case of the SD switching state, the value is SR_SIGNAL_DEGRADE.</p> <p>5. In the case of the SF switching state, the value is SR_SIGNAL_FAIL.</p> <p>6. In other cases, the value is SR_NA.</p>
LayerRate	transmissionParameters::LayerRate_T	Layer rate of the protection group.
groupName	globaldefs::NamingAttributes_T	Name of the protection group.
protectedTP	globaldefs::NamingAttributes_T	Protected TP during the switching.
switchToTP	globaldefs::NamingAttributes_T	Destination TP that is switched to.
additionalInfo	globaldefs::NVSList_T	Blank.

**Parent topic:** [protection](#)

## 9.4.5.8.3 WDMProtectionGroup\_T

---

This object is used to specify the data of a WDM protection group.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the protection group name, in the form of {name EMS value XXXX}{name ManagedElement value YYYY}{name PGP value /protection group type/Shelf/ ID of the protection group}

Name	Type	Description
		<p>Types of protection groups and the corresponding meanings are as follows:</p> <ul style="list-style-type: none"> <li>0: Unknown</li> <li>1: 1:N optical channel protection group</li> <li>2: Optical line protection group</li> <li>3: Intra-board 1+1 protection group</li> <li>4: Inter-board 1+1 protection group</li> <li>5: Client 1+1 protection group</li> <li>6: Intra-Sub-shelf 1+1 protection group</li> <li>7: OWSP protection group</li> <li>8: WXCP protection group for traditional WDM NEs SNCP protection group for NG WDM NEs</li> <li>9: 1+1 optical channel protection group for OptiX BWS 320G</li> <li>10: OLP-board-based optical line protection group for OptiX BWS 320G. Currently, it is not supported.</li> <li>11: Extended intra-board protection</li> <li>12: Optical line protection for NG WDM NEs</li> <li>13: Intra-board 1+1 protection for NG WDM NEs</li> <li>14: Client 1+1 protection for NG WDM NEs</li> <li>15: DPPS protection</li> <li>16: TPS protection</li> <li>17: Inter-shelf 1+1 protection for Optix OSN 1800</li> </ul>
userLabel	string	This parameter is left blank by default. You can set this parameter through the setUserLabel interface.
nativeEMSName	string	A non-OLP protection group is named in the format of NE name + ID of the protection group. An OLP protection group is named in the format of NE name + OLP + slot ID. This parameter is read-only.

Name	Type	Description
owner	string	This parameter is left blank by default. You can set this parameter through the setOwner interface.
protectionGroupType	WDMProtectionGroupType_T	For a 1:N protection group, the value is 1VN. For other protection groups, the value is 1P1.
protectionSchemeState	ProtectionSchemeState_T	Indicates the protection scheme status. The options are as follows: PSS_UNKNOWN: indicates that the protection group is in the normal state or unknown state. PSS_FORCED_OR_LOCKED_OUT: indicates that the protection group is in the locked state, forced switching state or manual switching state. PSS_AUTOMATIC: indicates that the protection group is in the automatic switching state.
reversionMode	ReversionMode_T	Indicates the reversion mode. The options are as follows: RM_REVERTIVE: revertive mode RM_NON_REVERTIVE: non-revertive mode RM_UNKNOWN: unknown
pgpTPList	globaldefs::NamingAttributesList_T	Indicates the list of TPs that belong to the protection group. The list of TPs is partially ordered. 1. A protection TP always trails its working TPs. For example, working TP 1, protection TP1, working TP2, protection TP2. 2. For a non-revertive 1+1 protection group, the roles of the protection TP and the working TP change during the switching.
pgpParameters	globaldefs::NVSLList_T	Indicates the revertive mode. HoldOffTime is supported. The options can be Unknown or the duration time of the protection group. Indicates the non-revertive mode. wtrTime is supported. The value is

Name	Type	Description
		the WTR time of the protection group. HoldOffTime is supported. The options can be Unknown or the duration time of the protection group.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. Currently, this parameter is left blank.

**Parent topic:** [protection](#)

## 9.4.5.8.4 WDMSwitchData\_T

---

This object is used to specify the data for switching WDM protection groups.

Name	Type	Description
protectionType	WDMProtectionGroupType_T	Indicates the protection group type. For a 1:N protection group, the value is 1VN. For other protection groups, the value is 1P1.
switchReason	SwitchReason_T	Reflects the reason why a switch occurred. The options are as follows:  SR_RESTORED is used for revertive groups to indicate a return to the normal state. SR_MANUAL indicates a switch that was requested by the operator and includes forced switches. SR_AUTOMATIC_SWITCH is used when the exact switch reason is unknown, in retrievals of switch data if a protection switch is currently active or in protection switch notifications. SR_SIGNAL_MISMATCH is used in the case the signal is

Name	Type	Description
		good, but is identified as coming from an incorrect source. SR_NA is used upon retrieval of switch data for non-revertive groups, if a more precise value is not available.
wPGPName	globaldefs::NamingAttributes_T	Indicates the name of the protection group.
protectedTP	globaldefs::NamingAttributes_T	Reroute the current work is the active IP recovery mode and non-recovery mode work on the active IP. If the current working reroute the standby IP recovery mode from Standby IP switchover to the active IP, non-recovery mode switch are still work on standby IP. Special notes on a 1:N protection group. Lockout: The protected TP is always the first working path. Clearance of switching: In the normal state, the protected TP is always the first working path. In other switching states, the protected TP is the working path where the switching occurs.
switchToTP	globaldefs::NamingAttributes_T	Reroute the current work is the active IP recovery mode and non-recovery mode work on the active IP. If the current working reroute the standby IP recovery mode from Standby IP switchover to the active IP, non-recovery mode switch are still work on standby IP. Special notes on a 1:N protection group. Lockout: The protected TP is always the first working path. Clearance of switching: In the normal state, the protected TP is always the first working path. In other switching states, the protected TP is the working path where the switching occurs.

Name	Type	Description
additionalInfo	globaldefs::NVSList_T	Additional information. Currently, this parameter is left blank.

**Parent topic:** [protection](#)

## 9.4.5.8.5 EProtectionGroup\_T

---

This object is used to specify the data of the equipment protection group.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of the equipment protection group.
userLabel	string	Indicates the user label. This parameter is left blank by default.
nativeEMSName	string	Indicates the native name of the equipment protection group.
owner	string	This parameter is left blank by default and cannot be set through the setOwner interface.
eProtectionGroupType	EProtectionGroupType_T	Indicates the type of the equipment protection group. The options are as follows: 1_PLUS_1 INBD_1_PLUS_1 1_FOR_N BPS
protectionSchemeState	ProtectionSchemeState_T	The value is always PSS_UNKNOWN.
reversionMode	ReversionMode_T	Indicates the reversion mode. The options are as follows: RM_REVERTIVE: indicates revertive mode.

Name	Type	Description
		RM_NON_REVERTIVE: indicates non-revertive mode. RM_UNKNOWN: indicates that the reversion mode is unknown.
protectedList	globaldefs::NamingAttributesList_T	Indicates the name of the protected equipment, that is, the working equipment.
protectingList	globaldefs::NamingAttributesList_T	Indicates name of the protection equipment.
ePgpParameters	globaldefs::NVSLList_T	Indicates the parameters of the protection group, including the following:  type: indicates the function type of the equipment protection group. The values of this parameter are as follows: PGT_TPS: indicates 1:N protection or BPS protection. PGT_XC: indicates protection of cross-connections. PGT_STG: indicates clock protection. PGT_SCC: indicates protection of the SCC board. PGT_LESS_XC: indicates protection of secondary cross-connections as contrasted with protection of primary cross-connections, for example, protection of lower-order cross-connections of OptiX 10G V2. PG_XC_STG: protection of the SCC board and clock. In certain equipment, the clock and cross-connection functions cannot be switched separately. PG_ATM: indicates 1+1 protection of ATM boards. wtrTime: indicates wait-to-restore time. This parameter is

Name	Type	Description
		valid for a revertive protection group only.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. Currently, this parameter is left blank.

**Parent topic:** [protection](#)

## 9.4.5.8.6 ESwitchData\_T

---

This topic describes the data structure for protection switching in equipment protection groups.

Name	Type	Description
eProtectionGroupType	EProtectionGroupType_T	For details about the parameter description, see section EProtectionGroup_T.
eSwitchReason	ESwitchReason_T	Indicates the switching cause. The options are as follows: For forced and manual switching, the value is SR_MANUAL. For automatic switching, the value is SR_E_FAILURE. For other switching, the value is SR_NA.
ePGPName	globaldefs::NamingAttributes_T	Indicates the name of the equipment protection group.
protectedE	globaldefs::NamingAttributes_T	Indicates the list of protected boards. For a non-revertive protection group, the protected boards are the working boards. For a revertive protection group, the protected boards are always the initial working boards.
switchToE	globaldefs::NamingAttributes_T	Indicates the switch-to boards.

Name	Type	Description
additionalInfo	globaldefs::NVSList_T	Indicates the additional information of protection switching. This parameter is left blank.

**Parent topic:** [protection](#)

## 9.4.5.8.7 IPProtectionGroup\_T

---

This object is used to specify the data of a tunnel APS protection group.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of a tunnel protection group.
userLabel	string	Indicates the user label. This parameter is left blank by default.
nativeEMSName	string	This parameter is always left blank.
owner	string	Indicates the object owner. This parameter is left blank by default.
protectionGroupType	string	Indicates the type of a tunnel protection group. The options are as follows: PGT_MSP_1_PLUS_1: corresponding to 1+1 on the U2000 PGT_MSP_1_FOR_N: corresponding to 1:1 and 1:N on the U2000
protectionSchemeState	ProtectionSchemeState_T	Indicates the protection scheme. The options are as follows: PSS_FORCED_OR_LOCKED_OUT PSS_AUTOMATIC PSS_UNKNOWN If the information about the switching status of the protection

Name	Type	Description
		group cannot be obtained currently, the value is PSS_UNKNOWN The value is always left blank.
reversionMode	ReversionMode_T	Indicates the reversion mode. The options are as follows: RM_REVERTIVE: revertive mode RM_NON_REVERTIVE: non-revertive mode RM_UNKNOWN: unknown
rate	transmissionParameters::LayerRate_T	Indicates the layer rate of a tunnel. The options are as follows: LR MPLS PATH(8011) LR IP PATH(8060)
protectedList	globaldefs::NamingAttributesList_T	Indicates the list of working tunnels. The tunnel is in front in the ingress direction followed by in the egress direction.
protectingList	globaldefs::NamingAttributesList_T	Indicates the list of tunnels under protection. The tunnel is in front in the ingress direction followed by in the egress direction.
pgpParameters	globaldefs::NVSLIST_T	The parameters include switchMode:switching mode. The options are as follows: DualEnded: dual-ended switching mode SingleEnded: single-ended switching wtrTime: wait-to-restore time. HoldOffTime:the hold-off time. ProtocolStatus:Specifies whether to enable a protection group protocol. The options are as follows:EnableDisable
additionalInfo	globaldefs::NVSLIST_T	This parameter is left blank.

**Parent topic:** [protection](#)

## 9.4.5.8.8 IPSwitchData\_T

---

This topic describes the data structure of protection switchingin tunnel protection groups.

Name	Type	Description
protectionType	String	Indicates the protection type.
switchReason	SwitchReason_T	Indicates the switching cause. The options are as follows: For an idle protection group, the value is SR_RESTORED. For switching lockout, forced switching, and manual switching, the value is SR_MANUAL. For wait-to-restore and automatic switching, the value is SR_AUTOMATIC_SWITCH. For signal degrade (SD) switching, the value is SR_SIGNAL_DEGRADE. For signal fail (SF) switching, the value is SR_SIGNAL_FAIL. For other switching, the value is SR_NA.
layerRate	transmissionParameters::LayerRate_T	The parameter value is consistent with the layer rate of the tunnel in a protection group. The options are as follows: LR MPLS PATH LR IP PATH
groupName	globaldefs::NamingAttributes_T	Indicates the name of a protection group.
protectedList	globaldefs::NamingAttributesList_T	Indicates the list of protected tunnels.
switchToList	globaldefs::NamingAttributesList_T	Indicates the list of switch-to tunnels.

Name	Type	Description
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. This parameter is left blank.

**Parent topic:** [protection](#)

## 9.4.5.8.9 HW\_ERPSProtectionGroup\_T

---

This topic describes the data structure of Ethernet ring protection switching (ERPS) protection groups.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the ERPS protection group name. The value is in the following format: name EMS value XXXX} {name ManagedElement value YYYY} {name ERPSPG value ZZZZ}.
userLabel	string	Indicates the user label. This parameter is always blank.
nativeEMSName	string	Indicates the native EMS name. This parameter is always blank.
owner	string	Indicates the name of the ERPS protection group owner. This parameter is always blank.
reversionMode	ReversionMode_T	Indicates the reversion mode. The option is always RM_REVERTIVE.
rate	transmissionParameters::LayerRate_T	Indicates the layer rate. The option is always LR_Not_Applicable

Name	Type	Description
pgpTPList	globaldefs::NamingAttributesList_T	Indicates the list of protection ports. The order of protection ports in the list is that east PTPs are above the west PTPs.
pgpParameters	globaldefs::NVSLList_T	The following parameters are supported: wtrTime: Wait-to-restore time. Unit: s. holdofftime: Holding time. Unit: ms guardtime: Guard time. Unit: ms
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. This parameter is always blank.

**Parent topic:** [protection](#)

## 9.4.5.8.10 HW\_IFProtectionGroup\_T

---

This object is used to specify the data of an intermediate frequency (IF) protection group.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the protection group name. The value is in the following format: {name EMS value XXXX} {name ManagedElement value YYYY} {name PGP value 1/protection group ID/ID of the protection group location}. Options of the ID of the protection group location are as follows: 6 indicates IF 1+1 protection group; 7 indicates N+1 protection group

Name	Type	Description
userLabel	string	Indicates the user label. This parameter is always left blank.
nativeEMSName	string	Indicates the native EMS name. This parameter is always left blank.
owner	string	Indicates the name of the IF protection group owner. This parameter is always left blank.
protectionGroupType	ProtectionGroupType_T	Indicates the IF protection group type. The options are as follows: PGT_MSP_1_PLUS_1 indicates IF 1+1 protection group; PGT_MSP_1_FOR_N indicates N+1 protection group.
protectionSchemeState	ProtectionSchemeState_T	The value of this parameter is always PSS_UNKNOWN.
reversionMode	ReversionMode_T	Indicates the reversion mode. The options are as follows: RM_REVERTIVE: revertive mode RM_NON_REVERTIVE: non-revertive mode RM_UNKNOWN: unknown
rate	transmissionParameters::LayerRate_T	Indicates the layer rate. The option is always LR_PHYSICAL_MEIDALESS.
pgpTPList	globaldefs::NamingAttributesList_T	Indicates the list of PTPs of the IF protection group. For the IF 1+1 protection group, the order of PTPs in the list is that working PTP is above the protection PTP. For N+1 protection groups, the order of PTPs in the list is that one or more working PTPs are above the protection PTP.
pgpParameters	globaldefs::NVSLList_T	The following four parameters are supported:

Name	Type	Description
		<p>type: Protection type. Options are as follows:</p> <ul style="list-style-type: none"> <li>PGT_IFB: N+1 protection</li> <li>PG_IFB_HSB: IF 1+1 HSB protection</li> <li>PG_IFB_SD: IF 1+1 SD protection</li> <li>PG_IFB_FD: IF 1+1 FD protection</li> </ul> <p>wtrTime: Wait-to-restore time, This parameter is applicable only to revertive protection groups.</p> <p>EnableReverseSwitching: The enable status of reverse switching. Options are Enabled and Disabled. This parameter is applicable only to HSB, FD and SD protection groups.</p> <p>SDEnable: The enable status of the SD. Options are Enabled and Disabled. This parameter is applicable only to N+1 protection groups.</p>
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. This parameter is always left blank.

**Parent topic:** [protection](#)

## 9.4.5.8.11 HW\_XPICGroup\_T

---

This topic describes the data structure of cross polarization interference cancellation(XPIC) groups.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the XPICT group name. The value is in the following

Name	Type	Description
		format: name EMS value XXXX}{name ManagedElement value YYYY}{name ERPSPG value ZZZZ}.
userLabel	string	Indicates the user label. This parameter is always blank.
nativeEMSName	string	Indicates the native EMS name. This parameter is always blank.
owner	string	Indicates the name of the XPIC group owner. This parameter is always blank.
vLinkID	string	Indicates the link ID of the polarization direction V.
vTPName	globaldefs::NamingAttributes_T	Indicates the name of the access termination point (TP) of the polarization direction V.
hLinkID	string	Indicates the link ID of the polarization direction H.
hTPName	globaldefs::NamingAttributes_T	Indicates the name of the termination point (TP) of the polarization direction H.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. This parameter is always blank.

**Parent topic:** [protection](#)

## 9.4.5.8.12 ProtectionSubnetworkLink\_T

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This topic describes information about protection subnet links.

Name	Type	Description
srcTP	globaldefs::NamingAttributes_T	Indicates the name of the source port on a link.

Name	Type	Description
snkTP	globaldefs::NamingAttributes_T	Indicates the name of the sink port on a link.
vc4List	TSSeq_T	Indicates the list of VC4 path numbers.

**Parent topic:** [protection](#)

## 9.4.5.8.13 ProtectionSubnetwork\_T

---

This topic describes information about SDH protection subnets.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of an SDH protection subnet.
userLabel	string	Indicates the object alias. This parameter is left blank by default.
nativeEMSName	string	Indicates a local EMS name.
owner	string	Indicates the object owner. This parameter is left blank by default.
layerRate	transmissionParameters::LayerRate_T	Indicates the layer rate level of an SDH protection subnet.
psnType	ProtectionSubnetworkType_T	Indicates the type of an SDH protection subnet. The options are as follows: 1+1 protection subnet: PSNT_MSP_1_PLUS_1 M:N protection subnet: PSNT_MSP_M_FOR_N Two-fiber unidirectional protection ring: PSNT_2_FIBER_ULSR

Name	Type	Description
		<p>Two-fiber bidirectional protection ring: PSNT_2_FIBER_BLSR</p> <p>Four-fiber bidirectional protection ring: PSNT_4_FIBER_BLSR</p> <p>Two-fiber unidirectional SNCP protection subnet: PSNT_USNCP</p> <p>Two-fiber bidirectional SNCP protection subnet: PSNT_BSNCP</p> <p>Unidirectional path protection ring: PSNT_UPP</p> <p>Bidirectional path protection ring: PSNT_BPP</p> <p>Non-protection ring: PSNT_NP</p> <p>SNC node: PSNT_SNC_NODE</p> <p>Non-Protection Chain: PSNT_NPL</p> <p>Non-Protection Ring: PSNT_NPR</p>
neIDList	NEIDSeq_T	Indicates the NE ID list in an SDH protection subnet.
psnLinks	ProtectionSubnetworkCircle_T	<p>Indicates the link information about an SDH protection subnet, including the source name and sink name of the link and IDs VC4 paths on port.</p> <p>For the element model, see ProtectionSubnetworkLink_T.</p>
addtionalInfo	globaldefs::NVSList_T	Indicates the additional information about an SDH protection subnet. Only the VC4Number field (number of VC4 paths) bound to an SDH protection subnet is displayed.

**Parent topic:** [protection](#)

## 9.4.5.8.14 IFSwitchData\_T

---

This topic describes the switching status of an IF protection group.

Name	Type	Description
protectionGroupType	ProtectionGroupType_T	<p>Indicates the type of the protection group.</p> <p>Only two types are supported: 1+1 and 1:N. The options are as follows:</p> <ul style="list-style-type: none"><li>PGT_MSP_1_PLUS_1</li><li>PGT_MSP_1_FOR_N</li></ul>
switchReason	SwitchReason_T	<p>Indicates the switching cause.</p> <p>This parameter is set to SR_MANUAL for locking, forcible switching, manual switching, and exercise switching.</p> <p>2. This parameter is set to SR_AUTOMATIC_SWITCH for wait-to-restore, automatic switching, remote defect indication, and reverse requests.</p> <p>3. This parameter is set to SR_SIGNAL_FAIL for SF switching.</p> <p>4. This parameter is set to SR_SIGNAL_DEGRADE for SD switching.</p> <p>5. This parameter is set to SR_NA in other scenarios.</p>
layerRate	transmissionParameters::LayerRate	<p>Indicates the layer rate of the protection group.</p> <p>This parameter is fixed to LR_PHYSICAL_MEDIALESS.</p>
groupName	globaldefs::NamingAttributes_T	Indicates the name of the protection group.
protectedList	globaldefs::NamingAttributesList_T	Indicates the protected TP during switching.

Name	Type	Description
		<p>1. In revertive mode, this parameter is fixed to the working TP during protection group creation.</p> <p>2. In non-revertive mode, this parameter is set to the current working TP.</p>
switchToTPLList	globaldefs::NamingAttributesList_T	Indicates the target TP, that is, the current working TP.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. Currently, it is blank.Caret

**Parent topic:** [protection](#)

## 9.4.5.9 HW\_mstplnventory

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This topic describes information models of MSTP inventories.

- [\*\*HW\\_MSTPEndPoint\\_T\*\*](#)

This object is used to specify the data of an MSTP end point.

- [\*\*HW\\_VirtualBridge\\_T\*\*](#)

This topic describes the data structure of virtual bridges.

- [\*\*HW\\_VirtualLAN\\_T\*\*](#)

This object is used to specify the data of a VLAN.

- [\*\*HW\\_ForwardEndPoint\\_T\*\*](#)

This object is used to specify the data of a VLAN forwarding port.

- [\*\*HW\\_MSTPBindingPath\\_T\*\*](#)

This object is used to specify the data of MSTP bound paths.

- [\*\*HW\\_QosRule\\_T\*\*](#)

This topic describes the data structure of QoS rules.

- [\*\*HW\\_Flow\\_T\*\*](#)

This object is used to specify the data of a flow.

- [HW\\_LinkAggregationGroup\\_T](#)  
This object is used to specify the data of a link aggregation group (LAG).
- [HW\\_LAGBranchPort\\_T](#)  
This topic describes the data structure of the HW\_LAGBranchPort\_T object.
- [HW\\_SpanningTree\\_T](#)  
This topic describes the data structure of the HW\_SpanningTree\_T object.
- [HW\\_STCurrentPort\\_T](#)  
This topic describes the data structure of the HW\_STCurrentPort\_T object.
- [ShapingQueue](#)  
This topic describes the data structure of the ShapingQueue object.

**Parent topic:** [Information Model](#)

## 9.4.5.9.1 HW\_MSTPEndPoint\_T

---

This object is used to specify the data of an MSTP end point.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of the end point.
userLabel	string	Indicates the user label.
nativeEMSName	string	Indicates the name displayed on the EMS GUI.
owner	string	Indicates the owner. This parameter is left blank by default.
direction	terminationPoint::Directionality_T	Indicates the direction of the MSTP end point. The value is always D_BIDIRECTIONAL.
type	HW_MSTPEndPointType_T	The supported types are as follows: HW_MEPT_NA HW_MEPT_ATM HW_MEPT_ATMTRUNK HW_MEPT_ETH HW_MEPT_ETHTRUNK HW_MEPT_LP HW_MEPT_RPR

Name	Type	Description
transmissionParams	transmissionParameters::LayeredParameterList_T	<p>Indicates the transmission parameters that can be queried.</p> <p>For transmission parameters of ATM and ATM trunk ports, see MSTP ATM Ports in the Transport Domain in CORBA NBI Developer Guide (Resource) .</p> <p>For transmission parameters of ETH, ETH trunk, and RPR ports, see MSTP Ethernet Ports in the Transport Domain in CORBA NBI Developer Guide (Resource) .</p> <p>When the IMA group exists on the ATMTTRUNK port, the following IMA attributes are displayed at the transmission parameter 8003 layer (that is, the LR_ATM layer):</p> <ul style="list-style-type: none"> <li>IMAProtocolVersion, which indicates the IMA protocol version and the value is a numeral.</li> <li>IMAFrameLength, which indicates the length of the IMA frame and the value is a numeral.</li> <li>IMAConfigMode, which indicates the IMA configuration mode and the value can be the following:</li> <ul style="list-style-type: none"> <li>SymmetricalModeAndSymmetricalOperation</li> <li>SymmetricalModeAndAsymmetricalOperation</li> <li>AsymmetricalModeAndAsymmetricalOperation</li> <li>UNKONW</li> </ul> <li>IMAId, which indicates the IMA number and the value is a numeral.</li> </ul>
additionalInfo	globaldefs::NVSLList_T additionalInfo	<p>Indicates additional information. This field applies only to LP ports.</p> <p>Model: Hub, Spoke, and UNKNOWN</p>

**Parent topic:** [HW\\_mstpInventory](#)

## 9.4.5.9.2 HW\_VirtualBridge\_T

---

This topic describes the data structure of virtual bridges.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name.
userLabel	string	User label.
nativeEMSName	string	Name displayed on the GUI of the network management system.
owner	string	Owner.
logicalTPLList	HW_MSTPLLogicalEndPointList_T	Logical ports of the virtual bridge. For the element model, see HW_MSTPEndPoint_T.
additionalInfo	globaldefs::NVSLList_T	Additional information, For details, see additionalInfo::HW_VirtualBridge_T.

**Parent topic:** [HW\\_mstlInventory](#)

### 9.4.5.9.3 HW\_VirtualLAN\_T

---

This object is used to specify the data of a VLAN.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the VLAN name.
userLabel	string	Indicates the user label.
nativeEMSName	string	Indicates the name displayed on the EMS GUI.
owner	string	Indicates the owner.
paraList	globaldefs::NVSLList_T	No attribute of the VLAN can be queried or set.
forwardTPLList	HW_ForwardEndPointList_T	Indicates the list of forwarding ports in the VLAN. For details on the element model, see HW_ForwardEndPoint_T.

Name	Type	Description
additionalInfo	globaldefs::NVSLIST_T	Indicates the additional information. Currently, this parameter is left blank.

**Parent topic:** [HW\\_mstplInventory](#)

## 9.4.5.9.4 HW\_ForwardEndPoint\_T

---

This object is used to specify the data of a VLAN forwarding port.

Name	Type	Description
logicTPName	globaldefs::NamingAttributes_T	Indicates the port name.
paraList	globaldefs::NVSLIST_T	No attribute of the VLAN forwarding port can be queried or set.
additionalInfo	globaldefs::NVSLIST_T	Indicates the additional information. Currently, this parameter is left blank.

**Parent topic:** [HW\\_mstplInventory](#)

## 9.4.5.9.5 HW\_MSTPBindingPath\_T

---

This object is used to specify the data of MSTP bound paths.

Name	Type	Description
direction	terminationPoint::Directionality_T	Indicates the path direction. The options are as follows: terminationPoint::D_SOURCE terminationPoint::D_SINK terminationPoint::D_BIDIRECTIONAL

Name	Type	Description
allPathList	globaldefs::NamingAttributesList_T	Indicates all the binding paths that can be used.
usedPathList	globaldefs::NamingAttributesList_T	Indicates the binding paths that are used.
additionalInfo	globaldefs::NVSLIST_T	Indicates the additional information. Currently, this parameter is left blank.

**Parent topic:** [HW\\_mstplInventory](#)

## 9.4.5.9.6 HW\_QosRule\_T

---

This topic describes the data structure of QoS rules.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of a data structure.
userLabel	String	Indicates a user label.
nativeEMSName	String	Indicates the name displayed in the GUI of a network management system.
owner	String	Indicates the owner name.
type	HW_QosType_T	Indicates the QoS type. The options are as follows: HW_QT_CAR HW_QT_COS
paraList	globaldefs::NVSLIST_T	The following parameters are supported for CAR: EnableCar: whether to enable CAR. CIR: the committed information rate. DCBS: the additional burst size of cache.

Name	Type	Description
		<p>PIR: the peak information rate.          DMBS: the additional maximum burst size of cache.</p> <p>In the case of CoS, supported parameter set varies with the value of CoSType.</p> <p>Here list the value of CosType and the supported parameter.</p> <ul style="list-style-type: none"> <li>SIMPLE: SimplePri</li> <li>IPTOS4: IPTOSD: the minimum delay. IPTOS: the maximum throughput. IPTOSR: the highest reliability. IPTOSC: the minimum expenditure.</li> <li>IPTOS16: IPTOSn (n ranges from 0000 to 1111 in binary mode)</li> <li>DSCP: DSCPn (n ranges from 000000 to 111111 in binary mode)</li> <li>TAGPRI: TAGPRIn (n ranges from 0 to 7)</li> </ul>
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. This parameter is blank.

**Parent topic:** [HW\\_mstplInventory](#)

## 9.4.5.9.7 HW\_Flow\_T

---

This object is used to specify the data of a flow.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the flow name.
userLabel	string	Indicates the user label.

Name	Type	Description
nativeEMSName	string	Indicates the name displayed on the EMS GUI.
owner	string	Indicates the owner.
qosRuleNames	globaldefs::NamingAttributesList_T	Indicates the names of QoS rules.
paraList	globaldefs::NVSLList_T	Indicates the supported parameters: FlowType, PortType, PortID and CaretVlanID.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. This parameter is left blank.

**Parent topic:** [HW\\_mstpInventory](#)

## 9.4.5.9.8 HW\_LinkAggregationGroup\_T

---

This object is used to specify the data of a link aggregation group (LAG).

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the LAG name.
userLabel	string	Indicates the user label.
nativeEMSName	string	Indicates the name displayed on the EMS GUI.
owner	string	Indicates the owner.
paraList	globaldefs::NVSLList_T	Supported parameters are as follows: Type indicates type of the link aggregation group. SharingType indicates the sharing state.

Name	Type	Description
mainPortName	globaldefs::NamingAttributes_T	Indicates the name of the main port.
branchPortList	HW_LAGBranchPortList_T	Indicates the detailed information about the branch ports. For details about the element model, see HW_LAGBranchPort_T.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. This parameter is left blank.

**Parent topic:** [HW\\_mstplInventory](#)

## 9.4.5.9.9 HW\_LAGBranchPort\_T

---

This topic describes the data structure of the HW\_LAGBranchPort\_T object.

Name	Type	Description
branchPortName	globaldefs::NamingAttributes_T	Name of a branch port.
branchPortParaList	globaldefs::NVSLList_T	Supported parameters are as follows:  States indicates the state of the branch port. Priority indicates the priority of the branch port.

**Parent topic:** [HW\\_mstplInventory](#)

## 9.4.5.9.10 HW\_SpanningTree\_T

---

This topic describes the data structure of the HW\_SpanningTree\_T object.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name.
userLabel	string	User label.
nativeEMSName	string	Local name.
owner	string	Name of the owner of the object.
STInfo	globaldefs::NVSLIST_T	Information of the spanning tree.
STCurrentBridge	globaldefs:: NVSLIST_T	Information of the spanning tree bridge.
STCurrentPort	HW_STCurrentPortList_T	Information of the port of the spanning tree bridge. For the element model, see HW_STCurrentPort_T.

**Parent topic:** [HW\\_mstplInventory](#)

## 9.4.5.9.11 HW\_STCurrentPort\_T

---

This topic describes the data structure of the HW\_STCurrentPort\_T object.

Name	Type	Description
portName	globaldefs::NamingAttributes_T	Port name.
userLabel	string	User label.
nativeEMSName	string	Local name.
owner	string	Name of the owner of the object.
additionalInfo	globaldefs::NVSLIST_T	Additional information, For details, see additionalInfo::HW_STCurrentPort_T.

**Parent topic:** [HW\\_mstplInventory](#)

## 9.4.5.12 ShapingQueue

---

This topic describes the data structure of the ShapingQueue object.

Name	Type	Description
queueID	unsigned long	Queue ID.
bEnable	boolean	Whether ShapingQueue is enabled.
CIR	long	Committed information rate.
CBS	long	Committed burst size.
EIR	long	Excess information rate.
EBS	long	Excess burst size.

**Parent topic:** [HW\\_mstplInventory](#)

## 9.4.5.10 HW\_mstpProtection

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This topic describes information models of MSTP protection groups and protection switching.

- [\*\*HW\\_RPRNode\\_T\*\*](#)  
This topic describes the data structure of Resilient Packet Ring (RPR) nodes.
- [\*\*HW\\_RPRTopolInfo\\_T\*\*](#)  
This topic describes the data structure of the HW\_RPRTopoInfo\_T object.
- [\*\*HW\\_RPRSswitchData\\_T\*\*](#)  
This topic describes the data structure of the HW\_RPRSswitchData\_T object.
- [\*\*HW\\_AtmProtectGroup\\_T\*\*](#)  
This object is used to specify the data of an ATM protection group.
- [\*\*HW\\_AtmServiceProtectPair\\_T\*\*](#)  
This topic describes the data structure for switching ATM protection groups.
- [\*\*HW\\_AtmPGSwitchData\\_T\*\*](#)  
This topic describes the data structure of protection switching in ATM protection groups.

- [HW\\_AtmPGSingleEndSwitchPara\\_T](#)

This topic describes the data structure for single-ended switching of ATM protection groups.

- [HW\\_RPRLinkInfo\\_T](#)

This topic describes information about protection subnet links.

- [HW\\_AtmPGSingEndPara\\_T](#)

This topic describes the data structure for single-ended switching of ATM protection groups.

**Parent topic:** [Information Model](#)

## **9.4.5.10.1 HW\_RPRNode\_T**

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This topic describes the data structure of Resilient Packet Ring (RPR) nodes.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of an RPR node.
userLabel	String	Indicates the user label of an RPR node.
nativeEMSName	String	Indicates the RPR node name displayed on the NMS.
owner	String	Indicates the owner of an RPR node.
nodeNo	Unsigned short	Indicates the ID of an RPR node.
protocolEnabled	Boolean	Specifies whether the RPR protocol is enabled on a node.
nodeParameters	globaldefs::NVSLList_T	Indicates the list of supported parameters. The value are as follows: holdOffTime wtrTime protectMode restoreMode slowTime topoTimer

Name	Type	Description
additionalInfo	globaldefs::NVSLIST_T	Indicates the additional information of an RPR node. This parameter is not processed.

**Parent topic:** [HW\\_mstpProtection](#)

## 9.4.5.10.2 HW\_RPRTopoInfo\_T

---

This topic describes the data structure of the HW\_RPRTopoInfo\_T object.

Name	Type	Description
nodeName	globaldefs::NamingAttributes_T	Name of a node.
topoParameters	globaldefs::NVSLIST_T	Indicates the list of supported topology parameters. The value are as follows: direction 0RingJumpNo 1RingJumpNo ProtectMode eastNeighbordNodeNo westNeighbordNodeNo eastProtectState eastSwitchState westProtectState westSwitchState eastSendLinkWeight westSendLinkWeight eastA0ReservedBandWidth westA0ReservedBandWidth 0RingReachable 1RingReachable
additionalInfo	globaldefs::NVSLIST_T	Additional information. This field is not processed.

**Parent topic:** [HW\\_mstpProtection](#)

## 9.4.5.10.3 HW\_RPRSwitchData\_T

---

This topic describes the data structure of the HW\_RPRSwitchData\_T object.

Name	Type	Description
nodeName	globaldefs::NamingAttributes_T	Name of a node.
switchReason	protection::SwitchReason_T	Reason of switching.
switchState	HW_SwitchState_T	Switching state enumerated.
switchPosition	HW_SwitchPosition_T	Switching position.
switchParameters	globaldefs::NVSLList_T	The supported switching parameters are as follows: switchPosition switchState protectType SwitchCountTimes ProtectCountTime LastSwitchCommand This field in the HW_RPRSwitchData_T structure contains east and west switching parameters.
additionalInfo	globaldefs::NVSLList_T	Additional information. This field is not processed.

**Parent topic:** [HW\\_mstpProtection](#)

## 9.4.5.10.4 HW\_AtmProtectGroup\_T

---

This object is used to specify the data of an ATM protection group.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the protection group name.

Name	Type	Description
userLabel	string	Indicates the user label.
nativeEMSName	string	Indicates the name displayed on the EMS GUI.
owner	string	Indicates the owner.
protectType	HW_AtmProtectType_T	Indicates the protection type. The options are as follows: HW_APT_1PLUS1: 1+1 protection HW_APT_1V1: 1:1 protection HW_APT_NONE: no protection HW_APT_NA: unknown
switchDirect	HW_AtmPGSwitchDirect_T	Indicates the direction of switching. The options are as follows: HW_ASD_SRC: source HW_ASD_SNK: sink HW_ASD_BI: bidirectional HW_ASD_NA: unknown
useState	HW_AtmPGUseState_T	Indicates the usage status. The options are as follows: HW_AUS_NA HW_AUS_USED HW_AUS_UNUSED
srcEndPara	HW_AtmPGSingEndPara_T	Indicates the detailed information about the source end.
snkEndPara	HW_AtmPGSingEndPara_T	Indicates the detailed information about the sink end.
ppList	HW_AtmServiceProtectPairList_T	Indicates the list of the protection pair. For details about the element model, see HW_AtmServiceProtectPair_T.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. This parameter is left blank.

**Parent topic:** [HW\\_mstpProtection](#)

## 9.4.5.10.5 HW\_AtmServiceProtectPair\_T

---

This topic describes the data structure for switching ATM protection groups.

Name	Type	Description
workServiceName	globaldefs::NamingAttributes_T	Name of working service.
protectServiceName	globaldefs::NamingAttributes_T	Name of protection service.
monitorFlag	HW_AtmMonitorFlag_T	Indicates the monitoring status. The value are as follows: HW_AMF_NA HW_AMF_CONNECTION HW_AMF_PROTECT_PAIR
additionalInfo	globaldefs::NVSList_T	Additional information. This field is not processed.

**Parent topic:** [HW\\_mstpProtection](#)

## 9.4.5.10.6 HW\_AtmPGSwitchData\_T

---

This topic describes the data structure of protection switchingin ATM protection groups.

Name	Type	Description
pgName	globaldefs::NamingAttributes_T	Indicates the name of an ATM protection group.
protectType	HW_AtmProtectType_T	Indicates the protection type. The options are as follows: HW_APT_NA: Indicates unknown or irrelevant protection.

Name	Type	Description
		HW_APT_NONE: Indicates that no protection is configured. HW_APT_1PLUS1: Indicates 1+1 protection. HW_APT_1V1: Indicates 1:1 protection.
srcEndSwitchPara	HW_AtmPGSingleEndSwitchPara_T	Indicates the detailed information about the source end.
snkEndSwitchPara	HW_AtmPGSingleEndSwitchPara_T	Indicates the detailed information about the sink end.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. This parameter is not processed.

**Parent topic:** [HW\\_mstpProtection](#)

## 9.4.5.10.7 HW\_AtmPGSingleEndSwitchPara\_T

---

This topic describes the data structure for single-ended switching of ATM protection groups.

Name	Type	Description
switchReason	protection::SwitchReason_T	Reason of switching enumerated by the TMF. For details, see the IDL.
switchState	HW_SwitchState_T	Switching state enumerated by the TMF. For details, see the IDL.
additionalInfo	globaldefs::NVSLList_T	Additional information. This field is not processed.

**Parent topic:** [HW\\_mstpProtection](#)

## 9.4.5.10.8 HW\_RPRLinkInfo\_T

---

This topic describes information about protection subnet links.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of an RPR link.
nodeNo	unsigned short	Indicates the number of an RPR link.
rprLinkParameters	globaldefs::NVSLList_T	Indicates the RPR link parameters. The following fields are supported: ring0SendLinkWeight: weight of send link for ring 0 ring0AReservedBindWidth: reserved bandwidth of priority A for ring 0 ring0AUUsedBindWidth: used bandwidth of priority A for ring 0 ring0BCirUsedBindWidth: CIR of priority B for ring 0 ring1SendLinkWeight: weight of send link for ring 1 ring1AReservedBindWidth: reserved bandwidth of priority A for ring 1 ring1AUUsedBindWidth: used bandwidth of priority A for ring 1 ring1BCirUsedBindWidth: CIR of priority B for ring 1
additionalInfo	globaldefs::NVSLList_T	This field is left blank by default.

**Parent topic:** [HW\\_mstpProtection](#)

---

## 9.4.5.10.9 HW\_AtmPGSingEndPara\_T

---

This topic describes the data structure for single-ended switching of ATM protection groups.

Name	Type	Description
switchType	HW_AtmPGSwitchType_T	Indicates the type of switching. The options are as follows: HW_AST_NA HW_AST_SINGLE_END HW_AST_BI_END
reversionMode	ReversionMode_T	Indicates the revertive mode. The options are as follows: RM_REVERTIVE: revertive RM_NON_REVERTIVE: non-revertive RM_UNKNOWN: unknown
holdOffTime	Number	Indicates the time duration.
wtrTime	Number	Indicates the wait to revert (WTR) time.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information.

**Parent topic:** [HW\\_mstpProtection](#)

## **9.4.5.11 HW\_mstpService**

---

This topic describes information models of MSTP services.

- [\*\*HW\\_EthServiceTP\\_T\*\*](#)  
This topic describes the data structure of source or sink termination points (TPs) of Ethernet services.
- [\*\*HW\\_EthService\\_T\*\*](#)  
This topic describes the data structure of Ethernet services.
- [\*\*HW\\_AtmService\\_T\*\*](#)  
This topic describes the data structure of ATM services.
- [\*\*HW\\_AtmServiceTP\\_T\*\*](#)  
This topic describes the data structure of source and sink termination points (TPs) of ATM services.

**Parent topic:** [Information Model](#)

## 9.4.5.11.1 HW\_EthServiceTP\_T

---

This topic describes the data structure of source or sink termination points (TPs) of Ethernet services.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name.
vlanID	unsigned short	VLAN ID.
tunnel	unsigned long	Tunnel label.
vc	unsigned long	VC label.
additionalInfo	globaldefs::NVSList_T	Additional information.

**Parent topic:** [HW\\_mstpService](#)

## 9.4.5.11.2 HW\_EthService\_T

---

This topic describes the data structure of Ethernet services.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name.
userLabel	string	User label.
nativeEMSName	string	Name displayed on the GUI of the network management system.
owner	string	Owner.
serviceType	HW_EthServiceType_T	Type of a service: HW_EST_NA HW_EST_EPL HW_EST_EVPL

Name	Type	Description
		HW_EST_EPLAN HW_EST_EVPLAN
direction	globaldefs::ConnectionDirection_T	Direction of the service: CD_UNI: unidirectional CD_BI: bidirectional
activeState	boolean	State of the service.
aEndPoint	HW_EthServiceTP_T	Information about the source end of the service.
zEndPoint	HW_EthServiceTP_T	Information about the sink end of the service.
additionalInfo	globaldefs::NVSLList_T	Additional information. For details, see additionalInfo::HW_EthService_T.

**Parent topic:** [HW\\_mstpService](#)

## 9.4.5.11.3 HW\_AtmService\_T

---

This topic describes the data structure of ATM services.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name.
userLabel	string	User label.
nativeEMSName	string	Name displayed on the GUI of the network management system.
owner	string	Owner.
protectType	HW_mstpProtection::HW_AtmProtectType_T	Protection type: HW_APT_NA HW_APT_NONE HW_APT_1PLUS1

Name	Type	Description
		HW_APT_1V1
serviceType	HW_AtmServiceType_T	Type of the service: HW_AST_NA HW_AST_PVP HW_AST_PVC
spreadType	HW_AtmServiceSpreadType_T	Spread type: HW_ASST_NA HW_ASST_P2P HW_ASST_P2MPROOT HW_ASST_P2MPEAF
protectRole	HW_AtmProtectRole_T	Protection role: HW_APR_NA HW_APR_WORKING HW_APR_PROTECTING
activeState	boolean	Flag that specifies whether the service is active.
aEndPoint	HW_AtmServiceTP_T	TP at the source end of the service.
zEndPoint	HW_AtmServiceTP_T	TP at the sink end of the service.
additionalInfo	globaldefs::NVSLList_T	Additional information.

**Parent topic:** [HW\\_mstpService](#)

## 9.4.5.11.4 HW\_AtmServiceTP\_T

---

This topic describes the data structure of source and sinktermination points (TPs) of ATM services.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name of the TP at the source or sink end of the ATM service

Name	Type	Description
trafficDescriptorName	globaldefs::NamingAttributes_T	Name of the traffic descriptor.
bPC	boolean	Whether to enable the traffic control.
additionalInfo	globaldefs::NVSLList_T	Additional information.

**Parent topic:** [HW\\_mstpService](#)

## 9.4.5.12 trafficDescriptor

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This topic describes information models of traffic descriptors. These information models are applicable to PTN devices of the transport domain.

- [TrafficDescriptor\\_T](#)  
This topic describes the data structure of traffic descriptors.
- [TDCreateData\\_T](#)  
This topic describes the data structure for creating trafficdescriptors.

**Parent topic:** [Information Model](#)

### 9.4.5.12.1 TrafficDescriptor\_T

---

This topic describes the data structure of traffic descriptors.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Name
userLabel	string	User label.
nativeEMSName	string	Local name.
owner	string	Name of the owner of the object.
serviceCategory	ServiceCategory_T	Category of the traffic descriptor.

Name	Type	Description
trafficParameters	TrafficParameterList_T	<p>Indicates traffic descriptor parameters, including:</p> <p>PCR-&lt;0+1&gt;: the maximum transmit rate of cells.</p> <p>PCR-&lt;0&gt;: the peak information rate (PIR) of cells when Clp (cell loss priority) is 0.</p> <p>SCR-&lt;0+1&gt;: the sustainable PIR of cells. Based on traffic types, the traffic that exceeds the SCR will be tagged or discarded.</p> <p>SCR-&lt;0&gt;: the sustainable transmit rate of cells.</p> <p>CDVT: the cell delay variation tolerance.</p> <p>MBS: the maximum burst size of cells.</p> <p>TAG: tags.</p> <p>TRANSPARENT: the traffic state.</p> <p>FDISCARD: whether the frame discarding is enabled.</p> <p>QOSLEVEL: traffic QoS.</p> <p>MCR: minimum cell rate.</p> <p>UPC/NPC: usage parameter control/network parameter control.</p>
conformanceDefinition	string	The value is always UNI 4.1.
activeState	boolean	Flag of activation.
additionalInfo	globaldefs::NVSList_T	Indicates additional information. For details, see additionalInfo::TrafficDescriptor_T.

**Parent topic:** [trafficDescriptor](#)

## 9.4.5.12.2 TDCreateData\_T

---

This topic describes the data structure for creating traffic descriptors.

Name	Type	Description
userLabel	string	User label.
forceUniqueness	boolean	Whether the userlabel is required to be unique. The value True is not supported.
owner	string	Name of the owner of the object.
serviceCategory	ServiceCategory_T	Type of the traffic descriptor.
trafficParameters	TrafficParameterList_T	<p>Indicates traffic descriptor parameters, including:</p> <p>PCR-&lt;0+1&gt;: the maximum transmit rate of cells.</p> <p>PCR-&lt;0&gt;: the peak information rate (PIR) of cells when Clp (cell loss priority) is 0.</p> <p>SCR-&lt;0+1&gt;: the sustainable PIR of cells. Based on traffic types, the traffic that exceeds the SCR will be tagged or discarded.</p> <p>SCR-&lt;0&gt;: the sustainable transmit rate of cells.</p> <p>CDVT: the cell delay variation tolerance.</p> <p>MBS: the maximum burst size of cells.</p> <p>TAG: tags.</p> <p>TRANSPARENT: the traffic state.</p> <p>FDISCARD: whether the frame discarding is enabled.</p> <p>QOSLEVEL: traffic QoS.</p> <p>MCR: minimum cell rate.</p> <p>UPC/NPC: usage parameter control/network parameter control.</p>
conformanceDefinition	string	The value is always UNI 4.1.
activeState	boolean	Flag of activation.
additionalInfo	globaldefs::NVSLList_T	Additional information. This field is not processed.

**Parent topic:** [trafficDescriptor](#)

## 9.4.5.13 encapsulationLayerLink

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This topic describes information models of encapsulation layer links.

- [EncapsulationLayerLink\\_T](#)

This topic describes the data structure of encapsulationlayer links.

**Parent topic:** [Information Model](#)

### 9.4.5.13.1 EncapsulationLayerLink\_T

---

This topic describes the data structure of encapsulationlayer links.

Name	Type	Description
name	globaldefs::NamingAttributes_T	The name of the encapsulation layer link.
userLabel	string	User label.
nativeEMSName	string	Local name.
owner	string	Name of the owner of the object.
type	LinkType_T	The value is always LT_POINT_TO_POINT.
transmissionParams	transmissionParameters::LayeredParameters_T	Transmission parameters.
rate	transmissionParameters::LayerRate_T	The value is always LR_Encapsulation.
networkAccessDomain	string	The value is always blank.
endTPs	globaldefs::NamingAttributesList_T	The list of termination points (TPs) terminating the encapsulation layer link.

Name	Type	Description
route	globaldefs::NamingAttributesList_T	The list of server SNC names.
segment	boolean	Whether the state of the ELL is terminal.
routeGroups	globaldefs::NamingAttributesList_T	The value is always blank.
additionalInfo	globaldefs::NVSList_T	The value is always blank.

**Parent topic:** [encapsulationLayerLink](#)

## 9.4.5.14 flowDomain

---

This topic describes information models offlow domains, flow domain fragments and Ethernet OAM operations.

- [FlowDomain\\_T](#)  
This topic describes the data structure of flow domains.
- [FlowDomainFragment\\_T](#)  
This topic describes the data structure of flow domain fragments (FDFrs).
- [EthernetOAMPoint\\_T](#)  
This topic describes the data structure of Ethernet OAMpoints.
- [EthernetOAMOperation\\_T](#)  
This topic describes the data structure of Ethernet OAM operations.
- [EthernetOAMPramer\\_T](#)  
This topic describes the data structure of Ethernet OAMparameters.
- [EthernetLTTestResult\\_T](#)  
This topic describes the data structure of results of linktrace (LT) tests.

**Parent topic:** [Information Model](#)

### 9.4.5.14.1 FlowDomain\_T

---

This topic describes the data structure of flow domains.

Name	Type	Description
name	globaldefs::NamingAttributes_T	The name of the flow domain.
userLabel	string	The default value is Flowdomain_1
nativeEMSName	string	The default value is Flowdomain_1
owner	string	The value is always blank.
transmissionParams	transmissionParameters::LayeredParameterList_T	The value is always blank.
networkAccessDomain	string	The value is always blank.
mfds	globaldefs::NamingAttributesList_T	The value is always blank.
fdEdgeCPTPs	globaldefs::NamingAttributesList_T	The value is always blank.
fdInternalCPTPs	globaldefs::NamingAttributesList_T	The value is always blank.
fDConnectivityState	ConnectivityState_T	The value is always flowDomain::CS_UNKNOWN
fdType	FDTtype_T	The value is always FDT_NETWORK
additionalInfo	globaldefs::NVSLlist_T	Additional information.

**Parent topic:** [flowDomain](#)

## 9.4.5.14.2 FlowDomainFragment\_T

---

This topic describes the data structure of flow domain fragments (FDFrs).

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the FDFr name.

Name	Type	Description
userLabel	String	Indicates the user label of an FDFr. This parameter is left blank by default.
nativeEMSName	String	Indicates the FDFr name displayed on the NMS.
owner	String	Indicates the FDFr owner. This parameter is left blank by default.
direction	globaldefs::ConnectionDirection_T	Indicates the FDFr direction. The options are as follows: CD_UNI CD BI
transmissionParams	transmissionParameters::LayeredParameterList_T	Indicates the supported transmission parameters, including: FlowdomainFragmentType: Indicates the FDFr type. Terminal: Indicates the termination point (TP).
endTPs	globaldefs::NamingAttributesList_T	Indicates the TPs terminating on the encapsulation layer link.
networkAccessDomain	String	The value is always blank.
flexible	Boolean	The value is always false
administrativeState	performance::AdministrativeState_T	The value is always performance::AS_Unlocked.
fdfrState	subnetworkConnection::SNCState_T	Indicates the FDFr state. The options are as follows: SNCS_NONEXISTENT: Indicates that the FDFr does not exist. SNCS_PENDING: Indicates that the FDFr is deactivated. SNCS_ACTIVE: Indicates that the FDFr is activated. SNCS_PARTIAL: Indicates that the FDFr is partially activated.
fdfrType	FDFrType_T	Indicates the FDFr type. The options are as follows:

Name	Type	Description
		FDFRT_POINT_TO_POINT: Indicates a point-to-point FDFr. FDFRT_POINT_TO_MULTIPOINT: Indicates a point-to-multipoint FDFr. FDFRT_MULTIPOINT: Indicates a multipoint-to-multipoint FDFr.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. NoVB is displayed for a non-VB node if the EOW/EOO contains E-LAN services of non-VB nodes.

**Parent topic:** [flowDomain](#)

### 9.4.5.14.3 EthernetOAMPoint\_T

---

This topic describes the data structure of Ethernet OAMpoints.

Name	Type	Description
Name	String	Indicates the name of an Ethernet OAM point.
type	EthernetOAMPointType_T	Indicates the type of an Ethernet OAM point. The options are as follows:  EOT_MEP: Indicates that the Ethernet OAM point is an edge point in a maintenance association.  EOP_MIP: Indicates that the Ethernet OAM point is a point in a maintenance association.
direction	EthernetOAMPointDirection_T	Indicates the direction of an Ethernet OAM point. The options are as follows:  EOPD_BI: Indicates the Ethernet OAM point is bidirectional.

Name	Type	Description
		EOPD_INGRESS: Indicates that the Ethernet OAM point is an ingress port. EOPD_EGRESS: Indicates that the Ethernet OAM point is an egress port.
level	Unsigned long	Indicates the level of an Ethernet OAM point.
additionalInfo	globaldefs::NVSLIST_T	Indicates the additional information.

**Parent topic:** [flowDomain](#)

## 9.4.5.14.4 EthernetOAMOperation\_T

---

This topic describes the data structure of Ethernet OAM operations.

Name	Type	Description
command	EthernetOAMCommandType_T	Indicates the type of an Ethernet OAM command. The options are as follows: EOCT_CC: Indicates that the command is used to perform a connectivity check. EOCT_LB: Indicates that the command is used to perform loopback. EOCT_LT: Indicates that the command is used to perform a link test.
srcPoint	EthernetOAMPParamer_T	Indicates the source OAM point.
snkPoint	EthernetOAMPParamer_T	Indicates the sink OAM point.
additionalInfo	globaldefs::NVSLIST_T	Indicates the additional information. For details, see additionalInfo::EthernetOAMOperation_T.

**Parent topic:** [flowDomain](#)

## 9.4.5.14.5 EthernetOAMParamer\_T

---

This topic describes the data structure of Ethernet OAMparameters.

Name	Type	Description
oamPointName	string	The name of the OAM point.
period	unsigned long	The period of ethernet OAM command.

**Parent topic:** [flowDomain](#)

## 9.4.5.14.6 EthernetLTTestResult\_T

---

This topic describes the data structure of results of linktrace (LT) tests.

Name	Type	Description
oamPointName	string	The name of the OAM point.
hopNumber	unsigned long	The hop-number of the Link-Trace.
result	boolean	The result of the Link-Trace.

**Parent topic:** [flowDomain](#)

## 9.4.5.15 HW\_controlPlane

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This topic describes information models of SNPP links.

- [HW\\_SnppLink\\_T](#)  
This topic describes the data structure of the HW\_SnppLink\_T object.
- [HW\\_Capacity\\_T](#)  
This topic describes the data structure of bandwidth capacities.

**Parent topic:** [Information Model](#)

## 9.4.5.15.1 HW\_SnppLink\_T

---

This topic describes the data structure of the HW\_SnppLink\_T object.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of the SNPPLink.
userLabel	string	Indicates the user label.
nativeEMSName	string	Indicates the local name
owner	string	Indicates the name of the owner of the object.
aEndSnppName	globaldefs::NamingAttributes_T	Indicates the name of the source TP of the SNPPLink.
zEndSnppName	globaldefs::NamingAttributes_T	Indicates the name of the sink TP of the SNPPLink.
direction	globaldefs::ConnectionDirection_T	Indicates the direction of the SNPPLink.
rateList	transmissionParameters::LayerRateList_T	Indicates the list of the cross-connection rate supported by the SNPPLink.
cost	unsigned short	Indicates the weight of the SNPPLink.
protectType	HW_LinkProtectType_T	The protection types of the SNPPLink supported are as follows: PROTECTED PREEMPTIBLE UNPROTECTED PROTECTED/PREEMPTIBLE PROTECTED/PREEMPTIBLE/UNPROTECTED
linkCapacity	HW_LinkCapacity_T	Indicates the bandwidth capacity of the SNPPLink. For the element model, see HW_Capacity_T.
linkState	HW_LinkState	Indicates the connection status of the SNPPLink, containing the following: DISCONNECTED

Name	Type	Description
		CONNECTED
srlgIDList	HW_SRLGIDList_T	Indicates the list of the shared risk link group ID. For the element model, see HW_SRLGID_T (unsigned long).
additionalInfo	globaldefs::NVSList_T	Indicates the additional information. For details, see additionalInfo::HW_SnppLink_T.

**Parent topic:** [HW\\_controlPlane](#)

## 9.4.5.15.2 HW\_Capacity\_T

---

This topic describes the data structure of bandwidth capacities.

Name	Type	Description
unit	"transmissionParameters ::LayerRate_T"	The list of the cross-connection rate supported.
Bandwidth	unsigned long	The bandwidth.
additionalInfo	globaldefs::NVSList_T	Additional information.

**Parent topic:** [HW\\_controlPlane](#)

## 9.4.5.16 maintenanceOps

---

This topic describes information models of traffic descriptors. These information models are applicable to PTN equipment and RTN equipment.

- [CurrentMaintenanceOperation\\_T](#)  
This topic describes the data structure of current maintenance operations.
- [PRBSTestResult\\_T](#)  
This topic describes the data structure of PRBS test results.

- [PRBTestParameter\\_T](#)  
This topic describes the data structure of PRBS test parameters.
- [SampleResult\\_T](#)  
This topic describes the data structure of sampling results.
- [TestDuration\\_T](#)  
This topic describes the data structure of test duration.
- [HW\\_MaintenanceDomain\\_T](#)  
This topic describes the data structure of maintenance domains (MDs).
- [HW\\_MaintenanceAssociation\\_T](#)  
This topic describes the data structure of maintenance associations (MAs).
- [HW\\_MaintenancePoint\\_T](#)  
This describes the data structure of maintenance points (MPs).

**Parent topic:** [Information Model](#)

## 9.4.5.16.1 CurrentMaintenanceOperation\_T

---

This topic describes the data structure of current maintenance operations.

Name	Type	Description
tpName	globaldefs::NamingAttributes_T	Indicates the name of a TP.
maintenanceOperation	MaintenanceOperation_T	Indicates the current maintenance operation that has been invoked, including: FACILITY_LOOPBACK: outloop setting. TERMINAL_LOOPBACK: inloop setting. FACILITY_FORCED_AIS: forced AIS alarms for devices. TERMINAL_FORCED_AIS: forced AIS alarms for terminals. FORCE_RDI: forced RDI alarms. OAM_ETHSVR_CC: the CC test on Ethernet services.

Name	Type	Description
		<p>OAM_ETHSVR_LB: the LB test on Ethernet services.</p> <p>OAM_ETHSVR_LT: the LT test on Ethernet services.</p> <p>OAM_ETHLINK_FIND: Ethernet link discovery.</p> <p>OAM_ETHLINK_LOOP: Ethernet link loopbacks.</p> <p>OAM_LSP_CC: the CC test on LSP services.</p> <p>OAM_LSP_LB: the LB test on LSP services.</p> <p>OAM_LSP_LT: the LT test on LSP services.</p> <p>OAM_PW_CC: the CC test on PW services.</p> <p>OAM_PW_LT: the LT test on PW services.</p> <p>OAM_PW_LB: the LB test on PW services.</p>
layerRate	"transmissionParameters ::LayerRate_T"	Indicates the layer rate to which the maintenance operation applies.
additionalInfo	globaldefs::NVSList_T	Indicates the additional information.

**Parent topic:** [maintenanceOps](#)

## 9.4.5.16.2 PRBSTestResult\_T

---

This topic describes the data structure of PRBS test results.

Name	Type	Description
testPara	PRBSTestParameter_T	The test parameters
startTime	globaldefs::Time_T	The start time of the test

Name	Type	Description
sampleResultList	SampleResultList_T	The result of the test. For the element model, see SampleResult_T
totalBitError	unsigned long	The total number of the bit errors.
realDuration	TestDuration_T	The duration of the actual test. For the element model, see TestDuration_T

**Parent topic:** [maintenanceOps](#)

## 9.4.5.16.3 PRBSTestParameter\_T

---

This topic describes the data structure of PRBS test parameters.

Name	Type	Description
tpName	globaldefs::NamingAttributes_T	The name of the TP.
testDuration	TestDuration_T	The duration of the test.
sampleGranularity	SampleGranularity_T	Sampling period.
testType	PRBSTestType_T	The test types supported are as follows:  FACILITY_PRBS_TEST TERMINAL_PRBS_TEST
accumulatingIndicator	boolean	Accumulate bit error values or not.

**Parent topic:** [maintenanceOps](#)

## 9.4.5.16.4 SampleResult\_T

---

This topic describes the data structure of sampling results.

Name	Type	Description
sampleTime	globaldefs::Time_T	Sampling time
value	unsigned long	The number of the bit errors

**Parent topic:** [maintenanceOps](#)

## 9.4.5.16.5 TestDuration\_T

---

This topic describes the data structure of test duration.

Name	Type	Description
value	unsigned long	The value of the test duration.
unit	string	The unit of the test duration.

**Parent topic:** [maintenanceOps](#)

## 9.4.5.16.6 HW\_MaintenanceDomain\_T

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This topic describes the data structure of maintenance domains (MDs).

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates a name.
userLabel	string	Indicates a user label.
nativeEMSName	string	Indicates a local EMS name.
owner	string	Indicates the name of an object owner.
mdParameters	globaldefs::NVSLList_T	Indicates MD parameters.

Name	Type	Description
additionalInfo	globaldefs::NVSLIST_T	Indicates additional information.

**Parent topic:** [maintenanceOps](#)

## 9.4.5.16.7 HW\_MaintenanceAssociation\_T

---

This topic describes the data structure of maintenance associations (MAs).

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates a name.
userLabel	string	Indicates a user label.
nativeEMSName	string	Indicates a local EMS name.
owner	string	Indicates the name of an object owner.
associatedService	globaldefs::NamingAttributes_T	Indicates the name of an associated service.
maParameters	globaldefs::NVSLIST_T	Indicates MA parameters.
additionalInfo	globaldefs::NVSLIST_T	Indicates additional information.

**Parent topic:** [maintenanceOps](#)

## 9.4.5.16.8 HW\_MaintenancePoint\_T

---

This describes the data structure of maintenance points (MPs).

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates a name.

Name	Type	Description
userLabel	string	Indicates a user label.
nativeEMSName	string	Indicates a local EMS name.
owner	string	Indicates the name of an object owner.
tpName	globaldefs::NamingAttributes_T	Indicates the name of a port where an MP resides.
transmissionParams	transmissionParameters::LayeredParameters_T	Indicates MP parameters.
additionalInfo	globaldefs::NVSList_T	Indicates additional information.

**Parent topic:** [maintenanceOps](#)

## 9.4.5.17 TopoManagementManager

---

This topic describes the information model of topologymanagement.

- [Node\\_T](#)  
This topic describes the data structure of nodes.
- [Position\\_T](#)  
This topic describes the data structure of positions.

**Parent topic:** [Information Model](#)

### 9.4.5.17.1 Node\_T

---

This topic describes the data structure of nodes.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the node name.

Name	Type	Description
nativeEMSName	String	Indicates the node name displayed on the NMS.
nodeType	NodeType_T	Indicates the node type. The options are as follows: NODETYPE_ME: Indicates a managed NE. NODETYPE_TOPO_SN: Indicates a service node.
position	Position_T	Indicates the node position.
parent	globaldefs::NamingAttributes_T	Indicates the name of the parent topology node.
additionalInfo	globaldefs::NVSList_T	Indicates the additional information.

**Parent topic:** [TopoManagementManager](#)

## 9.4.5.17.2 Position\_T

---

This topic describes the data structure of positions.

Name	Type	Description
xPos	long	X-axis
yPos	long	Y-axis

**Parent topic:** [TopoManagementManager](#)

## 9.4.5.18 HW\_vpnManager

---

This topic describes information models of virtual private network (VPN) services. Tunnels and services carried by these tunnels are necessary for successful VPN service transport. The model for MPLS static tunnels and PW switches is IPCrossConnection. The model for dynamic MPLS

tunnels and IP tunnels is TrafficTrunk. The model for PWE3 (that is, ATM services, CES services, and EES services), VPLS and NativeEth services is MFDFr. PTN, Hybrid MSTP and RTN 900 series equipment is supported. NativeEthservices are applicable only to RTN equipment of V100R002 version.

- **MatrixFlowDomainFragment\_T**

This topic describes the data structure of matrix flow domain fragments, such as VPLS, PWE3 and NativeETH services.

- **MultipointServiceAttr\_T**

This topic describes the data structure of the MultipointServiceAttr\_T object.

- **StaticMacAddress\_T**

This topic describes the data structure of static MAC addresses.

- **SplitHorizonGroup\_T**

This topic describes the data structure of split horizon groups.

- **IPCrossConnection\_T**

This topic describes the data structure of IP cross-connections, such as static tunnels and PW switches.

- **TrafficTrunk\_T**

This topic describes the data structure of traffic trunks.

- **FlowDomainFragment\_T**

This topic describes the data structure of flow domain fragments (FDFRs), including E2E PWE3 services and VPLS services.

- **SelfLearningMACAddressTable\_T**

This topic describes the self-learning MAC addresses of VLAN services.

- **SelfLearningMACAddress\_T**

This topic describes the self-learning MAC addresses.

**Parent topic:** [Information Model](#)

## **9.4.5.18.1 MatrixFlowDomainFragment\_T**

---

This topic describes the data structure of matrix flow domain fragments, such as VPLS, PWE3 and NativeETH services.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name.

Name	Type	Description
userLabel	string	Indicates the alias of the object. By default, the value is blank.
nativeEMSName	string	Indicates the local name.
owner	string	Indicates the owner of the object.
direction	globaldefs::ConnectionDirection_T	Indicates the direction. The value can be CD_UNI (unidirectional), or CD_BI (bidirectional).
transmissionParams	transmissionParameters::LayeredParameters_T	Indicates the transmission parameters. For details, see Transmission Parameters of the HW_vpManager in CORBA NBI Developer Guide (Resource) . .
multipointServiceAttr	MultipointServiceAttr_T	Indicates the multipoint service attributes. In the case of a PWE3 service, this parameter is blank. For details, refer to the descriptions of MultipointServiceAttr_T.
aEnd	subnetworkConnection::TPDataList_T	Indicates the list of MFDfr source objects. For details, see Transmission Parameters of the HW_vpManager in CORBA NBI Developer Guide (Resource) . .
zEnd	subnetworkConnection::TPDataList_T	Indicates the list of MFDfr sink objects. For details, see Transmission Parameters of the HW_vpManager in CORBA NBI Developer Guide (Resource) . .
fdfrState	subnetworkConnection::SNCState_T	Indicates the activation status. The value can be SNCS_ACTIVE (active), SNCS_PENDING (inactive), SNCS_PARTIAL (partially active), or SNCS_NONEXISTENT (deleted).
administrativeState	performance::AdministrativeState_T	Indicates the administrative status. The value can be AS_Unlocked (locked), or AS_Locked (unlocked).
flexible	boolean	Indicates whether a service access point can be added or deleted. The

Name	Type	Description
		value can be true, which indicates that a service access point can be added or deleted, or false, which indicates that a service access point cannot be added or deleted
mfdfrType	flowDomainFragment::FDFrType_T	Indicates the MFDFr type. The value can be FDFRT_MULTIPOINT, FDFRT_POINT_TO_MULTIPOINT, FDFRT_POINT_TO_POINT, or FDFRT_EXPLICIT.
additionalInfo	globaldefs::NVSLList_T	Indicates additional information. Currently, it is blank.

**Parent topic:** [HW vpnManager](#)

## 9.4.5.18.2 MultipointServiceAttr\_T

---

This topic describes the data structure of the MultipointServiceAttr\_T object.

Name	Type	Description
paraList	globaldefs::NVSLList_T	Indicates the attribute list. For details, see the next table that lists specific attributes of a VPLS service.
staticMacList	StaticMacAddressList_T	Indicates the static MAC address list. For details, see StaticMacAddress_T.
shgList	SplitHorizonGroupAttrList_T	Indicates the split horizon group list. For details, see SplitHorizonGroup_T.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. For details, see additionalInfo::MultipointServiceAttr_T.
paraList(VPLS)	N/A	
AccessMode	string	Indicates the access interface type. The value can be C-Aware, S-Aware, or T-Aware.

Name	Type	Description
MacLearning	string	Indicates whether to enable the function of self-learning MAC addresses. The value can be Enabled, or Disabled.
MacLearnStyle	string	Indicates the MAC address type. The value can be IVL, SVL, or NA.
AgingAbility	string	Indicates whether to enable the aging ability. The value can be Enabled, or Disabled.
AgingTime	string	Indicates the aging time.
MaxMacNumber	string	Indicates the capacity of the MAC address list.
MaxMacMonitor	string	Indicates the upper threshold for MAC address monitoring.
MinMacMonitor	string	Indicates the lower threshold for MAC address monitoring.
UnknownUnicastServiceFrameDelivery	string	Indicates the method of processing unknown unicast frames. The value can be Discard, or Broadcast.
UnknownMulticastServiceFrameDelivery	string	Indicates the method of processing unknown multicast frames. The value can be Discard, or Broadcast.
ServiceTagRole	string	Indicates the service demarcation tag, value: User, Service or NA.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.5.18.3 StaticMacAddress\_T

---

This topic describes the data structure of static MAC addresses.

Name	Type	Description
staticMacType	string	Indicates the type of the static MAC address. The value can be Static or BlackHole.
macAddress	string	Indicates the MAC address.
peVID	unsigned long	Indicates the outer VLAN ID.
ceVID	unsigned long	Indicates the inner VLAN ID. This parameter is invalid(4294967295) if it is larger than 4096.
tpName	globaldefs::NamingAttributes_T	Indicates a bound physical or logical port, PW, or QinQ link. The value of this parameter is left blank if the device domain is unknown.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. For details, see additionalInfo::StaticMacAddress_T.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.5.18.4 SplitHorizonGroup\_T

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This topic describes the data structure of split horizon groups.

Name	Type	Description
shgID	unsigned long	Indicates the ID of a split horizon group.
shgMemberNameList	globaldefs::NamingAttributesList_T	Indicates the list of the members of a split horizon group. The member can be a port, PW, or QinQ link.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. For details, see additionalInfo::SplitHorizonGroup_T.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.5.18.5 IPCrossConnection\_T

---

This topic describes the data structure of IP cross-connections, such as static tunnels and PW switches.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name.
nativeEMSName	string	Indicates the local name.
userLabel	string	Indicates the alias of the object. By default, the value is blank.
activeState	subnetworkConnection::SNCState_T	Indicates the activation status. The value can be SNCS_NONEXISTENT, SNCS_PENDING, SNCS_ACTIVE, or SNCS_PARTIAL.
administrativeState	performance::AdministrativeState_T	Indicates the administrative status. The value can be AS_Locked, or AS_Unlocked.
direction	globaldefs::ConnectionDirection_T	Indicates the direction. The value can be CD_UNI (unidirectional), or CD_BI (bidirectional).
ccType	subnetworkConnection::SNCType_T	Indicates the cross-connection type. The value can be ST_SIMPLE (one source and one sink), ST_ADD_DROP_A (two sources and one sink), ST_ADD_DROP_Z (one source and two sinks). Currently, only ST_SIMPLE is supported.
transmissionParams	transmissionParameters::LayeredParameters_T	Indicates the transmission parameters. For details, see Transmission Parameters of the HW_vpManager in

Name	Type	Description
		CORBA NBI Developer Guide (Resource) . .
aEndList	subnetworkConnection::TPDataList_T	Indicates the source list. For details, see Transmission Parameters of the Source and Sink Ends of Static Tunnels and PW Switchs in CORBA NBI Developer Guide (Resource) . .
zEndList	subnetworkConnection::TPDataList_T	Indicates the sink list. For details, see Transmission Parameters of the Source and Sink Ends of Static Tunnels and PW Switchs in CORBA NBI Developer Guide (Resource) . .
additionalInfo	globaldefs::NVSList_T	Indicates the additional information This parameter is blank.

**Parent topic:** [HW vpnManager](#)

## 9.4.5.18.6 TrafficTrunk\_T

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This topic describes the data structure of traffic trunks.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name.
userLabel	string	Indicates the alias of the object. The default value is blank.
nativeEMSName	string	Indicates the local name.
owner	string	Indicates the owner of the object.

Name	Type	Description
activeState	subnetworkConnection::SNCState_T	Indicates the activation status. The value can be SNCS_NONEEXISTENT, SNCS_PENDING, SNCS_ACTIVE, or SNCS_PARTIAL.
direction	globaldefs::ConnectionDirection_T	Indicates the direction. The value can be CD_UNI, or CD_BI.
transmissionParams	transmissionParameters::LayeredParameters_T	Indicates the transmission parameters. For details, see Transmission Parameters of the Traffic Trunk in CORBA NBI Developer Guide (Resource) . .
aEnd	subnetworkConnection::TPDataList_T	Indicates the source list. For details, see Transmission Parameters of the MFDFr (PWE3) NNI (PW) in CORBA NBI Developer Guide (Resource) . .
zEnd	subnetworkConnection::TPDataList_T	Indicates the sink list. For details, see Transmission Parameters of the MFDFr (PWE3) NNI (PW) in CORBA NBI Developer Guide (Resource) . .
administrativeState	performance::AdministrativeState_T	Indicates the administrative status. The value can be AS_Locked, or AS_Unlocked.
rerouteAllowed	subnetworkConnection::Reroute_T	Indicates whether to enable the rerouting. The value can be RR_NA, RR_YES, or RR_NO.
networkRouted	subnetworkConnection::NetworkRouted_T	Indicates the network route. The value can be NR_NA, NR_YES, or NR_NO.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information, including CreatedTime. The CreatedTime

Name	Type	Description
		<p>value is similar to 20110708030451.0Z.</p> <p>For details, see additionalInfo::TrafficTrunk_T.</p>

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.5.18.7 FlowDomainFragment\_T

---

This topic describes the data structure of flow domain fragments (FDFRs), including E2E PWE3 services and VPLS services.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name of a flow domain fragment (FDFr). It identifies an FDFr uniquely.
userLabel	string	Indicates the user label.
nativeEMSName	string	Indicates the local name.
owner	string	Indicates the owner.
direction	globaldefs::ConnectionDirection_T	Indicates the direction. The options are as follows: CD_UNI: unidirectional CD_BI: bidirectional For PWE3 services, the value is always CD_BI.
transmissionParams	transmissionParameters::LayeredParameters_T	Indicates the transmission parameters. For details, see HW_vpnManager in CORBA NBI Developer Guide (Resource) .
multipointServiceAttr	MultipointServiceAttr_T	The parameter value is always blank.
aEnd	subnetworkConnection::TPDataList_T	Indicates the list of objects at the source of the FDFr. For a PWE3 service, it is a list of objects at the

Name	Type	Description
		<p>source of the service. For VPLS and L3VPN services, it is a list of UNI ports.</p> <p>Indicates the transmission parameters. For details, see <a href="#">HW_vpManager</a> in CORBA NBI Developer Guide (Resource) .</p>
zEnd	subnetworkConnection::TPDataList_T	<p>Indicates the list of objects at the sink of the FDFr. For a PWE3 service, it is a list of objects at the sink of the service. For VPLS and L3VPN services, the value is left blank.</p> <p>Indicates the transmission parameters. For details, see <a href="#">HW_vpManager</a> in CORBA NBI Developer Guide (Resource) .</p>
networkAccessDomain	String	The value of this parameter is left blank.
flexible	Boolean	<p>Specifies whether FDFr service access points can be added or deleted. The options are as follows:</p> <p>true: FDFr service access points can be added or deleted.</p> <p>false: FDFr service access points cannot be added or deleted.</p> <p>For L3VPN and VPLS services, the value is always true. For PWE3 services, the value is always false.</p>
administrativeState	performance::AdministrativeState_T	<p>Indicates the FDFr administrative status. The options are as follows:</p> <p>AS_Unlocked: unlocked</p> <p>AS_Locked: locked</p>
fdfrState	subnetworkConnection::SNCState_T	<p>Indicates the FDFr status. The options are as follows:</p> <p>SNCS_ACTIVE: active</p> <p>SNCS_PENDING: inactive</p> <p>SNCS_PARTIAL: partially active</p>
fdfrType	FDFrType_T	Indicates the MFDFr type. The options are as follows:

Name	Type	Description
		<p>FDFRT_POINT_TO_POINT: Indicates the point-to-point MFDFr. For PWE3 services, the value is always FDFRT_POINT_TO_POINT.</p> <p>FDFRT_MULTIPOINT: Indicates the multipoint-to-multipoint MFDFr. For VPLS and L3VPN services, the value is always FDFRT_MULTIPOINT.</p> <p>FDFRT_POINT_TO_MULTIPOINT: Indicates the point-to-multipoint MFDFr (or E-Tree services). Currently, this value is unavailable.</p> <p>FDFRT_EXPLICIT: Indicates the explicit MFDFr (or PWE3 services with multiple AES links).</p>
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.5.18.8 SelfLearningMACAddressTable\_T

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This topic describes the self-learning MAC addresses of VLAN services.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the VLAN ID.
macAddressList	SelfLearningMACAddressList_T	Indicates the list of self-learning MAC addresses.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. Currently, it is blank.

**Parent topic:** [HW\\_vpnManager](#)

## **9.4.5.18.9 SelfLearningMACAddress\_T**

---

This topic describes the self-learning MAC addresses.

Name	Type	Description
macType	string	Indicates the type of an MAC address. Its value is Dynamic.
macAddress	string	Indicates an MAC address.
peVID	string	Indicates the outer VLAN ID.
ceVID	string	Indicates the inner VLAN ID. This parameter is fixed to (-1).
tpName	globaldefs::NamingAttributes_T	Indicates a port, bound physical port, bound logical port, PW, or QinQ link. This parameter is blank when the NE type is unknown.Caret
additionalInfo	globaldefs::NVSList_T	Indicates the additional information. Currently, it is blank.

**Parent topic:** [HW\\_vpnManager](#)

## **9.4.5.19 trafficConditioningProfile**

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This topic describes information models of traffic control policy profiles.

- [\*\*HW\\_TrafficClassifier\\_T\*\*](#)

This topic describes the data structure for traffic classification.

- [\*\*HW\\_TCProfile\\_T\*\*](#)

This topic describes the data structure of traffic classification profiles.

- [\*\*TrafficConditioningProfileAssign\\_T\*\*](#)

This topic describes the data structure for applying traffic policy profiles.

- [\*\*TrafficConditioningProfileDeassign\\_T\*\*](#)

This topic describes the data structure for unapplying traffic policy profiles.

**Parent topic:** [Information Model](#)

## 9.4.5.19.1 HW\_TrafficClassifier\_T

---

This topic describes the data structure for traffic classification.

Name	Type	Description
classifierID	string	Traffic classification ID. Value range: 1-16. Traffic classification ,when the QoS is CBQoS.
logicalRelationType	string	Matching rules of the traffic classification. When the parameter is set to OR, the traffic classification types can be the same. Options: AND, OR, UNDEFINE.
action	string	Operation type that identifies the adding, modification or deletion in the traffic classification list. The necessary attributes are delivered to identify the adding and modification. The traffic classification ID is filled to identify the deletion. Options: Add, Delete, Modify.
transmissionParams	transmissionParameters::LayeredParameterList_T	Transmission parameter, including the traffic classification and traffic action transmission parameters.

**Parent topic:** [trafficConditioningProfile](#)

## 9.4.5.19.2 HW\_TCProfile\_T

---

This topic describes the data structure of traffic classification profiles.

Name	Type	Description
name	globaldefs::NamingAttributes_T	{name EMS value Huawei/U2000} {name TCPPROFILE value /type=Port/devtype=1960/name=portprofile1900 {name EMS value Huawei/U2000} {name TCPPROFILE value /type=ATM/devtype=0/name=AtmProfile} Value of the TCPPROFILE tag. type indicates the policy type. devtype indicates the type ID of the equipment that is used to distinguish equipment types and is set to 0 if equipment types are not distinguished. name indicates the policy name. Policy types and equipment types (in the brackets) are as follows: Port (PTN3900, PTN1900, PTN3900_8, PTN910, PTN912, PTN950, OSN1500, OSN3500, Metro1000V3, RTN910, and RTN950) VUNIIngress (PTN3900, PTN1900, PTN3900_8, PTN910, PTN912, PTN950, OSN1500, OSN3500, Metro1000V3, RTN910, and RTN950) VUNIEgress PW ATM ATMCosMapping DSDomain QinQ ServiceWred PortWred CAR SVlanDEIUsedFlag CoSQueueMapping Wfq Currently, it is only required to fill the equipment type for the Port and VUNIIngress policies. The Port, VUNIIngress, VUNIEgress, PW, ATM, ATMCosMapping, and DS fields are supported.

Name	Type	Description
userLabel	string	User label.
nativeEMSName	string	Name of a traffic policy.
owner	string	Name of an object owner.
classifierList	HW_TrafficClassifierList_T	List of traffic classifications and action attributes.
transmissionParams	transmissionParameters::LayeredParameterList_T	Transmission parameter.
additionalInfo	globaldefs::NVSLList_T	Extended parameter.

**Parent topic:** [trafficConditioningProfile](#)

## 9.4.5.19.3 TrafficConditioningProfileAssign\_T

---

This topic describes the data structure for applying traffic policy profiles.

Name	Type	Description
tcpRef	globaldefs::NamingAttributes_T	Policy profile name.
resourceName	globaldefs::NamingAttributes_T	Applied object.
direction	Directionality_T	Application direction.
layerRate	LayerRate_T	Layer rate.
additionalInfo	globaldefs::NVSLList_T	Extended parameter.

**Parent topic:** [trafficConditioningProfile](#)

## 9.4.5.19.4 TrafficConditioningProfileDeassign\_T

---

This topic describes the data structure for unapplying traffic policy profiles.

Name	Type	Description
tcpRef	globaldefs::NamingAttributes_T	Policy profile name.
resourceName	globaldefs::NamingAttributes_T	Applied object.
direction	Directionality_T	Application direction.
layerRate	LayerRate_T	Layer rate.
additionalInfo	globaldefs::NVSLList_T	Extended parameter.

**Parent topic:** [trafficConditioningProfile](#)

## 9.4.5.20 trailNtwProtection

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This topic describes the information models of network trail protection.

- [TrailNtwProtection\\_T](#)

This topic describes the data structure of network trail protection, including tunnel APS 1+1 and 1:1 protection.

**Parent topic:** [Information Model](#)

## 9.4.5.20.1 TrailNtwProtection\_T

---

This topic describes the data structure of network trail protection, including tunnel APS 1+1 and 1:1 protection.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the name.
nativeEMSName	string	Indicates the local name.
userLabel	string	Indicates the alias. This parameter is left blank by default.

Name	Type	Description
owner	string	Indicates the owner. This parameter is left blank by default.
protectionGroupType	protection::ProtectionGroupType_T	Indicates the protection type. The options are as follows: PGT_MSP_1_PLUS_1 PGT_MSP_1_FOR_N PGT_2_FIBER_BLSR PGT_4_FIBER_BLSR
protectionSchemeState	protection::ProtectionSchemeState_T	Indicates the protection status. The options are as follows: PSS_UNKNOWN PSS_AUTOMATIC PSS_FORCED_OR_LOCKED_OUT
reversionMode	protection::ReversionMode_T	Indicates the reversion mode. The options are as follows: RM_UNKNOWN RM_NON_REVERTIVE RM_REVERTIVE
rate	transmissionParameters::LayerRate_T	Indicates the rate of a protection group.
trailNtwProtectionType	string	Indicates that the values of protection modes include Closed and Open.
protectionGroupAName	globaldefs::NamingAttributes_T	Indicates the name of the protection group at the source end.
protectionGroupZName	globaldefs::NamingAttributes_T	Indicates the name of the protection group at the sink end.
pgATPList	globaldefs::NamingAttributesList_T	Indicates the list of source ports. If the value is blank, all source ports are beyond the management domain of the U2000.
pgZTPList	globaldefs::NamingAttributesList_T	Indicates the list of sink ports. If the value is blank, all sink ports are beyond the management domain of the U2000.

Name	Type	Description
workerTrailList	globaldefs::NamingAttributesMultipleList_T	Indicates the working trail list (a name list of working SNCs).
protectionTrail	globaldefs::NamingAttributesList_T	Indicates the protection trail list (a name list of protection SNCs).
tnpParameters	globaldefs::NVSLList_T	For details, see Transmission Parameters of trailNtwProtection in CORBA NBI Developer Guide (Resource) . Indicates the protection trail list (a name list of protection SNCs).
apsFunction	string	Indicates the APS protocol type. The options are as follows: G.783 Legacy T-MPLS
networkAccessDomain	strin	Indicates the network access domain.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information. It is blank.

**Parent topic:** [trailNtwProtection](#)

## 9.4.5.21 ipMgr

---

This topic describes the data model of the configurations of L2 and L3 interface bridging, static routes, VRF, FRR, and VRRP protection.

- [Bridge T](#)  
This topic describes the data types of L2 and L3 bridging configurations.
- [StaticRouting T](#)  
This topic describes the data types of static route configurations.
- [VRF T](#)  
This topic describes the data types of the NE VRF configurations.
- [VRRPProtection T](#)  
This topic describes the data type of the Virtual Router Redundancy Protocol (VRRP).

- [FRRProtection\\_T](#)

This topic describes the data model of fast rerouting (FRR).

**Parent topic:** [Information Model](#)

## 9.4.5.21.1 Bridge\_T

---

This topic describes the data types of L2 and L3 bridging configurations.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the bridging relationship identifier.
userLabel	String	Indicates the user name of the bridging relationship.
nativeEMSName	String	Indicates the local name of the bridging relationship.
aEnd	globaldefs::NamingAttributesList_T	Indicates the TP at the A end.
zEnd	globaldefs::NamingAttributesList_T	Indicates the TP at the Z end.
direction	globaldefs::ConnectionDirection_T	Indicates the direction of the bridging relationship (bidirectional).
transmissionParams	transmissionParameters::LayeredParameterList_T	Indicates the transmission parameters.
additionalInfo	globaldefs::NVSLList_T	Indicates the additional information.

**Parent topic:** [ipMgr](#)

## 9.4.5.21.2 StaticRouting\_T

---

This topic describes the data types of static route configurations.

Name	Type	Description
destIP	String	Indicates the destination IP address.
destMask	String	Indicates the mask of the destination IP address.
nextHopIP	String	Indicates the IP address of the next hop.
outPort	globaldefs::NamingAttributes_T	Indicates the egress port ID.
priority	String	Indicates the priority (1-255).
bindingObject	globaldefs::NamingAttributes_T	Indicates the associated VRF.
additionalInfo	globaldefs::NVSList_T	Indicates the additional information.

**Parent topic:** [ipMgr](#)

## 9.4.5.21.3 VRF\_T

---

This topic describes the data types of the NE VRF configurations.

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the VRF name.
userLabel	String	Indicates the VRF user name.
nativeEMSName	String	Indicates the local VRF name.
owner	String	Indicates the VRF owner.
vrfType	String	Indicates the VRF type, static or dynamic.

Name	Type	Description
vrfLabel	String	Indicates the VRF label.
aEnd	subnetworkConnection::TPDataList_T	Indicates the TP list on the UNI side.
zEnd	subnetworkConnection::TPDataList_T	Indicates the TP list on the NNI side.
rdFormat	String	Indicates the VRF autonomous system (AS).
rdAttr	String	Indicates the RD value of VRF.
importRTList	ipMgr::ImportRTList_T	Indicates the imported RT list of VRF (dynamic).
exportRTList	ipMgr::ExportRTList_T	Indicates the exported RT list of VRF (dynamic).
transmissionParams	transmissionParameters::LayeredParameterList_T	Indicates VRF transmission parameters.
additionalInfo	globaldefs::NVSList_T	Indicates VRF extended parameters.

**Parent topic:** [ipMgr](#)

## 9.4.5.21.4 VRRPProtection\_T

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This topic describes the data type of the Virtual Router Redundancy Protocol (VRRP).

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the VRRP name.
userLabel	String	Indicates the VRRP user name.

Name	Type	Description
nativeEMSName	String	Indicates the local VRRP name.
owner	String	Indicates the VRRP owner.
rate	transmissionParameters::LayerRate_T	Indicates the VRRP layer rate.
tplist	globaldefs::NamingAttributesList_T	Indicates the TP list bound to VRRP.
vrrpParameters	globaldefs::NVSLList_T	Indicates VRRP protection parameters. - Virtual IP address vrrpParameters::IPAddress - Virtual ID vrrpParameters::VirtualID - Priority vrrpParameters::ConfigPriority
additionalInfo	globaldefs::NVSLList_T	Indicates additional parameters of VRRP.

**Parent topic:** [ipMgr](#)

## 9.4.5.21.5 FRRProtection\_T

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This topic describes the data model of fast rerouting (FRR).

Name	Type	Description
name	globaldefs::NamingAttributes_T	Indicates the FRR name.
userLabel	String	Indicates the FRR user name.
nativeEMSName	String	Indicates the local FRR name.
owner	String	Indicates the FRR owner.
protectionType	String	Indicates the FRR protection type.

Name	Type	Description
rate	transmissionParameters::LayerRate_T	Indicates the FRR layer rate.
tpList	globaldefs::NamingAttributesList_T	Indicates the FRR port list.
frrParameters	globaldefs::NVSLList_T	Indicates FRR protection parameters.
bindingObject	globaldefs::NamingAttributes_T	Indicates the VRF name of FRR.
additionalInfo	globaldefs::NVSLList_T	Indicates FRR additional parameters.

**Parent topic:** [ipMgr](#)

## 9.4.6 Transmission Parameters

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This topic describes transmission parameters of the following objects: inventory ports, services, and traffic policies.

- **terminationPoint**  
The terminationPoint include physical ports (such as SDH, PDH E1, and Ethernet ports) and logical ports (such as IMA groups, MP groups, and logical serial ports).
- **HW\_vpnManager**  
This topic describes transmission parameters of the HW\_vpnManager. The HW\_vpnManager manages static tunnels, dynamic MSTP tunnels, IP tunnels, PW switching, PWE3, VPLS, and NETH services on the U2000.
- **trafficConditioningProfile**  
This topic describes transmission parameters of the trafficConditioningProfile. The policies managed by the trafficConditioningProfile include portpolicies, Ethernet V-UNI ingress and egress policies, PW policies, ATM policies, ATM CoS mapping, and DS domain mapping.
- **trailNtwProtection**  
This topic describes transmission parameters of trailNtwProtection, including the wait-to-restore (WTR) time, switching mode, switching position, and hold-off time.
- **encapsulationLayerLink**  
Transmission parameters managed by encapsulationLayerLink include EncapsulationLayerLink.

- [flowDomain](#)  
Services managed by flowDomain include E2E Ethernet services (PWE3 and VPLS) on the U2000.

**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)

## 9.4.6.1 terminationPoint

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The terminationPoint include physical ports (such as SDH, PDH E1, and Ethernet ports) and logical ports (such as IMA groups, MP groups, and logical serial ports).

- [LAG Ports](#)  
This topic describes transmission parameters of link aggregationgroup (LAG) ports. An LAG combines multiple physical links to forma larger logical link.
- [MPPorts](#)  
This topic describes transmission parameters of MP ports. MP is a technology used to bind multiple PPP links and can be applied to PPP ports such as serial ports and E1 ports.
- [Logical Serial Ports](#)  
This topic describes transmission parameters of logical serial ports (serial ports). A serial port can be an E1 port to which 64 K timeslots are bound, or a VC12 channel. Serial ports support link layer protocols such as PPP. When PPP is theencapsulation protocol, a serial port can be a member of an ML-PPP group.
- [IMA Ports](#)  
This topic describes transmission parameters of Inverse Multiplexing over ATM (IMA) ports. IMA is a technology that involves inverse multiplexing and de-multiplexing of ATM cells in a cyclical fashion among physical links grouped to forma higher-bandwidth and logical link. The rate of the logical link is approximately the sum of the rate of the physical links. This is referred to as an IMA group.
- [Logical VE Ports](#)  
This topic describes transmission parameters of virtual Ethernet (VE) ports. VE ports are mainly applicable to the PPPoE/oA and IPoE/oA where Ethernet packets are encapsulated as ATM cells and transmitted over ATM networks.
- [Ports on IP Tunnels](#)  
This topic describes transmission parameters of ports on IP tunnels.
- [Member Ports](#)  
This topic describes transmission parameters of memberports. A member port is a port that is bound to a logical port.

- **Physical PDH Ports in the IP Domain**

This topic describes the transmission parameters of physicalPDH ports in the IP Domain. PDH ports in the IP Domain work in three modes, namely, layer 1 mode, layer 2 mode, and layer3 mode. In layer1 mode, PDH ports can be channelized and non-channelized.In non-channelized mode, CES services (traditional TDM services emulatedand transmitted on PSN networks) can be configured on PDH ports; inchannelized mode, timeslot 1 to 31 in every 64 K timeslots can bebound to a PDH port.In layer 2 mode, ATM services can be configuredon a PDH port. Inlayer 3 mode, PDH ports can be used to carry tunnels.

- **Physical SDH Ports in the IP Domain**

This topic describes the transmission parameters of physicalSDH ports in the IP Domain. SDH ports in the IP Domain work in threemodes, namely, layer 1 mode, layer 2 mode, and layer 3 mode. Layer1 mode is a channelized mode, in which you can configure CES serviceson an SDH port. Layer 2 mode is a non-channelized mode, in which youcan configure ATM services on an SDH port. Layer 3 mode is a non-channelizedmode, in which an SDH port can be used to carry tunnels.

- **Ethernet Ports in the IP Domain**

This topic describes the transmission parameters of physical Ethernet ports in the IP domain. Ethernet ports in the IP domain work in Layer 2 mode and Layer 3 mode. In Layer 2 mode, a physical Ethernet port can transparently transmit service dataand support VLAN or QinQ services based on different encapsulation protocols. In Layer 3 mode, a physical Ethernet port can be used to carry tunnels.

- **Microwave IF Ports(Packet IF)**

This topic describes transmission parameters of microwave IF ports (Packet IF). You can configure services on a microwave IF port after configuring the layer 2 attributes for this port. A microwave IF port can be used to carry tunnels after you configureLayer 3 attributes on this port. After configuring IF attributes for a microwave IF port, you can modify information of the IF board such as AM attributes and ATPC attributes.

- **Microwave IF Ports(SDH IF)**

This topic describes transmission parameters of microwaveports(SDH IF).

- **Microwave Radio Ports**

This topic describes the transmission parameters of microwave ports.

- **PDH Ports in the Transport Domain**

This topic describes the transmission parameters of PDH ports in the transport domain.

- **SDH Ports in the Transport Domain**

This topic describes the transmission parameters of SDH ports in the transport domain.

- **WDM Ports in the Transport Domain**

This topic describes the transmission parameters of WDM ports in the transport domain.

- **MSTP ATM Ports in the Transport Domain**

This topic describes the transmission parameters of MSTP ATM ports in the transport domain.

- **MSTP Ethernet Ports in the Transport Domain**

This topic describes the transmission parameters of MSTPEthernet ports in the transport domain.

- **WDM Ethernet Ports in the Transport Domain**

This topic describes transmission parameters of a WDM Ethernet port.

- **WDM Ethernet Trunk Ports in the Transport Domain**

This topic describes transmission parameters of a WDM Ethernet Trunk port.

- **WDM CTP Ports in the Transport Domain**

This topic describes the transmission parameters of WDM CTP ports in the transport domain.

**Parent topic:** [Transmission Parameters](#)

## 9.4.6.1.1 LAG Ports

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This topic describes transmission parameters of link aggregationgroup (LAG) ports. An LAG combines multiple physical links to forma larger logical link.

Parameter Name	Layer Rate	Legal Values
Generally applicable parameters		
LAGType	LR_LAG_Fragment	Manual, Static
LoadBalance	LR_LAG_Fragment	true, false
LoadBalanceMode	LR_LAG_Fragment	Non-LoadBalance, Auto, SourceMac, DestinationMac, SourceAndDestinationIP, SourceAndDestinationIP, SourcePort, DestinationPort, SourceAndDestinationPort, MPLSLabel
RevertiveMode	LR_LAG_Fragment	Revertive, Non-Revertive

Parameter Name	Layer Rate	Legal Values
SystemPriority	LR_LAG_Fragment	Number [0, 65535]
IngressTCPProfileName	LR_LAG_Fragment	\name=EMS\value=Huawei/U2000\name=TCP PROFILE\value=/type=xx/d
EgressTCPProfileName	LR_LAG_Fragment	\name=EMS\value=Huawei/U2000\name=TCP PROFILE\value=/type=xx/d

**Parent topic:** [terminationPoint](#)

## 9.4.6.1.2 MP Ports

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This topic describes transmission parameters of MP ports. MP is a technology used to bind multiple PPP links and can be applied to PPP ports such as serial ports and E1 ports.

Parameter Name	Layer Rate	Legal Values
Generally applicable parameters		
MinActiveLinks	LR_Encapsulation	Number[1, 16]

Parameter Name	Layer Rate	Legal Values
LinkDelayDetect	LR_Encapsulation	Enable, Disable
MaxDifferentialDelay	LR_Encapsulation	Number[25, 500]
FragmentSize	LR_Encapsulation	0/64/128/256/512
MaxReservedBandwidth	LR_Encapsulation	Number[0, 4294967295]
TEMeasurement	LR_Encapsulation	Number[0, 16777215]
IPAssignedType	LR_Encapsulation	Manually, Unspecified, UnnumberedNEIP, UnnumberedInterfaceIP

Parameter Name	Layer Rate	Legal Values
UnnumbedObject	LR_Encapsulation	ME/PTP
LinkStatus	LR_Encapsulation	UP, DOWN
IPAddress	LR_Encapsulation	IP address
IPAddressNegotiation	LR_Encapsulation	IP address
IPMask	LR_Encapsulation	IP mask
IPMaskNegotiation	LR_Encapsulation	IP mask
IngressTCPProfileName	LR_Encapsulation	\name=EMS\value=Huawei/U2000\name=TCP PROFILE\value=/type=xx/d
EgressTCPProfileName	LR_Encapsulation	\name=EMS\value=Huawei/U2000\name=TCP PROFILE\value=/type=xx/d

**Parent topic:** [terminationPoint](#)

### 9.4.6.1.3 Logical Serial Ports

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This topic describes transmission parameters of logical serial ports (serial ports). A serial port can be an E1 port to which 64 K timeslots are bound, or a VC12 channel. Serial ports support

link layer protocols such as PPP. When PPP is the encapsulation protocol, a serial port can be a member of an ML-PPP group.

Parameter Name	Layer Rate	Legal Values
Generally applicable parameters		
ProtocolIdentifier	LR_Encapsulation	PPP,ATM,TDM,HDLC,NULL
MaxReservedBandwidth	LR_Encapsulation	Number
MaximumFrameSize	LR_Encapsulation	Number [46, 1900]
IPAssignedType	LR_Encapsulation	Manually, Unspecified, UnnumberedNEIP, UnnumberedInterfaceIP
UnnumbedObject	LR_Encapsulation	ME/PTP
IPAddress	LR_Encapsulation	IP address
IPMask	LR_Encapsulation	IP mask
IPAddress(N)	LR_Encapsulation	Secondary IP address
IPMask(N)	LR_Encapsulation	Secondary IP mask
BindingObject	LR_Encapsulation	String
IngressTCPProfileName	LR_Encapsulation	\name=EMS\value=Huawei/U2000\name=TCP PROFILE\value=/type=xx\de

Parameter Name	Layer Rate	Legal Values
EgressTCProfileName	LR_Encapsulation	\name=EMS\value=Huawei/U2000\name=TCP PROFILE\value=/type=xx/d

**Parent topic:** [terminationPoint](#)

## 9.4.6.1.4 IMA Ports

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This topic describes transmission parameters of Inverse Multiplexing over ATM (IMA) ports. IMA is a technology that involves inverse multiplexing and de-multiplexing of ATM cells in a cyclical fashion among physical links grouped to form a higher-bandwidth and logical link. The rate of the logical link is approximately the sum of the rate of the physical links. This is referred to as an IMA group.

Parameter Name	Layer Rate	Legal Values
Generally applicable parameters		
ImaVersion	LR_Fragment	1.0, 1.1
Symmetry	LR_Fragment	SymmetricalModeAndSymmetricalOperation, SymmetricalModeAndAsymmetricalModeAndAsymmetricalOperation
TxFrameLength	LR_Fragment	32, 64, 128, 256

<b>Parameter Name</b>	<b>Layer Rate</b>		<b>Legal Values</b>
MaxDelayBetweenLinks	LR_Fragment	Number [1, 120]	
MinNumTxLinks	LR_Fragment	Number [1, 32], 64, 128	
MinNumRxLinks	LR_Fragment	Number [1, 32], 64, 128	
ATMNIType	LR_ATM_NI	UNI, NNI	
ATMCellScrambling	LR_ATM_NI	Enabled,Disabled	
LoopBack	LR_ATM_NI	NonLoopback,OutLoopback,InLoopback	

Parameter Name	Layer Rate	Legal Values
MaxVCIBits	LR_ATM_NI	Number [6, 16]
MaxVPIBits	LR_ATM_NI	Number [1, 12]
VPISupportedVCCCount	LR_ATM_NI	Number [0, 65535]
IngressTCPProfileName	LR_ATM_NI	\name=EMS\value=Huawei/U2000\name=TCP PROFILE\value=/type=xx/devty
EgressTCPProfileName	LR_ATM_NI	\name=EMS\value=Huawei/U2000\name=TCP PROFILE\value=/type=xx/devty

**Parent topic:** [terminationPoint](#)

## 9.4.6.1.5 Logical VE Ports

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This topic describes transmission parameters of virtual Ethernet (VE) ports. VE ports are mainly applicable to the PPPoE/oA and IPoE/oA where Ethernet packets are encapsulated as ATM cells and transmitted over ATM networks.

<b>Parameter Name</b>	<b>Layer Rate</b>	<b>Legal Values</b>
Generally applicable parameters		
PortMode	LR_Encapsulation	Layer2, Layer3, LayerMix
RelativeObject	LR_Encapsulation	
MACAddress	LR_Encapsulation	
IPAssignedType	LR_Encapsulation	Manually, Unspecified
IPAddress	LR_Encapsulation	IP address
IPMask	LR_Encapsulation	IP mask
Type	LR_Encapsulation	EoVLAN

Parameter Name	Layer Rate	Legal Values
AAL5EncapsulationType	LR_Encapsulation	LLC BRIDGE, LLC ROUTE, VCMUX BRIDGE, VCMUX ROUTE
VID	LR_Ethernet	Number[1, 4094]
IngressTCPProfileName	LR_Ethernet	\name=EMS\value=Huawei/U2000\name=TCP PROFILE\value=/type=xx/c
EgressTCPProfileName	LR_Ethernet	\name=EMS\value=Huawei/U2000\name=TCP PROFILE\value=/type=xx/c
VEGroupID	LR_Encapsulation	Number [1,8192]

**Parent topic:** [terminationPoint](#)

## 9.4.6.1.6 Ports on IP Tunnels

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This topic describes transmission parameters of ports on IP tunnels.

<b>Parameter Name</b>	<b>Layer Rate</b>	<b>Legal Values</b>
Generally applicable parameters		
AdminStatus	LR_Encapsulation	Up, Down
OperateStatus	LR_Encapsulation	Up, Down
IPAssignedType	LR_Encapsulation	Manually, Unspecified, UnnumberedNEIP, UnnumberedInterfaceIP
IPAddress	LR_Encapsulation	IP address
IPMask	LR_Encapsulation	IP mask
IPAddress(N)	LR_Encapsulation	Secondary IP address
IPMask(N)	LR_Encapsulation	Secondary IP mask

Parameter Name	Layer Rate	Legal Values
UnnumbedObject	LR_Encapsulation	ME/PTP
IngressTCPProfileName	LR_Encapsulation	\name=EMS\value=Huawei/U2000\name=TCP PROFILE\value=/type=xx/dev
EgressTCPProfileName	LR_Encapsulation	\name=EMS\value=Huawei/U2000\name=TCP PROFILE\value=/type=xx/dev

**Parent topic:** [terminationPoint](#)

## 9.4.6.1.7 Member Ports

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This topic describes transmission parameters of memberports. A member port is a port that is bound to a logical port.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
LAG member port transmission parameters				
Priority	LR_Encapsulation	0-65535	EMS & NMS	Indicates the priority of a member port.
PortMaster	LR_Encapsulation	Master, Backup	EMS & NMS	Indicates the master or backup state of a member port.

**Parent topic:** [terminationPoint](#)

## **9.4.6.1.8 Physical PDH Ports in the IP Domain**

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This topic describes the transmission parameters of physicalPDH ports in the IP Domain. PDH ports in the IP Domain work in three modes, namely, layer 1 mode, layer 2 mode, and layer3 mode. In layer1 mode, PDH ports can be channelized and non-channelized. In non-channelized mode, CES services (traditional TDM services emulated and transmitted on PSN networks) can be configured on PDH ports; in channelized mode, timeslot 1 to 31 in every 64 K timeslots can be bound to a PDH port. In layer 2 mode, ATM services can be configured on a PDH port. In layer 3 mode, PDH ports can be used to carry tunnels.

Parameter Name	Layer Rate	Legal Values	Potential settings from
Generally applicable parameters			
PortMode	LR_DSR_2M	Layer1, Layer2, Layer3	EMS & NMS
LoopBack	LR_DSR_2M	NoLoopBack, InLoopBack, OutLoopBack	EMS & NMS
ProtocolIdentifier	LR_DSR_2M	PPP, ATM, QinQ, 802.1Q, NULL	EMS & NMS
Channelize	LR_DSR_2M	TRUE, FALSE	EMS & NMS
MaximumFrameSize	LR_DSR_2M	Number [46, 1900]	EMS & NMS
MaxReservedBandwidth	LR_Encapsulation	Number [11, 1000000]	EMS & NMS
IPAssignedType	LR_Encapsulation	Manually, Unspecified, UnnumberedNEIP, UnnumberedInterfaceIP	EMS & NMS

Parameter Name	Layer Rate	Legal Values	Potential settings from
UnnumbedObject	LR_Encapsulation		EMS & NMS
IPAddress	LR_Encapsulation	IP address	EMS & NMS
IPMask	LR_Encapsulation	IP mask	EMS & NMS
FrameFormat	LR_Encapsulation	Unframe, DoubleFrame, CRC-4 MultiFrame, NO-CRC-4 MultiFrame	EMS & NMS
LineEncodingFormat	LR_Encapsulation	HDB3, AMI	EMS & NMS
ClockMode	LR_Encapsulation	Master, Slave	EMS & NMS
FrameMode	LR_Encapsulation	30, 31	EMS & NMS
FrameType	LR_Encapsulation	Unframe,PCM30,PCM30CRC,PCM31,PCM31CRC	EMS & NMS
N/A	LR_PHYSICAL_ELECTRICAL	N/A	N/A
N/A	LR_E1_2M	N/A	N/A

**Parent topic:** [terminationPoint](#)

## 9.4.6.1.9 Physical SDH Ports in the IP Domain

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This topic describes the transmission parameters of physicalSDH ports in the IP Domain. SDH ports in the IP Domain work in three modes, namely, layer 1 mode, layer 2 mode, and layer 3 mode. Layer 1 mode is a channelized mode, in which you can configure CES services on an SDH port. Layer 2 mode is a non-channelized mode, in which you can configure ATM services on an SDH port. Layer 3 mode is a non-channelized mode, in which an SDH port can be used to carry tunnels.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				
PortMode	LR_Encapsulation	Layer1 Layer2 Layer3	EMS & NMS	Indicates the port mode.
ProtocolIdentifier	LR_Encapsulation	PPP ATM QinQ 802.1Q FR HDLC NULL	EMS & NMS	Indicates the encapsulation type.
ScrambleEnabled	LR_Encapsulation	Enabled Disabled	EMS	Specifies whether to enable the scrambling function.
Channelize	LR_DSR_OC3 x N_STM x N	True False	EMS & NMS	Indicates channelization.
LaserStatus	LR_DSR_OC3 x N_STM x N	On Off NA	EMS & NMS	Indicates the laser status.
LoopBack	LR_DSR_OC3 x N_STM x N	NonLoopback InLoopBack OutLoopBack	EMS & NMS	Indicates the loopback mode.
ATMNIType	LR_ATM_NI	UNI NNI	EMS & NMS	Indicates the port type.
ATMCCellScrambling	LR_ATM_NI	Enable Disable	EMS & NMS	Specifies whether to

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				enable load scrambling of ATM cells.
MaxVPIBits	LR_ATM_NI	Number [0, 65535]	EMS & NMS	Indicates the maximum number of VPI bits.
MaxVCIBits	LR_ATM_NI	Number [0, 65535]	EMS & NMS	Indicates the maximum number of VCI bits.
VPISupportedVCCCount	LR_ATM_NI	Number [0, 65535]	EMS & NMS	Indicates the number of VPIs that support VCC.
MaxReservedBandwidth	LR_Encapsulation	Number [0, 4294967295]	EMS & NMS	Indicates the maximum reserved bandwidth. Unit: kbit/s
IPAssignedType	LR_Encapsulation	Manually Unspecified Unnumbered	EMS & NMS	Indicates the IP assignment type.
UnnumbedObject	LR_Encapsulation	ME PTP	EMS & NMS	Indicates the unnumbered object.
IPAddress	LR_Encapsulation	IP address	EMS & NMS	Indicates the IP address.
IPMask	LR_Encapsulation	IP mask	EMS & NMS	Indicates the IP mask.
IPAddress(N)	LR_Encapsulation	Secondary IP address	EMS & NMS	Indicates the IP address.
IPMask(N)	LR_Encapsulation	Secondary IP address mask	EMS & NMS	Indicates the IP mask.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
LaserTransmissionDistance	LR_Encapsulation	Number [0, 65535]	EMS & NMS	Indicates the transmission distance of the laser.
POSPortScrambling	LR_Encapsulation	Enable Disable	EMS & NMS	Specifies whether to enable scrambling.
CRCCheckLength	LR_Encapsulation	Number [1, 2] 1 indicates 16. 2 indicates 32.	EMS & NMS	Indicates the CRC character length.
ClockMode	LR_Encapsulation	Master Slave	EMS & NMS	Indicates the clock mode.
TrailTraceActualTx	LR_DSR_OC3 x N_STM x N	String	EMS	Indicates the J0 overhead bytes to be transmitted.
TrailTraceExpectedTx	LR_DSR_OC3 x N_STM x N	String	EMS	Indicates the J0 overhead bytes to be received.
TrailTraceActualRx	LR_DSR_OC3 x N_STM x N	String	EMS	Indicates the received J0 overhead bytes.
N/A	LR_PHYSICAL_OPTICAL	N/A	N/A	There is not transmission parameter for this layer rate.
N/A	LR_OPTICAL_SECTION	N/A	N/A	There is not transmission parameter for this layer rate.

**Parent topic:** [terminationPoint](#)

## 9.4.6.1.10 Ethernet Ports in the IP Domain

This topic describes the transmission parameters of physical Ethernet ports in the IP domain. Ethernet ports in the IP domain work in Layer 2 mode and Layer 3 mode. In Layer 2 mode, a physical Ethernet port can transparently transmit service data and support VLAN or QinQ services based on different encapsulation protocols. In Layer 3 mode, a physical Ethernet port can be used to carry tunnels.

Parameter Name	Layer Rate	
Generally applicable parameters		
PortMode	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	Layer1, Layer2, Layer3, LayerMix
ProtocolIdentifier	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	PPP, ATM, QinQ, 802.1Q, NULL
MaximumFrameSize	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	Number [46, 9600]
UserTermination	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	Enabled, Disabled
WorkingMode	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet	DPT, Auto-Negotiation, 10M Half-Duplex, Half-Duplex, 1000M Full-Duplex, 10GE

Parameter Name	Layer Rate	
	LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet LR_DSR_2.5Gigabit_Ethernet	
NonAutoNegotiationFlowControlMode	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	Disabled, ReceiveOnly, SendOnly, Enable
AutoNegotiationFlowControlMode	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	Disabled, EnableSymmetricFlowControl, EnableSymmetricAndDissymmetricFlow
MACLoopBack	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	InnerLoopback, OuterLoopback, NonLoopback
PHYLoopBack	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	InnerLoopback, OuterLoopback, NonLoopback
MACAddress	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	

Parameter Name	Layer Rate	
TrasmittingRate	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	Number [0, 65535]
ReceivingRate	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	Number [0, 65535]
LoopbackCheck	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	Enabled, Disabled
LoopbackPortShutdown	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	Enabled, Disabled
TPID	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	Number [0, 65535]
Tag	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN	TagAware, Access, Hybrid, Trunk, QINQ

Parameter Name	Layer Rate	
	LR_DSR_100Gigabit_Ethernet	
DefaultVlanID	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN	Number [0, 65535]
VLanPriority	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	Number [0, 65535]
MPLSEnable	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	Enabled, Disabled
MaxReservedBandwidth	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	Number
IPAssignedType	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	Manually, Unspecified

Parameter Name	Layer Rate	
IPAddress	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	IPAddress
IPMask	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	IP mask
IPAddress(N)	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	Secondary IP address
IPMask(N)	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	Secondary IP address mask
N/A	LR_PHYSICAL ELECTRICAL LR_PHYSICAL OPTICAL	N/A
N/A	LR_Encapsulation	N/A

Parameter Name	Layer Rate	
BindingObject	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet	\name=EMS\value=Huawei/U2000\name
IngressTCPProfileName	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet LR_Ethernet	\name=EMS\value=Huawei/U2000\name
EgressTCPProfileName	LR_DSR_Fast_Ethernet LR_DSR_Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet LR_DSR_10Gigabit_Ethernet_LAN LR_DSR_10Gigabit_Ethernet_WAN LR_DSR_100Gigabit_Ethernet LR_Ethernet	\name=EMS\value=Huawei/U2000\name

**Parent topic:** [terminationPoint](#)

## 9.4.6.1.11 Microwave IF Ports(Packet IF)

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This topic describes transmission parameters of microwave IF ports (Packet IF). You can configure services on a microwave IF port after configuring the layer 2 attributes for this port. A microwave IF port can be used to carry tunnels after you configureLayer 3 attributes on this port.

After configuring IF attributes for a microwave IF port, you can modify information of the IF board such as AM attributes and ATPC attributes.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comments
Generally applicable parameters				
LinkID	LR_PHYSICAL_MEDIALESS	Number [1,4094]	EMS & NMS	Indicates the microwave link ID.
ActualRxLinkID	LR_PHYSICAL_MEDIALESS	Number [1,4094]	EMS	Indicates the actual link ID.
Loopback	LR_PHYSICAL_MEDIALESS	NonLoopback, InLoopback, OutLoopback	EMS & NMS	Indicates the loopback setting of the IF port.
ATPCEnabled	LR_PHYSICAL_MEDIALESS	True, False	EMS & NMS	Specifies whether the ATPC function is enabled. This function enables the transmission of the transmit power automatically based on the changes in receive level. It receives end-of-range reports from the ATPC range.
ATPCUpperThreshold	LR_PHYSICAL_MEDIALESS	Number [-75,-20]	EMS & NMS	Indicates the ATPC threshold. Unit: dBm
ATPCLowerThreshold	LR_PHYSICAL_MEDIALESS	Number [-90,-35]	EMS & NMS	Indicates the ATPC threshold. Unit: dBm
ATPCAdjustmentEnable	LR_PHYSICAL_MEDIALESS	True, False	EMS & NMS	Specifies whether to enable ATPC adjustment parameter when ATPC is set to True.
AMEnableStatus	LR_PHYSICAL_MEDIALESS	True, False	EMS & NMS	Specifies whether to enable AM.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Com
ChannelSpace	LR_PHYSICAL_MEDIALESS	7M, 14M, 28M, 56M	EMS & NMS	Indicates the spacing of corresponding microwave channels.
AssuredAMCapacity	LR_PHYSICAL_MEDIALESS	QPSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM, 512QAM, 1024QAM, QPSKStrong, 16QAMStrong, 512QAMLight, 1024QAMLight, 2048QAM, 4096QAM, QPSKStrong_250M, QPSKStrong_500M, QPSKStrong_750M, QPSKStrong_62.5M, QPSKStrong_125M	EMS & NMS	Indicates the modulation types for the assured capacity. This parameter is valid when AMEnable is set to True.
FullAMCapacity	LR_PHYSICAL_MEDIALESS	QPSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM, 512QAM, 1024QAM, QPSKStrong, 16QAMStrong, 512QAMLight, 1024QAMLight, 2048QAM, 4096QAM, QPSKStrong_250M, QPSKStrong_500M, QPSKStrong_750M, QPSKStrong_62.5M, QPSKStrong_125M	EMS & NMS	Indicates the modulation types for the full capacity parameter when AMEnable is set to True.
ManuallyMode	LR_PHYSICAL_MEDIALESS	QPSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM, 512QAM, 1024QAM, QPSKStrong, 16QAMStrong, 512QAMLight, 1024QAMLight, 2048QAM, 4096QAM, QPSKStrong_250M,	EMS & NMS	Indicates the manually selected modulation. This parameter is valid when AMEnable is set to False.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Com
		QPSKStrong_500M, QPSKStrong_750M, QPSKStrong_62.5M, QPSKStrong_125M		
TransmitMode	LR_PHYSICAL_MEDIALESS	QPSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM, 512QAM, 1024QAM, QPSKStrong, 16QAMStrong, 512QAMLight, 1024QAMLight, 2048QAM, 4096QAM, QPSKStrong_250M, QPSKStrong_500M, QPSKStrong_750M, QPSKStrong_62.5M, QPSKStrong_125M	EMS	Indicates the modulation type for the transmission.
ReceiveMode	LR_PHYSICAL_MEDIALESS	QPSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM, 512QAM, 1024QAM, QPSKStrong, 16QAMStrong, 512QAMLight, 1024QAMLight, 2048QAM, 4096QAM, QPSKStrong_250M, QPSKStrong_500M, QPSKStrong_750M, QPSKStrong_62.5M, QPSKStrong_125M	EMS	Indicates the modulation type for the reception.
AMGuaranteedServiceCapacity	LR_PHYSICAL_MEDIALESS		EMS	Indicates the guaranteed service capacity of the AM mode.
AMFullServiceCapacity	LR_PHYSICAL_MEDIALESS		EMS	Indicates the full service capacity of the AM mode.
AMCurrentTransmitServiceCapacity	LR_PHYSICAL_MEDIALESS		EMS	Indicates the current service capacity of the current transmitted service.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Com
				in the AM Unit: Mbit
AMCurrentReceiveServiceCapacity	LR_PHYSICAL_MEDIALESS		EMS	Indicates t of the curr received se the AM m Mbit/s
GuaranteeE1Capacity	LR_PHYSICAL_MEDIALESS		EMS	Indicates t capacity. T parameter only for IFX2 boar
FullE1Capacity	LR_PHYSICAL_MEDIALESS		EMS	Indicates t capacity. T parameter only for IFX2 board AMEnable set to True
TrasmittingRate	LR_Ethernet		EMS	Indicates t rate. Unit: kbit/
ReceivingRate	LR_Ethernet		EMS	Indicates t rate. Unit: kbit/
CompositePortLoopback	LR_Ethernet	NonLoopback, InLoopback, OutLoopback	EMS	Indicates t loopback s multiplexi
ErrorFrameDiscardEnabled	LR_Ethernet	True, False	EMS	Specifies w enable disc error frame
MACAddress	LR_Ethernet		EMS	Indicates t address of an IF boar

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Com
MaximumFrameSize	LR_Ethernet	Number [1620,9600]	EMS & NMS	Indicates the maximum frame length.
ProtocolIdentifier	LR_Encapsulation	NULL, 802.1Q, QinQ	EMS & NMS	Indicates the encapsulation protocol.
PortMode	LR_Encapsulation	Layer2, Layer3, LayerMix	EMS & NMS	Indicates the mode of the port.
TPID	LR_Encapsulation	Number [1536,65535]	EMS & NMS	Indicates the type domain working mode. The port is the end point and the encapsulation type is QinQ.
Tag	LR_Encapsulation	TagAware, Access, Hybrid, Trunk, QINQ	EMS & NMS	Indicates the parameter in L2 mode.
DefaultVlanID	LR_Encapsulation	Number[1, 4094]	EMS & NMS	Indicates the VLAN ID. The parameter in L2 mode.
VlanPriority	LR_Encapsulation	Number[0, 7]	EMS & NMS	Indicates the priority. The parameter in L2 mode.
MPLSEnable	LR_Encapsulation	Enabled, Disabled	EMS & NMS	Specifies whether to enable MPLS. The parameter in L3 mode.
MaxReservedBandwidth	LR_Encapsulation	Number [0,4294967295]	EMS & NMS	Indicates the maximum reserved bandwidth. Unit: kbit/s. This parameter is valid in L3 mode.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Com
AdminGroup	LR_Encapsulation	Number [0,4294967295]	EMS & NMS	Indicates the administrative group. This parameter is valid in L3 mode.
IPAssignedType	LR_Encapsulation	Manually, Unspecified, UnnumberedIP, UnnumberedInterfaceIP	EMS & NMS	Indicates the IP assignment type parameter in L3 mode. IPAssignedType is set to Manu
IPAddress	LR_Encapsulation	IP address	EMS & NMS	Indicates the IP address. This parameter is valid in the L3 mode. IPAssignedType is set to Manu
IPMask	LR_Encapsulation	IP mask	EMS & NMS	Indicates the IP mask. This parameter is valid in the L3 mode or when IPAssignedType is set to Manu
OccupiedE1Capacity	LR_PHYSICAL_MEDIALESS		EMS	Indicates the occupied E1 capacity.
EthernetCapacity	LR_PHYSICAL_MEDIALESS		EMS	Indicates the Ethernet capacity. Unit: Mbit/s.

**Parent topic:** [terminationPoint](#)

## 9.4.6.1.12 Microwave IF Ports(SDH IF)

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This topic describes transmission parameters of microwave ports(SDH IF).

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
WorkMode	LR_PHYSICAL_MEDIALESS	0: invalid1: 4E1,7MHz,QPSK2: 4E1,3.5MHz,16QAM3: 8E1,14MHz,QPSK4: 8E1,7MHz,16QAM5: 16E1,28MHz,QPSK6: 16E1,14MHz,16QAM7: STM- 1,28MHz,128QAM8: E3,28MHz,QPSK9: E3,14MHz,16QAM10: 22E1,14MHz,32QAM11: 26E1,14MHz,64QAM12: 32E1,14MHz,128QAM13: 35E1,28MHz,16QAM14: 44E1,28MHz,32QAM15: 53E1,28MHz,64QAM16: 5E1,7MHz,QPSK17: 10E1,14MHz,QPSK18: 2E1,3.5MHz,QPSK19: 10M,3P5MHZ,16QAM20: 10E1,7MHZ,16QAM21: 40M,28MHZ,16QAM22: 40M,14MHZ,16QAM23: 64M,28MHZ,16QAM24: 80M,28MHZ,16QAM	EMS & NMS	Indicates the working mode.
LinkID	LR_PHYSICAL_MEDIALESS	Number [1,4094]	EMS & NMS	Indicates the microwave link ID.
ActualRxLinkID	LR_PHYSICAL_MEDIALESS	Number [1,4094]	EMS	Indicates the receive link ID.
Loopback	LR_PHYSICAL_MEDIALESS	NoLoopback, InLoopback, OutLoopback	EMS & NMS	Indicates the loopback status of the IF port.
ATPCEnabled	LR_PHYSICAL_MEDIALESS	True, False	EMS & NMS	Specifies whether the ATPC function is enabled. The ATPC function ensures that the transmit power

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				of the transmitter automatically traces the changes of the receive level at the receive end within the ATPC controlled range.
ATPCUpperThreshold	LR_PHYSICAL_MEDIALESS	Number [-75,-20]	EMS & NMS	Indicates the upper ATPC threshold. Unit: dBm.
ATPCLowerThreshold	LR_PHYSICAL_MEDIALESS	Number [-90,-35]	EMS & NMS	Indicates the lower ATPC threshold. Unit: dBm.
ATPCAdjustment	LR_PHYSICAL_MEDIALESS	Number [1,5]	EMS & NMS	Indicates the variation in the transmit power caused by the ATPC adjustment at a time.
XPICEnable	LR_PHYSICAL_MEDIALESS	True, False	EMS & NMS	Specifies whether the XPIC function is enabled.
Bandwidth	LR_PHYSICAL_MEDIALESS	7M, 14M, 28M, 40M, 56M	EMS & NMS	Indicates the bandwidths.
AMEnableStatus	LR_PHYSICAL_MEDIALESS	Enable, Disable	EMS & NMS	Specifies whether to enable AM.
AMMode	LR_PHYSICAL_MEDIALESS	Asymmetric, Symmetric	EMS & NMS	Indicates the AM mode.
AssuredAMCapacity	LR_PHYSICAL_MEDIALESS	QPSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM	EMS & NMS	Indicates the modulation mode of the

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				assured capacity. This parameter is valid when AMEnableStatus is set to Enable.
FullAMCapacity	LR_PHYSICAL_MEDIALESS	QPSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM	EMS & NMS	Indicates the modulation mode of the full capacity. This parameter is valid when AMEnableStatus is set to Enable.
ManuallyMode	LR_PHYSICAL_MEDIALESS	QPSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM	EMS & NMS	Indicates the manually specified modulation mode. This parameter is valid when AMEnableStatus is set to Disable.
Capacity	LR_PHYSICAL_MEDIALESS	Number [0,5]	EMS & NMS	Indicates the E1 capacity.
TransmitMode	LR_PHYSICAL_MEDIALESS	QPSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM	EMS	Indicates the current modulation mode at the transmit end.
ReceiveMode	LR_PHYSICAL_MEDIALESS	QPSK, 16QAM, 32QAM, 64QAM, 128QAM, 256QAM	EMS	Indicates the current modulation mode at the receive end.

**Parent topic:** [terminationPoint](#)

## 9.4.6.1.13 Microwave Radio Ports

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This topic describes the transmission parameters of microwave ports.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				
TXPower	LR_PHYSICAL_MEDIALESS		EMS	Indicates the transmit power (dBm)
TXStatus	LR_PHYSICAL_MEDIALESS	mute,unmute	EMS	Indicates the transmit status that is set.
TxRadioFrequency	LR_PHYSICAL_MEDIALESS		EMS	Indicates the transmit frequency (MHz) that is set.
RxRadioFrequencyActual	LR_PHYSICAL_MEDIALESS		EMS	Indicates the actual receive frequency (MHz).

**Parent topic:** [terminationPoint](#)

## 9.4.6.1.14 PDH Ports in the Transport Domain

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This topic describes the transmission parameters of PDH ports in the transport domain.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
ChannelServiceType	LR_PHYSICAL_ELECTRICAL	E1,T1,E3,T3	EMS & NMS	Indicates the channel service type. It can be queried and configured.
N/A	LR_DSR_2M LR_DSR_34M LR_DSR_140M	N/A	N/A	There is not transmission parameter for this layer rate.
TrailTraceActualTx	LR_E1_2M	String of hexadecimal numerals	EMS & NMS	Indicates the J2 bytes to be transmitted.
TrailTraceExpectedRx	LR_E1_2M	String of hexadecimal numerals	EMS & NMS	Indicates the J2 bytes to be received.
TrailTraceActualRx	LR_E1_2M	String of hexadecimal numerals	EMS & NMS	Indicates the J2 bytes received.
TrailTraceActualTx	LR_E3_34M LR_E4_140M	String of hexadecimal numerals	EMS & NMS	Indicates the J1 bytes to be transmitted.
TrailTraceExpectedRx	LR_E3_34M LR_E4_140M	String of hexadecimal numerals	EMS & NMS	Indicates the J1 bytes to be received.
TrailTraceActualRx	LR_E3_34M LR_E4_140M	String of hexadecimal numerals	EMS & NMS	Indicates the J1 bytes received.
RetimingMode	LR_E1_2M	Normal, Tributary, CrossConnect	EMS & NMS	Indicates the retiming mode.

**Parent topic:** [terminationPoint](#)

## **9.4.6.1.15 SDH Ports in the Transport Domain**

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This topic describes the transmission parameters of SDH ports in the transport domain.

Parameter Name	Layer Rate	
Generally applicable parameters		
LaserStatus	LR_PHYSICAL_OPTICAL	On, Off, NA
PortState	LR_PHYSICAL_OPTICAL	NA, IS-NR, OOS-AU, OOS-MA, OOS-AUMA LPBK
N/A	LR_OPTICAL_SECTION	N/A

Parameter Name	Layer Rate	
N/A	LR_DSR_OC3_STM1 LR_DSR_OC12_STM4 LR_DSR_OC24_STM8 LR_DSR_OC48_and_STM16 LR_DSR_OC192_and_STM64	N/A
TrailTraceActualTx	LR_Section_OC3_STS3_and_RS_STM1 LR_Section_OC12_STS12_and_RS_STM4 LR_Section_OC24_STS24_and_RS_STM8 LR_Section_OC48_STS48_and_RS_STM16 LR_Section_OC192_STS192_and_RS_STM64	String of hexadecimal numerals
TrailTraceExpectedRx	LR_Section_OC3_STS3_and_RS_STM1 LR_Section_OC12_STS12_and_RS_STM4 LR_Section_OC24_STS24_and_RS_STM8 LR_Section_OC48_STS48_and_RS_STM16 LR_Section_OC192_STS192_and_RS_STM64	String of hexadecimal numerals
TrailTraceActualRx	LR_Section_OC3_STS3_and_RS_STM1 LR_Section_OC12_STS12_and_RS_STM4 LR_Section_OC24_STS24_and_RS_STM8 LR_Section_OC48_STS48_and_RS_STM16 LR_Section_OC192_STS192_and_RS_STM64	String of hexadecimal numerals
N/A	LR_Section_OC3_STS3_and_RS_STM1 LR_Section_OC12_STS12_and_RS_STM4 LR_Section_OC24_STS24_and_RS_STM8 LR_Section_OC48_STS48_and_RS_STM16 LR_Section_OC192_STS192_and_RS_STM64	N/A
BindingObject	LR_Section_OC3_STS3_and_RS_STM1 LR_Section_OC12_STS12_and_RS_STM4 LR_Section_OC24_STS24_and_RS_STM8 LR_Section_OC48_STS48_and_RS_STM16 LR_Section_OC192_STS192_and_RS_STM64	\name=EMS\value=Huawei/U2000\name=Mana

Parameter Name	Layer Rate	

**Parent topic:** [terminationPoint](#)

## 9.4.6.1.16 WDM Ports in the Transport Domain

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This topic describes the transmission parameters of WDM ports in the transport domain.

Parameter Name	Layer Rate	Legal Values
Generally applicable parameters		
ProtectRole	LR_PHYSICAL_OPTICAL	Work, Protect
LaserStatus	LR_PHYSICAL_OPTICAL	On, Off, NA
AutoNegotiation	LR_PHYSICAL_OPTICAL	Enabled, Disabled, NA
LaserAutoShut	LR_PHYSICAL_OPTICAL	Enabled, Disabled, NA
PortState	LR_PHYSICAL_OPTICAL	NA, IS-NR, OOS-AU, OOS-MA, OOS-AUMA, IS-NR, LPBK, OS-AU, LPBK, OOS-MA, LPBK, OOS-AUMA, LPBK
TrailTraceActualTx	LR_PHYSICAL_OPTICAL LR_DIGITAL_SIGNAL_RATE	String of hexadecimal numerals
TrailTraceExpectedRx	LR_PHYSICAL_OPTICAL LR_DIGITAL_SIGNAL_RATE	String of hexadecimal numerals

Parameter Name	Layer Rate	Legal Values
TrailTraceActualRx	LR_PHYSICAL_OPTICAL LR_DIGITAL_SIGNAL_RATE	String of hexadecimal numerals
N/A	LR_OPTICAL_SECTION	N/A
ProtectRole	LR_PHYSICAL_OPTICAL	Work,Protect
MaxNumberOCh	LR_Optical_Multiplex_Section	Number
FrequencySpacing	LR_Optical_Multiplex_Section	50, 100
Frequency	LR_Optical_Supervision_Channel	Number
FrequencyList	LR_Optical_Supervision_Channel	Number
OSCType	LR_Optical_Supervision_Channel	OutBand
WorkingModel	LR_PHYSICAL_OPTICAL	ODU0: ODU0 mode ODU0NonConvergence: ODU0 non-convergence mode ODU1Convergence: ODU1 convergence mode ODU1NonConvergence: DU1 non-convergence mode ODUflexNonConvergence: ODUflex non-convergence mode ODU1: ODU1 mode ODU1_ODU0: ODU1_ODU0 mode ODU1_ANY_ODU0ReEncapsulation: ODU1_ANY_ODU0 re-encapsulation mode ODU1_ANY_ODU0_ODU1EeEncapsulation: ODU1_ANY_ODU0_ODU1 re-encapsulation mode ODU2NonConvergence: ODU2 non-convergence mode ODU0TributaryLine: ODU0 tributary-line mode

Parameter Name	Layer Rate	Legal Values
		ODU1_ANY_ODU0_ODU1ReEncapsulatiOnTributaryLine ODU1_ANY_ODU0_ODU1 re-encapsulation tributary-line mode ODU1TributaryLine: ODU1 tributary-line mode None: /None mode (No port is used.)
ChannelUseStatus	LR_PHYSICAL_OPTICAL	Used, Unused

**Parent topic:** [terminationPoint](#)

## 9.4.6.1.17 MSTP ATM Ports in the Transport Domain

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This topic describes the transmission parameters of MSTP ATM ports in the transport domain.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				
ATMNNIType	LR_ATM	UNI, NNI	EMS	Indicates the ATM port type.
MaxVPIBits	LR_ATM	Number (0 to 12)	EMS & NMS	Indicates the maximum VPI bits.
MaxVCIBits	LR_ATM	Number (0 to 16)	EMS & NMS	Indicates the maximum VCI bits.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
MaxVPC	LR_ATM	Number (0 to 4095)	EMS & NMS	Indicates the maximum number of VPCs.
MaxVCC	LR_ATM	Number (0 to 4095)	EMS & NMS	Indicates the maximum number of VCCs.
ConfiguredVPC	LR_ATM	Number	EMS & NMS	Indicates the number of VPCs configured.
ConfiguredVCC	LR_ATM	Number	EMS & NMS	Indicates the number of VCCs configured.
ActivatedStatus	LR_ATM	Activated, Unactivated	EMS	Indicates the activation status.
UPC/NPC	LR_ATM	Enable, Disable	EMS	Specifies whether to enable the UPC/NPC.
LoopBack	LR_ATM	NoLoopBack, InLoopBack, OutLoopBack	EMS	Indicates the loopback.

**Parent topic:** [terminationPoint](#)

## 9.4.6.1.18 MSTP Ethernet Ports in the Transport Domain

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This topic describes the transmission parameters of MSTPEthernet ports in the transport domain.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comments
N/A	LR_PHYSICAL_ELECTRICAL	N/A	N/A	The transaction parameters for layer
N/A	LR_DIGITAL_SIGNAL_RATE	N/A	N/A	The transaction parameters for layer
N/A	LR_Encapsulation	N/A	N/A	The transaction parameters for layer
N/A	LR_Fragment	N/A	N/A	The transaction parameters for layer
Tag	LR_Ethernet	Tag Aware, Access, Hybrid	EMS	Indicates the port is unidirectional
PortEnable	LR_Ethernet	Enable, Disable	EMS	Indicates the priority is not supported by the Transponder
WorkingMode	LR_Ethernet	Auto, 10MHalfDuplex, 10MFullDuplex, 100MHalfDuplex, 100MFullDuplex, 1000MHalfDuplex,	EMS	Indicates the mode

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comments
		1000MFullDuplex, DptMode		
MaxPacketLength	LR_Ethernet	Number [1512,65535]	EMS	Indicates the maximum frame length
MACLoopBack	LR_Ethernet	NoLoopBack, InLoopBack, OutLoopBack	EMS	Indicates the loopback mode
PHYLoopBack	LR_Ethernet	NoLoopBack, InLoopBack, OutLoopBack	EMS	Indicates the loopback mode
DefaultForwardPriority	LR_Ethernet	Number	EMS	Indicates the forwarding priority
NonAutoNegotiationFlowControlMode	LR_Ethernet	Disable, Symmetric, SendOnly, ReceiveOnly	EMS	Specifies the auto-negotiation flow control mode not supported by the Transceiver
AutoNegotiationFlowControlMode	LR_Ethernet	Disable, AutoNeg_Non-Symmetric, AutoNeg_Symmetric, AutoNeg_Symmetric/Non-Symmetric	EMS	Specifies the negotiation flow control mode
BroadcastMsgSuppress	LR_Ethernet	Disable, Enable	EMS	Specifies whether enable broadcast message suppression

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comments
				pac sup
BroadcastMsgSuppressThreshold	LR_Ethernet	Number [10%,100%]	EMS	Spec the thre for bro pac sup
PortType	LR_Ethernet	PE,P,UNI,NUNI	EMS	Ind the attr
EntranceDetect	LR_Ethernet	Enable, Disable	EMS	Spec wh ena entr
PhysicalParameters	LR_Ethernet	Number	EMS	Ind the para of a
EncapsulateProtocol	LR_Ethernet	HDLC, GFP, ATM, PPP, LAPS, CRC, CRC_CFP	EMS	Ind the enc pro
Scramble	LR_Ethernet	Not Scramble, Scrambling Mode[X43+1], Scrambling Mode[X48+1]	EMS	Ind the scra mod
CheckFieldLength	LR_Ethernet	FCS32, FCS16, No	EMS	Ind the the field
FCSCalculateSeq	LR_Ethernet	Little endian, Big endian	EMS	Ind the calc bit seq

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
WithExtendedHeader	LR_Ethernet	false, true	EMS	Specified whether superextended header is supported.
LCASState	LR_Ethernet	Enable, Disable	EMS	Specifies whether enable LCAS protection.
VlanID	LR_Ethernet	Number [1,4095]	EMS	N/A

Parent topic: [terminationPoint](#)

## 9.4.6.1.19 WDM Ethernet Ports in the Transport Domain

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This topic describes transmission parameters of a WDM Ethernet port.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				
Tag	LR_Ethernet	Tag Aware Access Hybrid	EMS & NMS	Indicates the tag attribute of data packets.
VlanID	LR_Ethernet	Number [1,4095]	EMS & NMS	N/A
VLanPriority	LR_Ethernet	Number [0,7]	EMS & NMS	Indicates the VLAN priority.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
PortEnable	LR_Ethernet	Enable Disable	EMS & NMS	Specifies whether the port is enabled.
WorkingMode	LR_Ethernet	Auto 10MHalfDuplex 10MFullDuplex 100MHalfDuplex 100MFullDuplex 1000MHalfDuplex 1000MFullDuplex DptMode 10GE Full-Duplex LAN 10GE Full-Duplex WAN 2G5E Full-Duplex	EMS & NMS	Indicates the working mode.
MaxPacketLength	LR_Ethernet	Number	EMS & NMS	Indicates the maximum length of a packet.
BroadcastMsgSuppress	LR_Ethernet	Enable Disable	EMS	Specifies whether to enable the broadcast packet suppression.
BroadcastMsgSuppressThreshold	LR_Ethernet	Number	EMS	Specifies the threshold for the broadcast packet suppression.
PortType	LR_Ethernet	UNI NNI CAWARE SAWARE	EMS	Indicates the port attributes.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
EntranceDetect	LR_Ethernet	Enable Disable	EMS	Specifies whether to enable the entry check.
NonAutoNegotiationFlowControlMode	LR_Ethernet	Disable Symmetric SendOnly ReceiveOnly	EMS & NMS	Indicates the non-auto-negotiation flow control mode.
AutoNegotiationFlowControlMode	LR_Ethernet	Disable AutoNeg_Non-Symmetric AutoNeg_Symmetric/Non-Symmetric Symmetric SendOnly ReceiveOnly	EMS	Indicates the auto-negotiation flow control mode.
PhysicalParameters	LR_Ethernet	Number	EMS	Indicates the physical parameters.
MACLoopBack	LR_Ethernet	NoLoopBack InLoopBack OutLoopBack	EMS & NMS	Indicates the loopback status at the MAC layer.
PHYLoopBack	LR_Ethernet	NoLoopBack InLoopBack OutLoopBack	EMS	Indicates the loopback status at the PHY layer.

Parent topic: [terminationPoint](#)

## 9.4.6.1.20 WDM Ethernet Trunk Ports in the Transport Domain

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This topic describes transmission parameters of a WDM Ethernet Trunk port.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				
Tag	LR_Ethernet	Tag Aware Access Hybrid	EMS & NMS	Indicates the tag attribute of data packets.
VlanID	LR_Ethernet	Number [1,4095]	EMS & NMS	N/A
VLanPriority	LR_Ethernet	Number [0,7]	EMS & NMS	Indicates the VLAN priority.
EntranceDetect	LR_Ethernet	Enable Disable	EMS & NMS	Specifies whether to enable the entry check.
PortType	LR_Ethernet	UNI NNI CAWARE SAWARE	EMS & NMS	Indicates the port attributes.
	LR_Encapsulation			There is not transmission parameter for this layer rate.
	LR_Fragment			There is not transmission parameter for this layer rate.

**Parent topic:** [terminationPoint](#)

## 9.4.6.1.21 WDM CTP Ports in the Transport Domain

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This topic describes the transmission parameters of WDM CTP ports in the transport domain.

Parameter Name	Layer Rate	Legal Values
Generally applicable parameters		
ClientType	LR_DIGITAL_SIGNAL_RATE	SDH SONET GBE(GFP-T) GBE GBE GBE(TTT-GMP) 10GBE(LAN) 10GBE(WAN) 10GBE(CBR) FC FC(S) ESCON FICON FICON(Slice) OTU F HDTV DVB(ASI) DVB DVB-SDI FD HYBRID ISC INFINIBAND CPRI ET EPON CLO
ClientRate	LR_DIGITAL_SIGNAL_RATE	Number
MaxClientRate	LR_DIGITAL_SIGNAL_RATE	Number
MinClientRate	LR_DIGITAL_SIGNAL_RATE	Number
SMTrailTraceExpectedRx	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	62 characters. Each character is represented by a hexadecimal number. Consecutive hexadecimal numbers are separated by spaces. Characters 1 through 15 indicate the SAI. Characters 16 through 31 indicate the LDI. Characters 32 through 62 indicate user-information.
SMTrailTraceActualRx	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	62 characters. Each character is represented by a hexadecimal number. Consecutive hexadecimal numbers are separated by spaces. Characters 1 through 15 indicate the SAI. Characters 16 through 31 indicate the LDI. Characters 32 through 62 indicate user-information.
SMTrailTraceActualTx	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	62 characters. Each character is represented by a hexadecimal number. Consecutive hexadecimal numbers are separated by spaces. Characters 1 through 15 indicate the SAI. Characters 16 through 31 indicate the LDI. Characters 32 through 62 indicate user-information.
SPRINGNodeId	One of the following: LR_OCH_Transport_Unit_5G	Unknown

Parameter Name	Layer Rate	Legal Values
	LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	
SignalLabelExpectedRx	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	62 characters. Each character is represented by a hexadecimal number. Consecutive hexadecimal numbers are separated by spaces. Characters 1 through 15 indicate the SAI. Characters 16 through 31 indicate the LDI. Characters 32 through 62 indicate user-information.
SignalLabelActualRx	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	62 characters. Each character is represented by a hexadecimal number. Consecutive hexadecimal numbers are separated by spaces. Characters 1 through 15 indicate the SAI. Characters 16 through 31 indicate the LDI. Characters 32 through 62 indicate user-information.
PMTrailTraceActualTx	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	62 characters. Each character is represented by a hexadecimal number. Consecutive hexadecimal numbers are separated by spaces. Characters 1 through 15 indicate the SAI. Characters 16 through 31 indicate the LDI. Characters 32 through 62 indicate user-information.
PMTrailTraceExpectedRx	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	62 characters. Each character is represented by a hexadecimal number. Consecutive hexadecimal numbers are separated by spaces. Characters 1 through 15 indicate the SAI. Characters 16 through 31 indicate the LDI. Characters 32 through 62 indicate user-information.
PMTrailTraceActualRx	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2	62 characters. Each character is represented by a hexadecimal number. Consecutive hexadecimal numbers are separated by spaces. Characters 1 through 15 indicate the SAI. Characters 16 through 31 indicate the LDI.

Parameter Name	Layer Rate	Legal Values
	LR_OCH_Transport_Unit_1	Characters 32 through 62 indicate user-information.
TCMLevel<n>TrailTraceMonitorDAPI	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	On Off
TCMLevel<n>TrailTraceMonitorSAPI	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	On Off
TCMLevel<n>ContraTrailTraceMonitorDAPI	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	On Off
TCMLevel<n>ContraTrailTraceMonitorSAPI	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	On Off
TCMLevel<n>TrailTraceActualTx	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	62 characters. Each character is represented by a hexadecimal number. Consecutive hexadecimal numbers are separated by colons. Characters 1 through 15 indicate the Source Address. Characters 16 through 31 indicate the Destination Address. Characters 32 through 62 indicate user-information.

Parameter Name	Layer Rate	Legal Values
TCMLevel<n>TrailTraceExpectedRx	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	62 characters. Each character is represented by a hexadecimal number. Consecutive hexadecimal numbers are separated by spaces. Characters 1 through 15 indicate the SAs. Characters 16 through 31 indicate the LAs. Characters 32 through 62 indicate user-information.
TCMLevel<n>TrailTraceActualRx	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	62 characters. Each character is represented by a hexadecimal number. Consecutive hexadecimal numbers are separated by spaces. Characters 1 through 15 indicate the SAs. Characters 16 through 31 indicate the LAs. Characters 32 through 62 indicate user-information.
Frequency	LR_Optical_Channel	Number
RegType	LR_Optical_Channel	3R
MappingModel	LR_DIGITAL_SIGNAL_RATE	BitTransparentMapping(11.1G) -- Bit transparent mapping (11.1G) MACTransparentMapping(10.7G) -- MAC transparent mapping (10.7G) BitTransparentMapping(10.7G) -- Bit transparent mapping (10.7G) EncapsulatedToFEC5G -- Encapsulated FEC5G EncapsulatedToOTU5G -- Encapsulated OTU5G GFP_OTU2 -- GFP_OTU2 SDH_OTU2 -- SDH_OTU2 MACTransparentMapping(10.7G)Support -- MAC transparent mapping (10.7G), IEEE 1588
TX_TimeSlot	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2	string

Parameter Name	Layer Rate	Legal Values
	LR_OCH_Transport_Unit_1	
RX_TimeSlot	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	Indicate the timeslot of the RX port.
EnableLPT	LR_DIGITAL_SIGNAL_RATE	Enable, Disable
ODUTimeslotModel	LR_Optical_Channel	AssignRandom, AssignConsecutive
SMTIMDetectionMode	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	SAPI&DAPI, Only DAPI, Only SAPI, NO Detection
PMTIMDetectionMode	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	SAPI&DAPI, Only DAPI, Only SAPI, NO Detection
EnableFEC	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	Enable, Disable
FECType	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2	FEC AFEC HFEC HFEC2 SDFEC

Parameter Name	Layer Rate	Legal Values
	LR_OCH_Transport_Unit_1	SDFEC2
TCMLevel<n>SourceEnable	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	Enable, Disable
TCMLevel<n>SinkEnable	One of the following: LR_OCH_Transport_Unit_5G LR_OCH_Transport_Unit_4 LR_OCH_Transport_Unit_3 LR_OCH_Transport_Unit_2 LR_OCH_Transport_Unit_1	Enable, Disable
LineRate	LR_OCH_Data_Unit_2	Standard, Speedup, Speedup(11.3G), 10.7G(Special)
MSI	LR_Optical_Channel	Enable, Disable

**Parent topic:** [terminationPoint](#)

## 9.4.6.2 HW\_vpManager

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This topic describes transmission parameters of the HW\_vpManager. The HW\_vpManager manages static tunnels, dynamic MSTP tunnels, IP tunnels, PW switching, PWE3, VPLS, and NETH services on the U2000.

- [\*\*MFDFr \(PWE3\)\*\*](#)  
This topic describes transmission parameters of PWE3 services. PWE3 is an end-to-end layer 2 service bearing technology. PWE3 services are transmitted on the point-to-point L2VPN, consisting of AES services, CES services, and EES services(carried on PWs on the network side).
- [\*\*MFDFr \(PWE3\) UNI\*\*](#)  
This topic describes transmission parameters of UNIs for PWE3 services. PWE3 services consist

of AES services, CES services, and EES services which are carried on the PWs on the network side.

- **MFDFr (PWE3) NNI (PW)**

This topic describes transmission parameters of networkNNIsfor PWE3 services that are carried on PWs. PWE3 services consist ofAES services, CES services, and EES services which are carried onPWs on the network side.

- **MFDFr (VPLS)**

This topic describes the transmission parameters of the virtual private LAN service (VPLS). As a type of multipoint-to-multipoint service, VPLS forwards packets between multiple access points on the user side and network side with the Layer2 MAC address self-learning function.

- **MFDFr (VPLS) UNI**

This topic describes transmission parameters of UNIs for VPLS services.

- **MFDFr (VPLS) NNI**

This topic describes the transmission parameters of NNIs for VPLS services.

- **MFDFr (VPLS) NNI(Port)**

This topic describes transmission parameters of NNIs for VPLS services. VPLS services which are carried on the Ports on the network side.

- **MFDFr (nativeETH)**

This topic describes transmission parameters of nativeETHservices. The nativeETH services include E-Line services and E-LANservices (carried on network-side ports or QinQ VLANs).

- **MFDFr (nativeETH) UNI**

This topic describes transmission parameters of UNIs for nativeETH Line services.

- **MFDFr(nativeETH) NNI**

This topic describes transmission parameters of network-to-network interfaces for NativeEth services.

- **IP Cross-Connections**

This topic describes transmission parameters of IP cross-connections. An IP cross-connection can be an MPLS static tunnel or a PW switching.

- **Source and Sink Ends of Static Tunnels**

This topic describes transmission parameters of sourceand sink ends of static tunnels.

- **Source and Sink Ends of PW Switches**

This topic describes transmission parameters of source and sink ends of PW switches.

- **Traffic Trunk**

This topic describes transmission parameters of traffic trunks. A traffic trunk can be a static CR tunnel, static tunnel, MPLS dynamic tunnel, IP tunnel, or PW.

- **[FDFr\(PWE3\)](#)**  
This topic describes transmission parameters of E2E PWE3 services, including Ethernet, AES, and EES services.
- **[Source Ends of FDFrs \(PWE3\)](#)**  
This topic describes transmission parameters of E2E PWE3 services at the source end.
- **[Sink Ends of FDFrs \(PWE3\)](#)**  
This topic describes transmission parameters of E2E PWE3 services at the sink end.
- **[FDFr \(VPLS\)](#)**  
This topic describes transmission parameters of E2E virtual private LAN services (VPLS).
- **[Source Ends of FDFrs \(VPLS\)](#)**  
This topic describes transmission parameters of E2E virtual private LAN services (VPLS).
- **[Tunnel Trails](#)**  
This topic describes transmission parameters of E2E static tunnels.
- **[PW Trails](#)**  
This topic describes transmission parameters of E2E pseudo wires (PWs).
- **[Source Ends of PW Trails](#)**  
This topic describes transmission parameters of E2E pseudo wires (PWs).
- **[MFDFr \(AGGR\)](#)**  
This topic describes transmission parameters of aggregation (AGGR) services.
- **[Source Ends of MFDFrs \(AGGR\)](#)**  
This topic describes transmission parameters of aggregation(AGGR) services at the source.
- **[Sink Ends of MFDFrs \(AGGR\)](#)**  
This topic describes transmission parameters of aggregation (AGGR) services at the sink.

**Parent topic:** [Transmission Parameters](#)

## **9.4.6.2.1 MFDFr (PWE3)**

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This topic describes transmission parameters of PWE3 services. PWE3 is an end-to-end layer 2 service bearing technology. PWE3 services are transmitted on the point-to-point L2VPN, consisting of AES services, CES services, and EES services(carried on PWs on the network side).

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
General parameters				
ServiceID	LR_ATM_VP LR_ATM_VC LR_ATM_NI LR_E1_2M LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet	Number [1 to 65535]		Indicates the service ID. Applies to AES, CES, and EES services.
ProtectionGroupID	LR_ATM_VP LR_ATM_VC LR_ATM_NI LR_E1_2M LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet	String [1 to 4096]		Indicates the protection group ID. This parameter is mandatory if there is protection. This parameter is blank if there is no protection.
ProtectionType	LR_ATM_VP LR_ATM_VC LR_ATM_NI LR_E1_2M LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet	PW_Redundancy PW_APS PW_MC_APS PW_APS_Binding		Indicates the protection type. PW_Redundancy: PW redundancy protection PW_APS: PW APS protection PW_MC_APS: MC-PW APS protection PW_APS_Binding: PW_APS protection pair This parameter is mandatory for a service with protection.
ProtectionMode	LR_ATM_VP LR_ATM_VC LR_ATM_NI LR_E1_2M	1:1, 1+1		Indicates the protection mode. APS protection and MC-PW APS protection support

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
	LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet			the 1:1 protection only. PW redundancy protection supports both 1:1 and 1+1 protections. PW_APS protection pair does not apply to the two protection modes.
PeerProtectionGroupID	LR_ATM_VP LR_ATM_VC LR_ATM_NI LR_E1_2M LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet	String [1 to 4096]		Indicates the peer protection group ID. Applies to PW-MC APS protections.
APSEnable	LR_ATM_VP LR_ATM_VC LR_ATM_NI LR_E1_2M LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet	Enable, Disable	EMS & NMS	Specifies whether to enable the APS protection. Applies to APS protection and MC-PW APS protection.
SwitchMode	LR_ATM_VP LR_ATM_VC LR_ATM_NI LR_E1_2M LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet	SingleEnded, DualEnded		Indicates the switching mode. SingleEnded: single ended. DualEnded: dual ended. Currently, only DualEnded is available and applies to APS protection and MC-PW APS protection.
ReversionMode	LR_ATM_VP LR_ATM_VC	Non_Revertive, Revertive		Indicates the reversion mode.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
	LR_ATM_NI LR_E1_2M LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet			Applies to APS protection and MC-PW APS protection.
wtrTime	LR_ATM_VP LR_ATM_VC LR_ATM_NI LR_E1_2M LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet	Number [1,12]	EMS & NMS	Indicates the wait-to-restore (WTR) time. Unit: minute Applies to APS protection and MC-PW APS protection.
HoldOffTime	LR_ATM_VP LR_ATM_VC LR_ATM_NI LR_E1_2M LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet	Number [0,100]	EMS & NMS	Indicates the switch hold-off time. Unit: ms Applies to APS protection and MC-PW APS protection.
DelayJitterSwitch	LR_ATM_VP LR_ATM_VC LR_ATM_NI LR_E1_2M LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet	Enable, Disable	EMS	Specifies whether to enable delay/jitter switching. Default value: Disable
SwitchDirection	LR_ATM_VP LR_ATM_VC LR_ATM_NI LR_E1_2M LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet	BidirectionalSwitch, UnidirectionalSwitch	EMS	Indicates the direction of delay switching. Default value: BidirectionalSwitch
SwitchfirstCondition	LR_ATM_VP LR_ATM_VC	Jitter, Delay	EMS	Indicates the condition of

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
	LR_ATM_NI LR_E1_2M LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet			delay/jitter switching. Default value: Jitter
DelayThreshold	LR_ATM_VP LR_ATM_VC LR_ATM_NI LR_E1_2M LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet	Number [100,65535] or DelayNotTriggerSwitch	EMS	Indicates the delay difference. Default value: 10000
JitterThreshold	LR_ATM_VP LR_ATM_VC LR_ATM_NI LR_E1_2M LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet	Number [100,65535] or JitterNotTriggerSwitch	EMS	Indicates the jitter difference. Default value: 2000
ATM emulation service-specific parameters				
	LR_ATM_VP			Indicates the ATM VP access.
	LR_ATM_VC			Indicates the ATM VC access.
	LR_ATM_NI			Indicates the ATM port access.
Circuit emulation service specific parameters				
	LR_E1_2M			Indicates the CES service rate for E1 port access.
	LR_VT2_and_TU12_VC12			Indicates the CES service rate for VC12 access.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
	LR_DS0_64K			Indicates the CES service rate for 64 Kbit/s timeslot access.
Ethernet emulation service specific parameters				
MaximumFrameSize	LR_Ethernet	Number [64, 9000]	EMS & NMS	Indicates the maximum frame length.
ServiceTagRole	LR_Ethernet	User, Service	EMS	Indicates the service demarcation tag.
BPDU	LR_Ethernet		EMS & NMS	Specifies whether to enable the BPDU.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.6.2.2 MFDFr (PWE3) UNI

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This topic describes transmission parameters of UNIs for PWE3 services. PWE3 services consist of AES services, CES services, and EES services which are carried on the PWs on the network side.

Parameter Name	Layer Rate	Legal Values
ATM emulation service specific parameters		
CTPValue	LR_ATM_NI	
Circuit emulation service specific parameters		
CTPValue	LR_VT2_and_TU12_VC12 LR_DS0_64K LR_E1_2M	Number

Parameter Name	Layer Rate	Legal Values
TimeSlots	LR_VT2_and_TU12_VC12 LR_DS0_64K LR_E1_2M	Number
EmulationsType	LR_VT2_and_TU12_VC12 LR_DS0_64K LR_E1_2M	E1
Ethernet emulation service specific parameters		
IVID	LR_Ethernet	Number [1, 4094]
IngressQosPolicyName	LR_Ethernet	
IngressTCProfileName	LR_Ethernet	\name=EMS\value=Huawei/U2000\name=TCPFILE\value=ty
EgressQosPolicyName	LR_Ethernet	

Parameter Name	Layer Rate	Legal Values
IngressBandwidthLimit	LR_Ethernet	Enabled,Disabled
IngressCIR	LR_Ethernet	Number[64, 10000000]
IngressPIR	LR_Ethernet	Number[64, 10000000]
EgressBandwidthLimit	LR_Ethernet	Enabled,Disabled
EgressCIR	LR_Ethernet	Number[64, 10000000]
EgressPIR	LR_Ethernet	Number[64, 10000000]

**Parent topic:** [HW\\_vpnManager](#)

## **9.4.6.2.3 MFDFr (PWE3) NNI (PW)**

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This topic describes transmission parameters of networkNNIs for PWE3 services that are carried on PWs. PWE3 services consist of AES services, CES services, and EES services which are carried on PWs on the network side.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				
SignalType	LR_MPLS_Channel	Static, Dynamic	EMS	Indicates the signaling type.
PWID	LR_MPLS_Channel	Number	EMS	Indicates the PW ID.
PWType	LR_MPLS_Channel	ATM_N_TO_ONE_VCC ATM_ONE_TO_ONE_VCC ATM_N_TO_ONE_VPC ATM_ONE_TO_ONE_VPC SATOP, CESOPSN ETHERNET_TAGGED ETHERNET ATM_AAL5_SDU_VCC ATM_AAL5_PDU_VCC TRANSPARENT SATOP_T1 SATOP_E3 PPP IP_LAYER2_TRANSPORT IP_INTERWORKING HDLC FRAME_RELAY	EMS	Indicates the PW type. Currently devices do not support ATM_AAL5_PDU_VCC.
InLabel	LR_MPLS_Channel	Number [16, 1048575]	EMS	Indicates the transmit label. This parameter is valid when SignalType is set to Static.
OutLabel	LR_MPLS_Channel	Number [16, 1048575]	EMS	Indicates the receive label. This parameter is valid when SignalType is set to Static.
ControlWord	LR_MPLS_Channel	NO_USE MUST_USE PREFERRED_USE	EMS	Indicates the control word. Default: NO_USE.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
ControlChannelType	LR_MPLS_Channel	None CW AlertLabel	EMS	Indicates the type of the control channel. Default: CW. This parameter applies to the OptiX RTN 900 V100R003.
VCCV	LR_MPLS_Channel	None Ping	EMS	Indicates the VCCV check mode. Default: Ping.
EncapsulationType	LR_MPLS_Channel	MPLS UDP IP	EMS	Indicates the encapsulation type. Currently, the value can be MPLS.
BindingObject	LR_MPLS_Channel	String	EMS	Indicates the name of the bound object.
EgressBindingObject	LR_MPLS_Channel	String	EMS	Indicates the name of the egress binding object. This parameter applies to only the OptiX RTN 900 V100R003. This parameter must be issued for creating services.
PeerIP	LR_MPLS_Channel	String	EMS	Indicates the peer IP address.
AdminStatus	LR_MPLS_Channel	Enabled,Disabled	EMS	Indicates the enable status.
WorkingMode	LR_MPLS_Channel	Working Protection DNI	EMS	Indicates the PW working mode. This parameter is available only when PWE3 services are configured with PW protection groups.
IngressQosPolicyName	LR_MPLS_Channel	String	EMS	Indicates a QoS policy attribute.
EgressQosPolicyName	LR_MPLS_Channel	String	EMS	Indicates a QoS policy attribute.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
IngressCIR	LR_MPLS_Channel	Number	EMS	Indicates the committed information rate of the ingress.
IngressPIR	LR_MPLS_Channel	Number	EMS	Indicates the peak information rate of the ingress.
IngressBandwidthLimit	LR_MPLS_Channel	EnabledDisabled	EMS	Indicates the Bandwidth of the ingress.
EgressCIR	LR_MPLS_Channel	Number	EMS	Indicates the committed information rate of the egress.
EgressPIR	LR_MPLS_Channel	Number	EMS	Indicates the peak information rate of the egress.
EgressBandwidthLimit	LR_MPLS_Channel	Enabled, Disabled	EMS	Indicates the Bandwidth of the egress.
ATM emulation service specific parameters				
ConcatMaxCell	LR_MPLS_Channel	Number	EMS	Indicates the maximum number of concatenation cells. Default: 10.
PacketLoadingTime	LR_MPLS_Channel	Number	EMS	Indicates the maximum waiting time. Default: 1000.
VPI	LR_MPLS_Channel	Number	EMS	Indicates the VP number.
VCI	LR_MPLS_Channel	Number	EMS	Indicates the VC number.
Circuit emulation service specific parameters				
RTP	LR_MPLS_Channel	Enable Disable	EMS	Indicates the RTP header. Default: DISABLE.
JitterTime	LR_MPLS_Channel	Number	EMS & NMS	Indicates the jitter time. Default: 8000.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
PacketLoadingTime	LR_MPLS_Channel	Number	EMS	Indicates the packet loading time. Default: 1000.
EncapsulationNumber	LR_MPLS_Channel	Number	EMS	Indicates the number of encapsulated frames. This parameter applies to only the datacom domain.
ClockMode	LR_MPLS_Channel	Null LinearClockMode NA	EMS	Indicates the clock mode.
Ethernet emulation service specific parameters				
RequestVID	LR_MPLS_Channel	Number	EMS	Indicates the request VLAN ID. This parameter is included in output only when PWType is set to ETHERNET_TAGGED.
PW_APS, PW_MC_APS parameters				
MSPWEndIP	LR_MPLS_Channel	String	EMS	Indicates the OAM PW address.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.6.2.4 MFDFr (VPLS)

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This topic describes the transmission parameters of the virtual private LAN service (VPLS). As a type of multipoint-to-multipoint service, VPLS forwards packets between multiple access points on the user side and network side with the Layer2 MAC address self-learning function.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
ServiceID	LR_Ethernet	Number	EMS	Indicates the VPLS service ID.
MaximumFrameSize	LR_Ethernet	Number	EMS & NMS	Indicates the maximum frame length.
BPDU	LR_Ethernet	Enabled, Disabled	EMS & NMS	Specifies whether the BPDU is enabled.
IGMPSnoopingState	LR_Ethernet	Enabled, Disabled	EMS & NMS	Indicates the IGMP snooping status.
PbUNI	LR_Ethernet	True, False	EMS & NMS	Indicates the PBUNI flag.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.6.2.5 MFDFr (VPLS) UNI

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This topic describes transmission parameters of UNIs for VPLS services.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				
IVID	LR_Ethernet	Number [1, 4094]	EMS & NMS	Indicates the VLAN ID. If there are multiple VLAN IDs, they are separated by a comma.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
SVID	LR_Ethernet	Number [1, 4094]	EMS & NMS	Indicates the UNI S-VLAN ID. This parameter is supported by RTN NEs.
SuppressBroadcast	LR_Ethernet	True, False	EMS & NMS	Specifies whether to enable broadcast packet suppression.
SuppressBroadcastThreshold	LR_Ethernet	Number [0, 100]	EMS & NMS	Indicates the threshold for broadcast packet suppression.
UnknownSuppressUnicastThreshold	LR_Ethernet	Number [0, 100]	EMS & NMS	Indicates the suppression threshold for unknown unicast packets.
UnknownSuppressMulticastThreshold	LR_Ethernet	Number [0, 100]	EMS & NMS	Indicates the suppression threshold for unknown unicast packets.
IngressQosPolicyName	LR_MPLS_Channel	String	EMS	Indicates a QoS policy attribute.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
EgressQosPolicyName	LR_MPLS_Channel	String	EMS	Indicates a QoS policy attribute.
IngressBandwidthLimit	LR_Ethernet	Enabled/Disabled	EMS & NMS	Specifies whether to enable ingress bandwidth limit.
IngressCIR	LR_Ethernet	Number	EMS & NMS	Indicates the committed information rate, reflecting the ingress UNI QoS.
IngressPIR	LR_Ethernet	Number	EMS & NMS	Indicates the peak information rate, reflecting the ingress UNI QoS.
EgressBandwidthLimit	LR_Ethernet	Enabled/Disabled	EMS & NMS	Specifies whether to enable egress bandwidth limit.
EgressCIR	LR_Ethernet	Number	EMS & NMS	Indicates the committed information rate, reflecting the egress UNI QoS.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
EgressPIR	LR_Ethernet	Number	EMS & NMS	Indicates the peak information rate, reflecting the egress UNI QoS.

**Parent topic:** [HW vpnManager](#)

## 9.4.6.2.6 MFDFr (VPLS) NNI

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This topic describes the transmission parameters of NNIs for VPLS services.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
PW parameters				
SignalType	LR_MPLS_Channel	Static, Dynamic	NA	Indicates the signaling type.
PWID	LR_MPLS_Channel	Number	EMS	Indicates the PW ID.
PWType	LR_MPLS_Channel	ETHERNET_TAGGED, ETHERNET	NA	Indicates the PW type.
InLabel	LR_MPLS_Channel	Number [16, 1048575]	NA	Indicates the PW ingress label. This parameter needs to be set when SignalType is set to Static.
OutLabel	LR_MPLS_Channel	Number [16, 1048575]	NA	Indicates the PW egress label. This parameter needs to be set when SignalType is set to Static.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
EncapsulationType	LR_MPLS_Channel	MPLS, UDP, IP	NA	Indicates the encapsulation type. Currently, the value can be MPLS.
ControlWord	LR_MPLS_Channel	NO_USE, MUST_USE, PREFERRED_USE	EMS	Indicates the control word.
ControlChannelType	LR_MPLS_Channel	None, CW, AlertLabel	EMS	Indicates the control channel type. Default: CW.
VCCV	LR_MPLS_Channel	None, Ping	EMS	Indicates the VCCV check mode. Default: Ping.
BindingObject	LR_MPLS_Channel	String	EMS	Indicates the name of the bound object.
PeerIP	LR_MPLS_Channel	String	EMS	Indicates the peer address.
AdminStatus	LR_MPLS_Channel	Enabled, Disabled	EMS & NMS	Indicates the administration status.
RequestVID	LR_MPLS_Channel	Number [1, 4094]	EMS	Indicates the request VLAN. This parameter is valid when PWType is set to ETHERNET_TAGGED. If a packet from the peer is not tagged with a VLAN ID, the PW tags the packets with a VLAN ID according to the value of this parameter.
IngressQosPolicyName	LR_MPLS_Channel	String	EMS	Indicates a QoS policy attribute.
EgressQosPolicyName	LR_MPLS_Channel	String	EMS	Indicates a QoS policy attribute.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
EgressBindingObject	LR_MPLS_Channel	String	EMS	Indicates the name of the egress binding object.
IngressBandwidthLimit	LR_MPLS_Channel	EnabledDisabled	EMS	Indicates the Bandwidth of the ingress.
EgressBandwidthLimit	LR_MPLS_Channel	EnabledDisabled	EMS	Indicates the Bandwidth of the egress.
IngressCIR	LR_MPLS_Channel	Number	EMS	Indicates the committed information rate of the ingress.
IngressPIR	LR_MPLS_Channel	Number	EMS	Indicates the peak information rate of the ingress.
EgressCIR	LR_MPLS_Channel	Number	EMS	Indicates the committed information rate of the egress.
EgressPIR	LR_MPLS_Channel	Number	EMS	Indicates the peak information rate of the egress.

**Parent topic:** [HW vpnManager](#)

## 9.4.6.2.7 MFDFr (VPLS) NNI(Port)

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This topic describes transmission parameters of NNIs for VPLS services. VPLS services which are carried on the Ports on the network side.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Ethernet emulation service specific parameters				
SVID	LR_Ethernet	Number [1, 4094]	EMS & NMS	Indicates the SVLAN ID of the

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				NNI, RTN device support.

**Parent topic:** [HW vpnManager](#)

## 9.4.6.2.8 MFDFr (nativeETH)

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This topic describes transmission parameters of nativeETH services. The nativeETH services include E-Line services and E-LAN services (carried on network-side ports or QinQ VLANs).

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				
ServiceID	LR_Ethernet	Number	EMS	Indicates the ID of the native ETH service.
ServiceDirection	LR_Ethernet	UNIToUNI, UNIToNNI, NNIToNNI	EMS	Indicates the service direction of the nativeETH (only for the nativeETH Line service)
MaximumFrameSize	LR_Ethernet	Number [64, 10240]	EMS & NMS	Indicates the maximum frame size. This parameter is unavailable if it is not supported by the NMS.
BPDU	LR_Ethernet	Enabled, Disabled	EMS & NMS	Indicates whether the BPDU is enabled.
ServiceType	LR_Ethernet	NETH	EMS	Indicates the service type. This parameter is used

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				to create NativeEth services.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.6.2.9 MFDFr (nativeETH) UNI

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This topic describes transmission parameters of UNIs for nativeETH Line services.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				
IVID	LR_Ethernet	Number [1, 4094]	EMS	VLAN ID. If there are multiple VLAN IDs, they are separated by a comma.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.6.2.10 MFDFr(nativeETH) NNI

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This topic describes transmission parameters of network-to-network interfaces for NativeEth services.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				
SVID	LR_Ethernet	Number	EMS	Indicates the SVLAN ID. This

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				parameter is applicable only when services are carried by the QinQ.

**Parent topic:** [HW vpnManager](#)

## 9.4.6.2.11 IP Cross-Connections

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This topic describes transmission parameters of IP cross-connections. An IP cross-connection can be an MPLS static tunnel or a PW switching.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
MPLS static tunnel parameters				
IPCrossConnectionID	LR_MPLS_Path	Number	EMS	Indicates the service ID.
BandWidth	LR_MPLS_Path	Number{0, 1-2147483647}	EMS	Indicates the bandwidth. Unit: kbit/s. The value 0 indicates that the bandwidth is not limited. This parameter must be applied when static tunnels for PTN equipment are created.
BandwidthRemaining	LR_MPLS_Path	Number{0, 128-4294967295}	EMS	Indicates the remaining bandwidth. Unit: kbit/s. The

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				value 0 indicates that the bandwidth is not limited.
RevBandWidth	LR_MPLS_Path	Number	EMS	Indicates the RevBandWidth. Unit: kbit/s. The value 0 indicates that the bandwidth is not limited.
CBS	LR_MPLS_Path	Number{0, 64-131072}	EMS	Indicates the committed burst size (byte). The value 0 indicates that the bandwidth is not limited. This parameter must be applied when static tunnels for PTN equipment are created.
PIR	LR_MPLS_Path	Number{0, 64-2147483647}	EMS	Indicates the peak information rate (kbit/s). The value 0 indicates that the bandwidth is not limited. This parameter must be applied when static tunnels for PTN equipment are created.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
PBS	LR_MPLS_Path	Number{0, 64-16777216}	EMS	Indicates the peak burst size (byte). The value 0 indicates that the bandwidth is not limited. This parameter must be applied when static tunnels for PTN equipment are created.
NextHop	LR_MPLS_Path	An IP address	EMS	Indicates the next hop IP address.
RevNextHop	LR_MPLS_Path	An IP address	EMS	Indicates the reverse next hop IP address.
Type	LR_MPLS_Path	L-LSP, E-LSP	EMS	Indicates the tunnel type.
EXP	LR_MPLS_Path	Number[0, 7],"None"	EMS	Indicates the EXP.
IngressLsrID	LR_MPLS_Path	An IP address	EMS	Indicates the label switch router (LSR) ID. This parameter is used to create egress or transit tunnels.
EgressLsrID	LR_MPLS_Path	An IP address	EMS	Indicates the LSR ID. This parameter is used to create ingress or transit tunnels.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
MaximumFrameSize	LR_MPLS_Path	Number	EMS	Indicates the maximum frame length.
PW Switch parameters				
IPCrossConnectionID	LR_MPLS_Channel	Number	EMS	Indicates the service ID.
ControlWord	LR_MPLS_Channel	NO_USE, MUST_USE, PREFERRED_USE	EMS	Indicates the control word.
ControlChannelType	LR_MPLS_Channel	None, CW	EMS	Indicates the control channel type.
VCCV	LR_MPLS_Channel	None, Ping	EMS	Indicates the VCCV check mode.
PWType	LR_MPLS_Channel	ATM_N_TO_ONE_VCC, ATM_ONE_TO_ONE_VCC, ATM_N_TO_ONE_VPC, ATM_ONE_TO_ONE_VPC, SATOP, CESOPSN, ETHERNET_TAGGED, ETHERNET, TRANSPARENT,SATOP_E3	EMS	Indicates the PW type.
ConcatMaxCell	LR_MPLS_Channel	Number	EMS	Indicates the maximum concatenation cells.
PacketLoadingTime	LR_MPLS_Channel	Number	EMS	Indicates the packet loading time.
MaximumFrameSize	LR_MPLS_Channel	Number	EMS	Indicates the maximum frame length.
RTP	LR_MPLS_Channel	Enable, Disable	EMS	Specifies whether the

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				RTP header is enabled.
JitterTime	LR_MPLS_Channel	Number	EMS	Indicates the jitter buffer time.
ClockMode	LR_MPLS_Channel	NULL,LinearClockMode	EMS	Indicates the clock mode.
RequestVID	LR_MPLS_Channel	VlanID	EMS	Required during VLAN ID creation and not displayed during queries

**Parent topic:** [HW vpnManager](#)

## 9.4.6.2.12 Source and Sink Ends of Static Tunnels

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This topic describes transmission parameters of source and sink ends of static tunnels.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				
RevOutLabel	LR_MPLS_Path	Number	EMS	Indicates the reverse egress label. This parameter is applicable to source ends of bidirectional tunnels.
RevInLabel	LR_MPLS_Path	Number	EMS	Indicates the reverse ingress

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				label. This parameter is applicable to sink ends of bidirectional tunnels.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.6.2.13 Source and Sink Ends of PW Switches

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This topic describes transmission parameters of source and sink ends of PW switches.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				
PWID	LR_MPLS_Channel	String	EMS	Indicates the PW ID.
SignalType	LR_MPLS_Channel	Static Dynamic	EMS	Indicates a signaling type.
InLabel	LR_MPLS_Channel	Number [16, 1048575]	EMS	Indicates an in label. This parameter is applicable to static PWs.
OutLabel	LR_MPLS_Channel	Number [16, 1048575]	EMS	Indicates an out label. This parameter is applicable to static PWs.
EncapsulationType	LR_MPLS_Channel	MPLS	EMS	Indicates an encapsulation type.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				The value of this parameter is MPLS.
PeerIP	LR_MPLS_Channel	String	EMS	Indicates a peer IP.
BindingObject	LR_MPLS_Channel	String	EMS	Indicates a binding object.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.6.2.14 Traffic Trunk

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This topic describes transmission parameters of traffic trunks. A traffic trunk can be a static CR tunnel, static tunnel, MPLS dynamic tunnel, IP tunnel, or PW.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters, except for PWs				
TrafficTrunkID	LR_MPLS_Path	Number	EMS	Indicates the service ID.
Applicable parameters of static CR tunnels or static tunnels				
BandWidth	LR_MPLS_Path	Number	EMS	Indicates the bandwidth. Unit: kbit/s. The getAllTrafficTrunks interface does not support this parameter.
Type	LR_MPLS_Path	L-LSP, E-LSP	EMS	Indicates the tunnel type. The getAllTrafficTrunks interface does not support this parameter.
EXP	LR_MPLS_Path	Number [0, 7]	EMS	Indicates the EXP. The getAllTrafficTrunks interface does not support this parameter.
BandwidthRemaining	LR_MPLS_Path	Number	EMS	Indicates the free bandwidth. Unit: kbit/s. The getAllTrafficTrunks interface does not support this parameter.
SignalType	LR_MPLS_Path	Static-CR	EMS	Indicates the tunnel signal type.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
PIR	LR_MPLS_Path	Number	EMS	Indicates the peak information rate.
CBS	LR_MPLS_Path	Number	EMS	Indicates the committed burst size.
PBS	LR_MPLS_Path	Number	EMS	Indicates the peak burst size.
Applicable parameters for MPLS dynamic tunnels				
PIR	LR_MPLS_Path	Number	EMS	Indicates the peak information rate.
CBS	LR_MPLS_Path	Number	EMS	Indicates the committed burst size.
BandWidth	LR_MPLS_Path	Number	EMS	Indicates the bandwidth. Unit: kbit/s
Type	LR_MPLS_Path	L-LSP, E-LSP	EMS	Indicates the tunnel type.
PBS	LR_MPLS_Path	Number	EMS	Indicates the peak burst size.
ReRoute	LR_MPLS_Path	Enable, Disable	EMS	Specifies whether to enable rerouting.
FastReRoute	LR_MPLS_Path	Enable, Disable	EMS	Specifies whether to enable fast rerouting.
ProtectionRole	LR_MPLS_Path	Primary, Bypass	EMS	Indicates the protection role.
RoutingStyle	LR_MPLS_Path	string	EMS	Indicates the route constraint. The format of the value is 10.70.65.69/includeLoose/10.70.65.21/includeStrict
SignalType	LR_MPLS_Path	RSVP	EMS	Indicates the tunnel signal type.
Applicable parameters for IP tunnels				
	LR_IP_Path			
Applicable parameters of PWs				
BindingObject	LR_MPLS_Channel	string	EMS	Indicates the binding object. When a user invokes the getAllTrafficTrunks interface of the CORBA NetworkManager, the traffic trails for routers (Including PTN 6900s) in batches are returned only when the configuration item ETRAIL_BULK_SIZE is set to 1. By default, the configuration item is set to 10.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
ServiceType	LR_MPLS_Channel	ETH, CES, ATM	EMS	Indicates the service type.
PrimaryTrailRoutingStyle	LR_MPLS_Path	string	EMS	Indicates the route constraints of the primary trail value is 10.70.65.69/includeLoose/10.70.65.21/excluded.
BackupTrailRoutingStyle	LR_MPLS_Path	string	EMS	Indicates the route constraints of the backup trail value is 10.0.0.35/excluded.

**Parent topic:** [HW vpnManager](#)

## 9.4.6.2.15 FDFr(PWE3)

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This topic describes transmission parameters of E2E PWE3 services, including Ethernet, AES, and EES services.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
General parameters				
BindingObject	LR_ATM_VP LR_ATM_VC LR_ATM_NI LR_E1_2M LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet	String	EMS	Indicates the name of object that binds PW trails.  This parameter applies to AES, CES, and EES services.
ServiceType	LR_ATM_VP LR_ATM_VC LR_ATM_NI LR_E1_2M LR_VT2_and_TU12_VC12 LR_DS0_64K LR_Ethernet	E-LINE, E-LAN, E-TREE	EMS	Indicates the service type.  This parameter applies to AES, CES, and EES services.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
ATM emulation service specific parameters				
	LR_ATM_VP			Indicates ATM VP access.
	LR_ATM_VC			Indicates ATM VC access.
	LR_ATM_NI			Indicates ATM port access.
Circuit emulation service specific parameters				
FrameNum	LR_E1_2M LR_DS0_64K LR_VT2_and_TU12_VC12	Number	EMS	Indicates the number of encapsulated frames.  This parameter applies to three rates of CES services.
	LR_E1_2M			Indicates the rate of the CES service that is received through an E1 port.
	LR_VT2_and_TU12_VC12			Indicates the rate of the CES service that occupies a VC12 timeslot.
	LR_DS0_64K			Indicates the rate of the CES service that occupies a 64-kbit/s timeslot.
Ethernet emulation service specific parameters				
MaximumFrameSize	LR_Ethernet	Number	EMS	Indicates the maximum frame length.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
BPDU	LR_Ethernet	Enabled,Disabled	EMS	Specifies whether to enable the BPDU.
ServiceTagRole	LR_Ethernet	User,Service	EMS	Indicates the service demarcation tag.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.6.2.16 Source Ends of FDFrs (PWE3)

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This topic describes transmission parameters of E2E PWE3 services at the source end.

Parameter Name	Layer Rate	
Ethernet emulation service specific parameters		
IVID	LR_Ethernet	1-4094
ATM emulation service specific parameters		
CTPValue	LR_ATM_VC,LR_ATM_VP,LR_ATM_NI	N/A
Circuit emulation service specific parameters		
EmulationsType	LR_E1_2M,LR_DS0_64K,LR_VT2_and_TU12_VC12,LR_Optional,LR_E1_2M	CHANNEL-
TimeSlots	LR_E1_2M,LR_DS0_64K,LR_VT2_and_TU12_VC12,LR_Optional,LR_E1_2M	N/A
CTPValue	LR_E1_2M,LR_DS0_64K,LR_VT2_and_TU12_VC12,LR_Optional,LR_E1_2M	N/A
Ethernet emulation service specific parameters		
IVID	LR_Ethernet	Number[1, 4094]

Parameter Name	Layer Rate	
IngressQosPolicyName	LR_Ethernet	String
IngressTCPProfileName	LR_Ethernet	\name=EMS
EgressQosPolicyName	LR_Ethernet	String
IngressBandwidthLimit	LR_Ethernet	Enabled,Disabled
EgressBandwidthLimit	LR_Ethernet	Enabled,Disabled
IngressCIR	LR_Ethernet	Number
IngressPIR	LR_Ethernet	Number
EgressCIR	LR_Ethernet	Number
EgressPIR	LR_Ethernet	Number

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.6.2.17 Sink Ends of FDFrs (PWE3)

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This topic describes transmission parameters of E2E PWE3 services at the sink end.

Parameter Name	Layer Rate	Legal Value
Ethernet emulation service specific parameters		
IVID	LR_Ethernet	1-4094
RequestVID	LR_Ethernet	1-4094

Parameter Name	Layer Rate	Legal Value
ATM emulation service specific parameters		
CTPValue	LR_ATM_VC,LR_ATM_VP,LR_ATM_NI	N/A
Circuit emulation service specific parameters		
EmulationsType	LR_E1_2M,LR_DS0_64K,LR_VT2_and_TU12_VC12,LR_Optional,LR_E1_2M	CHANNEL-STM-1 E1
TimeSlots	LR_E1_2M,LR_DS0_64K,LR_VT2_and_TU12_VC12,LR_Optional,LR_E1_2M	N/A
CTPValue	LR_E1_2M,LR_DS0_64K,LR_VT2_and_TU12_VC12,LR_Optional,LR_E1_2M	N/A
IngressQosPolicyName	LR_Ethernet	String
EgressQosPolicyName	LR_Ethernet	String
IngressBandwidthLimit	LR_Ethernet	Enabled,Disabled
EgressBandwidthLimit	LR_Ethernet	Enabled,Disabled
IngressCIR	LR_Ethernet	Number
IngressPIR	LR_Ethernet	Number
EgressCIR	LR_Ethernet	Number
EgressPIR	LR_Ethernet	Number

**Parent topic:** [HW vpnManager](#)

## 9.4.6.2.18 FDFr (VPLS)

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This topic describes transmission parameters of E2E virtual private LAN services (VPLS).

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
NetworkStyle	LR_Ethernet	1:Full-Mesh VPLS; 2:H-VPLS; 4:Daisy Chain; 8:Customized	EMS	Indicates the virtual private LAN service (VPLS) networking style.
ServiceType	LR_Ethernet	E-LAN	EMS	Indicates the service type. This parameter can be queried only through the getFDFr interface.
BindingObject	LR_Ethernet	String	EMS	Indicates the name of object.

**Parent topic:** [HW vpnManager](#)

## 9.4.6.2.19 Source Ends of FDFrs (VPLS)

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This topic describes transmission parameters of E2E virtual private LAN services (VPLS).

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
IVID	LR_Ethernet	Number [1, 4094]	EMS	Indicates the VLAN ID. If there are multiple VLAN IDs, they are separated by a comma. This parameter can be queried only through the getFDFr interface.
SuppressBroadcast	LR_Ethernet	True, False	EMS	Specifies whether to suppress broadcast packets. This parameter

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				can be queried only through the getFDFr interface.
SuppressBroadcastThreshold	LR_Ethernet	Number [1, 4294967295]	EMS	Indicates the threshold for broadcast packet suppression. This parameter can be queried only through the getFDFr interface. The value is returned only when SuppressBroadcast is True.
UnknownSuppressUnicastThreshold	LR_Ethernet	Number [0, 100]	EMS	Indicates the suppression threshold for unknown unicast packets. This parameter can be queried only through the getFDFr interface. The value is returned only when SuppressBroadcast is True.
UnknownSuppressMulticastThreshold	LR_Ethernet	Number [0, 100]	EMS	Indicates the suppression threshold for unknown Multicas packets. This parameter can be queried only through the getFDFr interface. The value is returned only when

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				SuppressBroadcast is True.
IngressQosPolicyName	LR_Ethernet	N/A	EMS	Indicates the name of the ingress QoS policy. This parameter keeps blank always.
EgressQosPolicyName	LR_Ethernet	N/A	EMS	Indicates the name of the egress QoS policy. This parameter keeps blank always.
IngressBandwidthLimit	LR_Ethernet	Enable,Disable	EMS	Indicates the limit of the ingress bandwidth.
EgressBandwidthLimit	LR_Ethernet	Enable,Disable	EMS	Indicates the limit of the egress bandwidth.
IngressCIR	LR_Ethernet	Number	EMS	Ingress assured bandwidth
IngressPIR	LR_Ethernet	Number	EMS	Indicates the peak information rate (PIR) of the ingress.
EgressCIR	LR_Ethernet	Number	EMS	Egress assured bandwidth
EgressPIR	LR_Ethernet	Number	EMS	Indicates the peak information rate (PIR) of the egress.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.6.2.20 Tunnel Trails

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This topic describes transmission parameters of E2E static tunnels.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
SignalType	LR_MPLS_Path	Static-CR	EMS	Indicates the signalling type. The value is always Static-CR.
BandWidth	LR_MPLS_Path	Number{0, 128-4294967295}	EMS	Indicates the bandwidth. Unit: kbit/s. The value 0 indicates that the bandwidth is not limited.
Type	LR_MPLS_Path	L-LSP E-LSP	EMS	Indicates the dynamic tunnel type.
EXP	LR_MPLS_Path	Number[0, 7], None	EMS	Indicates the experimental bits (EXP) priority.
PIR	LR_MPLS_Path	Number{0, 64-2147483647}	EMS	Indicates the PIR (kbit/s). The value 0 indicates that the bandwidth is not limited.
PBS	LR_MPLS_Path	Number{0, 64-16777216}	EMS	Indicates the peak burst size (byte). The value 0 indicates that the bandwidth is not limited.
CBS	LR_MPLS_Path	Number{0, 64-131072}	EMS	Indicates the committed burst size (byte). The value 0 indicates that the bandwidth is not limited.
BandwidthRemaining	LR_MPLS_Path	Number{0, 128-4294967295}	EMS	Indicates the remaining bandwidth. Unit: kbit/s. The value 0 indicates that the

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				bandwidth is not limited.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.6.2.21 PW Trails

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This topic describes transmission parameters of E2E pseudo wires (PWs).

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
BindingObject	LR_MPLS_Channel		EMS	Indicates the binding object. When a user invokes the getAllTrafficTrunks interface of the CORBA NBI to get E2E PW trails for routers (Including PTN 6900s) in the bound tunnel trails are returned only when the configuration item BatchPWSwitch in the server/etc/oss_cfg/nbi/corba/conf/ii_domain_bundle file is set to 1. By default, the configuration item is set to 0.
ServiceType	LR_MPLS_Channel	ATM/CES/ETH	EMS	Indicates the service type.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.6.2.22 Source Ends of PW Trails

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This topic describes transmission parameters of E2E pseudo wires (PWs).

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
PWID	LR_MPLS_Channel		EMS	Indicates the PW ID.
SignalType	LR_MPLS_Channel	Static, Dynamic	EMS	Indicates the signal type.
InLabel	LR_MPLS_Channel	Number	EMS	Indicates the transmit label.
OutLabel	LR_MPLS_Channel	Number	EMS	Indicates the receive label.
EncapsulationType	LR_MPLS_Channel	MPLS, UDP, IP	EMS	Indicates the encapsulation type. Currently, the value can be MPLS.
PWType	LR_MPLS_Channel	ATM_N_TO_ONE_VCC, ATM_ONE_TO_ONE_VCC, ATM_N_TO_ONE_VPC, ATM_ONE_TO_ONE_VPC, SATOP, CESOPSN, ETHERNET_TAGGED, ETHERNET	EMS	Indicates the PW type.
ControlWord	LR_MPLS_Channel	NO_USE, MUST_USE, PREFERRED_USE	EMS	Indicates the control word.
ControlChannelType	LR_MPLS_Channel	None, CW	EMS	Indicates the type of the control channel.
VCCV	LR_MPLS_Channel	None, Ping	EMS	Indicates the VCCV check mode.
BindingObject	LR_MPLS_Channel	String	EMS	Indicates the name of the binding object.
EgressBindingObject	LR_MPLS_Channel	String	EMS	Indicates the name of the egress binding object. This parameter is only applicable to the OptiX RTN 900 of V100R003 version. This parameter must be issued for creating services.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
PeerIP	LR_MPLS_Channel	String	EMS	Indicates the IP address of the remote LSP.
AdminStatus	LR_MPLS_Channel	Enabled,Disabled	EMS	Indicates the enable status. Enabled/Disabled.
WorkingMode	LR_MPLS_Channel	Working, Protection	EMS	Indicates the PW working mode. This parameter is available only when PWE3 services are configured with PW protection groups.
IngressQosPolicyName	LR_MPLS_Channel	String	EMS	Indicates a QoS policy attribute.
EgressQosPolicyName	LR_MPLS_Channel	String	EMS	Indicates a QoS policy attribute.
ATM PW trail				
ConcatMaxCell	LR_MPLS_Channel	Number	EMS	Indicates the maximum number of concatenation cells.
PacketLoadingTime	LR_MPLS_Channel	Number	EMS	Indicates the packet loading time.
VPI	LR_MPLS_Channel	Number	EMS	Indicates the VP number.
VCI	LR_MPLS_Channel	Number	EMS	Indicates the VC number.
CES PW trail				
RTP	LR_MPLS_Channel	Enable, Disable	EMS	Specifies whether to enable the Real-time Transport Protocol (RTP) header.
JitterTime	LR_MPLS_Channel	Number	EMS	Indicates the jitter buffer time.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
PacketLoadingTime	LR_MPLS_Channel	Number	EMS	Indicates the packet loading time.
ClockMode	LR_MPLS_Channel	ExternalClockMode, AdaptiveClockMode	EMS	Indicates the clock mode.
EncapsulationNumber	LR_MPLS_Channel	Number	EMS	Indicates the frame number of the packet encapsulation.
ETH PW trail				
RequestVID	LR_MPLS_Channel	Number[1, 4094]	EMS	Indicates the request VLAN. This parameter is available if PWType is ETHERNET_TAGGED.
IngressBandwidthLimit	LR_MPLS_Channel	Enable,Disable	EMS	Indicates the limit of the ingress bandwidth.
EgressBandwidthLimit	LR_MPLS_Channel	Enable,Disable	EMS	Indicates the limit of the egress bandwidth.
IngressCIR	LR_MPLS_Channel	Number	EMS	Indicates the committed burst size (CBS) of the ingress.
IngressPIR	LR_MPLS_Channel	Number	EMS	Indicates the peak information rate (PIR) of the ingress.
EgressCIR	LR_MPLS_Channel	Number	EMS	Indicates the committed burst size (CBS) of the egress.
EgressPIR	LR_MPLS_Channel	Number	EMS	Indicates the peak information rate (PIR) of the egress.

**Parent topic:** [HW\\_vpManager](#)

## 9.4.6.2.23 MFDFr (AGGR)

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This topic describes transmission parameters of aggregation (AGGR) services.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
ServiceID	LR_Ethernet		EMS	Indicates the ID of the service.
MaximumFrameSize	LR_Ethernet	1500	EMS	Indicates the maximum transmission unit (MTU).

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.6.2.24 Source Ends of MFDFr (AGGR)

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This topic describes transmission parameters of aggregation(AGGR) services at the source.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
IngressQosPolicyName	LR_Ethernet	N/A	EMS	Indicates the name of the ingress QoS profile.
EgressQosPolicyName	LR_Ethernet	N/A	EMS	Indicates the name of the egress QoS profile.
IVID	LR_Ethernet	N/A	EMS	Indicates the list of numbers. The numbers are separated by comma (,).
CTagTranslation_Table_Count	LR_Ethernet	N/A	EMS	Indicates the number of VLAN

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				forwarding entries.
CTagTranslation_Table_External	LR_Ethernet	N/A	EMS	Indicates the VLAN list before forwarding. VLAN IDs are separated by comma (,), for example, 1,2,3.
CTagTranslation_Table_Internal	LR_Ethernet	N/A	EMS	Indicates the VLAN list after forwarding. VLAN IDs are separated by comma (,), for example, 2,3,1.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.6.2.25 Sink Ends of MFDFrs (AGGR)

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This topic describes transmission parameters of aggregation (AGGR) services at the sink.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
SignalType	LR_MPLS_Channel	STATIC, DYNAMIC	EMS	Indicates the signaling type.
PWID	LR_MPLS_Channel	1-4294967295	EMS	Indicates the PW ID.
PWType	LR_MPLS_Channel	SATOP, CESOPSN, ETHERNET_TAGGED, ETHERNET	EMS	Indicates the PW type.
OutLabel	LR_MPLS_Channel	16-1048575 (PTN) 16-1023 (DMS)	EMS	Indicates the transmit label of the static PW.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
InLabel	LR_MPLS_Channel	16-1048575 (PTN) 16-1023 (DMS)	EMS	Indicates the receive label of the static PW.
EncapsulationType	LR_MPLS_Channel	MPLS	EMS	Indicates the encapsulation type.
ControlWord	LR_MPLS_Channel	NO_USE, MUST_USE, PREFERRED_USE	EMS	Indicates the control word.
CtrlChannelType	LR_MPLS_Channel	None, CW	EMS	Indicates the type of the control channel.
VCCV	LR_MPLS_Channel	None, Ping	EMS	Indicates the mode of virtual circuit connectivity verification (VCCV).
BindingObject	LR_MPLS_Channel	N/A	EMS	Indicates the name of the bound object.
PeerIP	LR_MPLS_Channel	N/A	EMS	Indicates the peer IP address.
AdminStatus	LR_MPLS_Channel	Enabled, Disabled	EMS	Indicates the status.
RequestVID	LR_MPLS_Channel	1-4094	EMS	This parameter is available only when PWType is ETHERNET_TAGGED. The PW will add the value of this parameter to untagged packets from the peer as their VLAN IDs. If this parameter is not applied, 66535 is added.
IngressQosPolicyName	LR_MPLS_Channel	N/A	EMS	Indicates the name of the ingress QoS profile.
EgressQosPolicyName	LR_MPLS_Channel	N/A	EMS	Indicates the name of the egress QoS profile. This parameter does not apply to SDH AGGR services.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
CTagTranslation_Table_Count	LR_Ethernet	N/A	EMS	Indicates the number of VLAN forwarding entries.
CTagTranslation_Table_External	LR_Ethernet	N/A	EMS	Indicates the VLAN list before forwarding. VLAN IDs are separated by comma (,), for example, 1,2,3.
CTagTranslation_Table_Internal	LR_Ethernet	N/A	EMS	Indicates the VLAN list after forwarding. VLAN IDs are separated by comma (,), for example, 1,2,3.

**Parent topic:** [HW\\_vpnManager](#)

## 9.4.6.3 trafficConditioningProfile

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This topic describes transmission parameters of the trafficConditioningProfile. The policies managed by the trafficConditioningProfile include portpolicies, Ethernet V-UNI ingress and egress policies, PW policies, ATM policies, ATM CoS mapping, and DS domain mapping.

- **Port Policies**

This topic describes transmission parameters of port policies. These parameters are configured for PTN port policies and traffic classification. For CoS parameters, parameters for PTN port policies with a maximum of eight types.

- **V-UNI Ingress Policies**

This topic describes transmission parameters of Ethernet V-UNI ingress policies such as parameters for PTN port policies and traffic policies. For CoS parameters, parameters for PTN port policies with a maximum of eight types.

- **V-UNI Egress Policies**

This topic describes transmission parameters of Ethernet V-UNI egress policies such as parameters for PTN port policies and traffic policies. For CoS parameters, parameters for PTN port policies with a maximum of eight types.

- **[PW Policies](#)**  
This topic describes transmission parameters of PW policies. Currently only PWs are supported and can be carried on only LSP tunnels. For CoS parameters, parameters for PTN port policies with a maximum of eight types.
- **[ATM Policies](#)**  
This topic describes transmission parameters of ATM policies.
- **[ATM CoS Mapping](#)**  
This topic describes transmission parameters of CoS mapping of ATM services.
- **[HQoS Policy](#)**
- **[DS Domain Mapping](#)**  
This topic describes transmission parameters of the DiffServ domain mapping.
- **[CBQoS Policy](#)**  
This topic describes CBQoS transmission parameters. CBQoS is a type of traffic policy that classifies traffic into different classes according to certain criteria. Therefore, different class traffic can be treated differently. These transmission parameters of traffic behaviors are used for PTN6900 equipment only.
- **[Behavior](#)**  
This topic describes transmission parameters of traffic behaviors. These transmission parameters of traffic behaviors are used for PTN6900 equipment only.
- **[Classification](#)**  
This topic describes the transmission parameters of traffic classification. These transmission parameters of traffic classification are used for PTN6900 equipment and packet equipment.

**Parent topic:** [Transmission Parameters](#)

## 9.4.6.3.1 Port Policies

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This topic describes transmission parameters of port policies. These parameters are configured for PTN port policies and traffic classification. For CoS parameters, parameters for PTN port policies with a maximum of eight types.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
ProfileType	LR_Ethernet	Port	EMS & NMS	Indicates the policy type.
DeviceType	LR_Ethernet	Optix PTN 3900,Optix PTN 1900,Optix PTN 3900-8,Optix PTN 910,Optix PTN 912,Optix PTN 950,Optix OSN 1500,Optix OSN 3500,Optix Metro 1000V3,Optix RTN 910,Optix RTN 950,Optix OSN 7500,Optix OSN 7500II,Optix OSN 500,Optix OSN 8800 T16,Optix OSN 8800 T32,Optix PTN 960,Optix PTN 910-F,OptiX PTN 905,OptiX RTN 905,OptiX RTN 980,OptiX METRO 1000	EMS & NMS	Indicates the device type.
ClassifierShare	LR_Ethernet	Enable, Disable	EMS & NMS	Indicates shared bandwidth of the traffic classification. This parameter is not supported by case-shape equipment.
WRRProfile	LR_Ethernet	String	NMS	Indicates the name of the WRR policy. This parameter is applicable only to RTN900 series equipment.
COS parameters				
Profile_CoS_Table_Count	LR_Ethernet	0-8	NMS	Indicates the number of configuration items. 0

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				indicates the default value.
Profile_CoS_Table	LR_Ethernet	BE, AF1, AF2, AF3, AF4, EF, CS6, CS7	NMS	Table field. It cannot be null.
Profile_CoS_BandwidthLimit	LR_Ethernet	Enable, Disable	EMS & NMS	Indicates the bandwidth limit. It is mandatory during the creation. When the bandwidth limit is enabled, the following parameters can be set.
Profile_CoS_CIR	LR_Ethernet	CIR: 1000-10000000	EMS & NMS	Committed information rate (CIR) indicates the guaranteed rate of a service. Unit: kbit/s.
Profile_CoS_PIR	LR_Ethernet	PIR: 1000-10000000	EMS & NMS	Peak information rate (PIR) indicates the maximum rate of a service. Unit: kbit/s.
Profile_CoS_CBS	LR_Ethernet	CBS: 2-64000	EMS & NMS	Committed burst size (CBS) indicates the committed

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				traffic transiently.
Profile_CoS_PBS	LR_Ethernet	PBS: 2-64000	EMS & NMS	Peak burst size (PBS) indicates the maximum traffic of a service transiently.
Profile_CoS_TailDropLimit	LR_Ethernet	TailDropLimit: port: 0-960, service: 0-4095 (256 bytes)	EMS & NMS	Tail discard threshold.
Traffic classification parameters				
ACLACTION	LR_Ethernet	Enable, Disable	EMS & NMS	ACL action.
DestinationMAC	LR_Ethernet	MAC character string	EMS & NMS	Indicates the destination MAC address.
SourceMAC	LR_Ethernet	MAC character string	EMS & NMS	Indicates the source MAC address.
DSCP	LR_Ethernet	0-63 (highest)	EMS & NMS	Differentiated service code point value.
IPPriority	LR_Ethernet	0-7 (highest)	EMS & NMS	IP-Precedence value.
CVLANID	LR_Ethernet	1-4094	EMS & NMS	CVLAN ID
SourceIP	LR_Ethernet	IP string	EMS & NMS	Source IP address.
DestinationIP	LR_Ethernet	IP string	EMS & NMS	Destination IP address.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
ProtocolType	LR_Ethernet	TCP, UDP, ICMP, IGMP	EMS & NMS	Protocol type.
SourcePort	LR_Ethernet	Source port	EMS & NMS	Source port.
DestinationPort	LR_Ethernet	Destination port	EMS & NMS	Destination port.
ICMP	LR_Ethernet	ECHO, ECHO_REPLY, FRAGMENTNEED_DFSET, HOST_REDIRECT, HOST_TOS_REDIRECT, HOST_UNREACHABLE, INFORMATION_REPLY, INFORMATION_REQUEST, NET_REDIRECT, NET_TOS_REDIRECT, NET_UNREACHABLE, PARAMETER_PROBLEM, PORT_UNREACHABLE, PROTOCOL_UNREACHABLE, REASSEMBLY_TIMEOUT, SOURCE_QUENC	EMS & NMS	ICMP packet type.
CVLANPriority	LR_Ethernet	0-7 (highest)	EMS & NMS	CVLAN priority.
SVLANID	LR_Ethernet	1-4094	EMS & NMS	SVLAN ID.
SVLANPriority	LR_Ethernet	0-7 (highest)	EMS & NMS	SVLAN priority.
DEI	LR_Ethernet	0-1	EMS & NMS	Drop eligible indicator.
Cos	LR_Ethernet	None, CS7, CS6, EF, AF4, AF3, AF2, AF1, BE	EMS & NMS	The CoS parameter indicates the class of service. Eight CoS values, that is, CS7, CS6, EF, AF4, AF3,

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				AF2, AF1, and BE, are available according to the standard. Different CoS values correspond to different queues.
BindwidthLimit	LR_Ethernet	Enable, Disable	EMS & NMS	Specifies whether to enable bandwidth limit. If bandwidth limit is disabled, remarking and recoloring are prohibited.
CIR	LR_Ethernet	PTN: 320-20000000 DMS: 100-10000000	EMS & NMS	Committed information rate (CIR) indicates the guaranteed rate of a service.
PIR	LR_Ethernet	PTN: 320-20000000 DMS: 100-10000000	EMS & NMS	Peak information rate (PIR) indicates the maximum rate of a service.
CBS	LR_Ethernet	PTN: 16000-10000000 DMS: 0-33554432	EMS & NMS	Committed burst size (CBS) indicates the committed

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				traffic transiently.
PBS	LR_Ethernet	PTN: 16000-10000000 DMS: 0-33554432	EMS & NMS	Peak burst size (PBS) indicates the maximum traffic of a service transiently.
ColorationMode	LR_Ethernet	ColorBlind, ColorAware	EMS & NMS	Coloration mode. ColorBlind indicates the color blindness mode. The CAR is directly performed for the user packets, which are marked according to the CAR result. ColorAware indicates the color sensitive mode. The CAR are performed for the packets. The CAR result is compared with the color of the packet. Then, mark the packets in a darker color. The colors of the

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				packet in sequence are red, yellow, and green.
GreenMode	LR_Ethernet	Pass, Discard, Remark	EMS & NMS	Green processing mode. When the remarking is selected, the following CoS and color of the remarking are available. The yellow and red modes are similar.
GreenRemarkCoS	LR_Ethernet	None, CS7, CS6, EF, AF4, AF3, AF2, AF1, BE	EMS & NMS	Green remarking CoS.
GreenRemarkColor	LR_Ethernet	Green, Yellow, Red, None	EMS & NMS	Green remarking color.
YellowMode	LR_Ethernet	Pass, Discard, Remark	EMS & NMS	Yellow processing mode.
YellowRemarkCoS	LR_Ethernet	None, CS7, CS6, EF, AF4, AF3, AF2, AF1, BE	EMS & NMS	Yellow remarking CoS.
YellowRemarkColor	LR_Ethernet	Green, Yellow, Red, None	EMS & NMS	Yellow remarking color.
RedMode	LR_Ethernet	Pass, Discard, Remark	EMS & NMS	Red processing mode.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
RedRemarkCoS	LR_Ethernet	Pass, Discard, Remark	EMS & NMS	Red processing mode.
RedRemarkColor	LR_Ethernet	Green, Yellow, Red, None	EMS & NMS	Red remarking color.
EgressBindwidthLimit	LR_Ethernet	Enabled/Disabled/PartialEnable/Invalid	EMS & NMS	Egress bandwidth limitation status. The default value is Invalid, which indicates an invalid attribute.
EgressCIR	LR_Ethernet	Number[64,10000000]	EMS & NMS	Egress CIR.
EgressPIR	LR_Ethernet	Number[64,10000000]	EMS & NMS	Egress PIR.
EgressCBS	LR_Ethernet	Number[64,10000000]	EMS & NMS	Egress CBS.
EgressPBS	LR_Ethernet	Number[64,10000000]	EMS & NMS	Egress PBS.

**Parent topic:** [trafficConditioningProfile](#)

## 9.4.6.3.2 V-UNI Ingress Policies

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This topic describes transmission parameters of Ethernet V-UNI ingress policies such as parameters for PTN port policies and traffic policies. For CoS parameters, parameters for PTN port policies with a maximum of eight types.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				
ClassifierShare	LR_Ethernet	Enable, Disable	EMS & NMS	Indicates the shared bandwidth of the traffic classification. This parameter is not supported by case-shape equipment.
ProfileType	LR_Ethernet	VUNIIngress	EMS & NMS	Indicates the policy type.
DeviceType	LR_Ethernet	Optix PTN 3900,Optix PTN 1900,Optix PTN 3900-8,Optix PTN 910,Optix PTN 912,Optix PTN 950,Optix OSN 1500,Optix OSN 3500,Optix Metro 1000V3,Optix RTN 910,Optix RTN 950,Optix OSN 7500,Optix OSN 7500II,Optix OSN 500,Optix OSN 8800 T16,Optix OSN 8800 T32,Optix PTN 960,Optix PTN 910-F,OptiX PTN 905,OptiX RTN 905,OptiX RTN 980,OptiX METRO 1000	EMS & NMS	Indicates the device type.
WRRProfile	LR_Ethernet	String	NMS	Indicates the name of the WRR policy. This parameter is applicable only to RTN900 series equipment.
COS parameters				
Profile_CoS_Table_Count	LR_Ethernet	0-8		Number of configuration items. 0

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				indicates the default value. This parameter must be set if CoS parameters need to be set.
Profile_CoS_Table	LR_Ethernet	BE, AF1, AF2, AF3, AF4, EF, CS6, CS7		Table field. It cannot be null.
Profile_CoS_BandwidthLimit	LR_Ethernet	Enable, Disable	EMS & NMS	Bandwidth limit. It is mandatory during the creation. When the bandwidth limit is enabled, the following parameters can be set.
Profile_CoS_CIR	LR_Ethernet	CIR: 1000-10000000 kbit/s	EMS & NMS	Committed information rate (CIR) indicates the guaranteed rate of a service.
Profile_CoS_PIR	LR_Ethernet	PIR: 1000-10000000 kbit/s	EMS & NMS	Peak information rate (PIR) indicates the maximum rate of a service.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Profile_CoS_CBS	LR_Ethernet	CBS: 2-64000 kbit/s	EMS & NMS	Committed burst size (CBS) indicates the committed traffic transiently.
Profile_CoS_PBS	LR_Ethernet	PBS: 2-64000 kbit/s	EMS & NMS	Peak burst size (PBS) indicates the maximum traffic of a service transiently.
Profile_CoS_TailDropLimit	LR_Ethernet	TailDropLimit: Port: 0-960, Service: 0-4095 (256 bytes)	EMS & NMS	Tail discard threshold.
Traffic classification parameters				
ACLACTION	LR_Ethernet	Enable, Disable	EMS & NMS	ACL action.
DestinationMAC	LR_Ethernet	MAC character string	EMS & NMS	Destination MAC address.
SourceMAC	LR_Ethernet	MAC character string	EMS & NMS	Source MAC address.
DSCP	LR_Ethernet	0-63 (highest)	EMS & NMS	Differentiated service code point value.
IPPriority	LR_Ethernet	0-7 (highest)	EMS & NMS	IP-Precedence value.
CVLANID	LR_Ethernet	1-4094	EMS & NMS	CVLAN ID.
SourceIP	LR_Ethernet	IP string	EMS & NMS	Source IP address.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
DestinationIP	LR_Ethernet	IP string	EMS & NMS	Destination IP address.
ProtocolType	LR_Ethernet	TCP, UDP, ICMP, IGMP	EMS & NMS	Protocol type.
SourcePort	LR_Ethernet	Source port	EMS & NMS	Source port.
DestinationPort	LR_Ethernet	Destination port	EMS & NMS	Destination port.
ICMP	LR_Ethernet	ECHO, ECHO_REPLY, FRAGMENTNEED_DFSET, HOST_REDIRECT, HOST_TOS_REDIRECT, HOST_UNREACHABLE, INFORMATION_REPLY, INFORMATION_REQUEST, NET_REDIRECT, NET_TOS_REDIRECT, NET_UNREACHABLE, PARAMETER_PROBLEM, PORT_UNREACHABLE, PROTOCOL_UNREACHABLE, REASSEMBLY_TIMEOUT, SOURCE_QUENC	EMS & NMS	ICMP packet type.
CVLANPriority	LR_Ethernet	0-7 (highest)	EMS & NMS	CVLAN priority.
SVLANID	LR_Ethernet	1-4094	EMS & NMS	SVLAN ID
SVLANPriority	LR_Ethernet	0-7 (highest)	EMS & NMS	SVLAN priority.
DEI	LR_Ethernet	0-1	EMS & NMS	Drop eligible indicator.
Traffic behavior parameter				
CoS	LR_Ethernet	None, CS7, CS6, EF, AF4, AF3, AF2, AF1, BE	EMS & NMS	The CoS parameter indicates the class of

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				service. Eight CoS values, that is, CS7, CS6, EF, AF4, AF3, AF2, AF1, and BE, are available according to the standard. Different CoS values correspond to different queues.
BindwidthLimit	LR_Ethernet	Enable, Disable	EMS & NMS	Specifies whether to enable bandwidth limit. If bandwidth limit is disabled, remarking and recoloring are prohibited.
CIR	LR_Ethernet	PTN: 320-20000000 DMS: 100-10000000	EMS & NMS	Committed information rate (CIR) indicates the guaranteed rate of a service.
PIR	LR_Ethernet	PTN: 320-20000000 DMS: 100-10000000	EMS & NMS	Peak information rate (PIR) indicates the maximum rate of a service.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
CBS	LR_Ethernet	PTN: 16000-10000000 DMS: 0-33554432	EMS & NMS	Committed burst size (CBS) indicates the committed traffic transiently.
PBS	LR_Ethernet	PTN: 16000-10000000 DMS: 0-33554432	EMS & NMS	Peak burst size (PBS) indicates the maximum traffic of a service transiently.
GroomingPolicy	LR_Ethernet	SP, WRR, WFQ	EMS & NMS	Grooming policy after reloading
ColorationMode	LR_Ethernet	ColorBlind, ColorAware	EMS & NMS	Coloration mode. ColorBlind indicates the color blindness mode. The CAR is directly performed for the user packets, which are marked according to the CAR result. ColorAware indicates the color sensitive mode. The CAR are performed for the packets.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				The CAR result is compared with the color of the packet. Then, mark the packets in a darker color. The colors of the packet in sequence are red, yellow, and green.
GreenMode	LR_Ethernet	Pass, Discard, Remark	EMS & NMS	Green processing mode. When the remarking is selected, the following CoS and color of the remarking are available. The yellow and red modes are similar.
GreenRemarkCoS	LR_Ethernet	None, CS7, CS6, EF, AF4, AF3, AF2, AF1, BE	EMS & NMS	Green remarking CoS.
GreenRemarkColor	LR_Ethernet	Green, Yellow, Red, None	EMS & NMS	Green remarking color.
YellowMode	LR_Ethernet	Pass, Discard, Remark	EMS & NMS	Yellow processing mode.
YellowRemarkCoS	LR_Ethernet	None, CS7, CS6, EF, AF4, AF3, AF2, AF1, BE	EMS & NMS	Yellow remarking CoS.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
YellowRemarkColor	LR_Ethernet	Green, Yellow, Red, None	EMS & NMS	Yellow remarking color.
RedMode	LR_Ethernet	Pass, Discard, Remark	EMS & NMS	Red processing mode.
RedRemarkCoS	LR_Ethernet	None, CS7, CS6, EF, AF4, AF3, AF2, AF1, BE	EMS & NMS	Red remarking CoS.
RedRemarkColor	LR_Ethernet	Green, Yellow, Red, None	EMS & NMS	Red remarking color.
EgressBindwidthLimit	LR_Ethernet	Enabled/Disabled/PartialEnable/Invalid	EMS & NMS	Egress bandwidth limitation status. The default value is Invalid, which indicates an invalid attribute.

Parent topic: [trafficConditioningProfile](#)

### 9.4.6.3.3 V-UNI Egress Policies

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This topic describes transmission parameters of Ethernet V-UNI egress policies such as parameters for PTN port policies and traffic policies. For CoS parameters, parameters for PTN port policies with a maximum of eight types.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
ClassifierShare	LR_Ethernet	Enable, Disable	EMS & NMS	Indicates the shared bandwidth of the traffic classification. This parameter is not supported by case-shape equipment.
ProfileType	LR_Ethernet	VUNIEgress	EMS & NMS	Indicates the policy type.
DeviceType	LR_Ethernet	Common	EMS & NMS	Indicates the device type.
WRRProfile	LR_Ethernet	String	NMS	Indicates the name of the WRR policy. This parameter is applicable only to RTN900 series equipment.
COS parameters				
Profile_CoS_Table_Count	LR_Ethernet	0-8		Number of configuration items. 0 indicates the default value.
Profile_CoS_Table	LR_Ethernet	BE, AF1, AF2, AF3, AF4, EF, CS6, CS7	EMS & NMS	Table field. It cannot be null.
Profile_CoS_BandwidthLimit	LR_Ethernet	Enable, Disable	EMS & NMS	Bandwidth limit. It is mandatory during the creation. When the bandwidth limit is enabled, the following

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				parameters can be set.
Profile_CoS_CIR	LR_Ethernet	CIR: 1000-10000000 kbit/s	EMS & NMS	Committed information rate (CIR) indicates the guaranteed rate of a service.
Profile_CoS_PIR	LR_Ethernet	PIR: 1000-10000000 kbit/s	EMS & NMS	Peak information rate (PIR) indicates the maximum rate of a service.
Profile_CoS_CBS	LR_Ethernet	CBS: 2-64000 kbit/s	EMS & NMS	Committed burst size (CBS) indicates the committed traffic transiently.
Profile_CoS_PBS	LR_Ethernet	PBS: 2-64000 kbit/s	EMS & NMS	Peak burst size (PBS) indicates the maximum traffic of a service transiently.
Profile_CoS_TailDropLimit	LR_Ethernet	TailDropLimit: Port: 0-960, Service: 0-4095 (256 bytes)	EMS & NMS	Tail discard threshold.
GroomingPolicy	LR_Ethernet	SP, WRR, WFQ	EMS & NMS	Grooming policy after reloading

**Parent topic:** [trafficConditioningProfile](#)

## 9.4.6.3.4 PW Policies

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This topic describes transmission parameters of PW policies. Currently only PWs are supported and can be carried on only LSP tunnels. For CoS parameters, parameters for PTN port policies with a maximum of eight types.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				
SignalType	LR_Ethernet	STATIC, DYNAMIC		PW signaling type.
WRRProfile	LR_Ethernet	String	NMS	Indicates the name of the WRR policy. This parameter is applicable only to RTN900 series equipment.
COS parameters				
ProfileType	LR_Ethernet	PW	EMS & NMS	Indicates the policy type.
DeviceType	LR_Ethernet	Common	EMS & NMS	Indicates the device type.
Profile_CoS_Table_Count	LR_Ethernet	0-8		Number of configuration items. 0 indicates the default value.
Profile_CoS_Table	LR_Ethernet	BE, AF1, AF2, AF3, AF4, EF, CS6, CS7	EMS & NMS	Table field. It cannot be null.
Profile_CoS_BandwidthLimit	LR_Ethernet	Enable, Disable	EMS & NMS	Bandwidth limit. It is mandatory during the creation. When the bandwidth limit is enabled, the following parameters can be set.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Profile_CoS_CIR	LR_Ethernet	CIR: 1000-10000000 kbit/s	EMS & NMS	Committed information rate (CIR) indicates the guaranteed rate of a service.
Profile_CoS_PIR	LR_Ethernet	PIR: 1000-10000000 kbit/s	EMS & NMS	Peak information rate (PIR) indicates the maximum rate of a service.
Profile_CoS_CBS	LR_Ethernet	CBS: 2-64000 kbit/s	EMS & NMS	Committed burst size (CBS) indicates the committed traffic of a service transiently.
Profile_CoS_PBS	LR_Ethernet	PBS: 2-64000 kbit/s	EMS & NMS	Peak burst size (PBS) indicates the maximum traffic of a service transiently.
Profile_CoS_TailDropLimit	LR_Ethernet	TailDropLimit: Port: 0-960, Service: 0-4095 (256 bytes)	EMS & NMS	Tail discard threshold.
GroomingPolicy	LR_Ethernet	SP, WRR, WFQ	EMS & NMS	Grooming policy after reloading

**Parent topic:** [trafficConditioningProfile](#)

## 9.4.6.3.5 ATM Policies

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This topic describes transmission parameters of ATM policies.

<b>Parameter Name</b>	<b>Layer Rate</b>	
Generally applicable parameters		
ConnectionID	LR_Ethernet	Integer
ServiceType	LR_Ethernet	UBR/CBR/RT-VBR/NRT-VBR/UBR+
ProfileType	LR_Ethernet	ATM
DeviceType	LR_Ethernet	Common
TrafficType	LR_Ethernet	NoTrafficDescriptor/NoClpNoScr/ClpNoTaggingNoScr/ClpTaggingNoScr/NoClpScr/ClpN ficDescriptorMcr/AtmNoClpMcr/AtmNoClpMcrCdvt

<b>Parameter Name</b>	<b>Layer Rate</b>	
Clp01Pcr	LR_Ether net	90-1412828
Clp01Scr	LR_Ether net	90-1412828
Clp0Pcr	LR_Ether net	90-1412828
Clp0Scr	LR_Ether net	90-1412828
Clp01Mcr	LR_Ether net	90-1412828
MaxCellPeekSize	LR_Ether net	2-200000
CDVT	LR_Ether net	7-13300000

Parameter Name	Layer Rate	
TrafficFrameTag	LR_Ethernet	Enable, Disable
UpcNpc	LR_Ethernet	Enable, Disable

**Parent topic:** [trafficConditioningProfile](#)

## 9.4.6.3.6 ATM CoS Mapping

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This topic describes transmission parameters of CoS mapping of ATM services.

Parameter Name	Layer Rate	Legal Values
Generally applicable parameters		
UBR	LR_Ethernet	BE/AF11/AF12/AF13/AF21/AF22/AF23/AF31/AF32/AF33/AF41/AF42/AF43/EF/CS6/CS7

Parameter Name	Layer Rate		Legal Values
ProfileType	LR_Ethernet	ATMCoSMapping	
DeviceType	LR_Ethernet	Common	
CBR	LR_Ethernet	BE/AF11/AF12/AF13/AF21/AF22/AF23/AF31/AF32/AF33/AF41/AF42/AF43/EF/CS6/CS7	

<b>Parameter Name</b>	<b>Layer Rate</b>	<b>Legal Values</b>
RT_VBR	LR_Ethernet	BE/AF11/AF12/AF13/AF21/AF22/AF23/AF31/AF32/AF33/AF41/AF42/AF43/EF/CS6/CS7
NRT_VBR	LR_Ethernet	BE/AF11/AF12/AF13/AF21/AF22/AF23/AF31/AF32/AF33/AF41/AF42/AF43/EF/CS6/CS7

Parameter Name	Layer Rate	Legal Values
UBR+	LR_Ethernet	BE/AF11/AF12/AF13/AF21/AF22/AF23/AF31/AF32/AF33/AF41/AF42/AF43/EF/CS6/CS7
POR-T TRANS	LR_Ethernet	BE/AF11/AF12/AF13/AF21/AF22/AF23/AF31/AF32/AF33/AF41/AF42/AF43/EF/CS6/CS7

**Parent topic:** [trafficConditioningProfile](#)

## **9.4.6.3.7 HQoS Policy**

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Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Generally applicable parameters				
ProfileType	LR_Ethernet	HQoS	EMS & NMS	Indicates the profile type.
DeviceType	LR_Ethernet	Common	EMS & NMS	Indicates the device type.
User queue parameters				
UserQueue_Direction	LR_Ethernet	UNIDIRECTIONAL/BIDIRECTIONAL	EMS & NMS	Indicates the direction of user queue.
UserQueue_IngressCIR	LR_Ethernet	Number	EMS & NMS	Indicates the ingress committed information rate of user queue.
UserQueue_IngressPIR	LR_Ethernet	Number	EMS & NMS	Indicates the ingress peak information rate of user queue.
Car parameters				
Car_Direction	LR_Ethernet	UNIDIRECTIONAL/BIDIRECTIONAL	EMS & NMS	Indicates the direction of CAR.
Car_IngressCIR	LR_Ethernet	Number	EMS & NMS	Indicates the ingress committed information rate of CAR.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Car_IngressPIR	LR_Ethernet	Number	EMS & NMS	Indicates the ingress peak information rate of CAR.
Car_IngressCBS	LR_Ethernet	Number	EMS & NMS	Indicates the ingress committed burst size of CAR.
Car_IngressPBS	LR_Ethernet	Number	EMS & NMS	Indicates the ingress peak burst size of CAR.
Car_IngressGreenAction	LR_Ethernet	Pass/Discard	EMS & NMS	Indicates the ingress green packet action of CAR.
Car_IngressYellowAction	LR_Ethernet	Pass/Discard	EMS & NMS	Indicates the ingress yellow packet action of CAR.
Car_IngressRedAction	LR_Ethernet	Pass/Discard	EMS & NMS	Indicates the ingress red packet action of CAR.
Suppression parameters				
Suppression_Direction	LR_Ethernet	UNIDIRECTIONAL/BIDIRECTIONAL	EMS & NMS	Indicates the direction suppressed by the

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				ingress packet.
Suppression_IngressCIR	LR_Ethernet	Number	EMS & NMS	Indicates the CIR suppressed by the ingress packet.
Suppression_IngressCBS	LR_Ethernet	Number	EMS & NMS	Indicates the CBS suppressed by the ingress packet.
Suppression_IngressType	LR_Ethernet	Multicast-Suppression/Broadcast-Suppression/Unknown-Unicast-Suppression	EMS & NMS	Indicates the type suppressed by the ingress packet.

**Parent topic:** [trafficConditioningProfile](#)

## 9.4.6.3.8 DS Domain Mapping

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This topic describes transmission parameters of the DiffServ domain mapping.

Parameter Name	Layer Rate	Legal Values
Generally applicable parameters		
PackageType	LR_Ethernet	CVLAN/SVLAN/IP_DSCP/MPLS_EXP

Parameter Name	Layer Rate	Legal Values
Ingress_<#P1>_<#P2>_Table_Count	LR_Ethernet	Number[number of table entries] 1~n

Parameter Name	Layer Rate	Legal Values
ProfileType	LR_Ethernet	DSDomain
DeviceType	LR_Ethernet	Common
Ingress_<#P1>_<#P2>_Table	LR_Ethernet	Structure:<Priority#1>,<Priority#2>,...<Priority#N>

Parameter Name	Layer Rate	Legal Values

Parameter Name	Layer Rate	Legal Values
Ingress_<#P1>_<#P2>_CoS_Table	LR_Ethernet	Structure:<BE AF1 AF2 ..CS6>,<BE AF11 AF12 ..CS6>,<BE AF11 AF12 ..CS6>

Parameter Name	Layer Rate	Legal Values
Egress_<#P1>_<#P2>_Table_Count	LR_Ethernet	Number[number of table entries] 1~n

Parameter Name	Layer Rate	Legal Values
Egress_<#P1>_<#P2>_Table	LR_Ethernet	Structure:<Priority#1>,<Priority#2>,...<Priority#N>

Parameter Name	Layer Rate	Legal Values
Egress_<#P1>_<#P2>_CoS_Table	LR_Ethernet	Structure:<BE AF1 AF2..CS6>,<BE AF11 AF12..CS6>,<BE AF11 AF12..CS6>

Parameter Name	Layer Rate	Legal Values

Parameter Name	Layer Rate	Legal Values

**Parent topic:** [trafficConditioningProfile](#)

## 9.4.6.3.9 CBQoS Policy

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This topic describes CBQoS transmission parameters. CBQoS is a type of traffic policy that classifies traffic into different classes according to certain criteria. Therefore, different class traffic can be treated differently. These transmission parameters of traffic behaviors are used for PTN6900 equipment only.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comments
ProfileType	LR_Ethernet	CBQoS	EMS & NMS	Profile
DeviceType	LR_Ethernet	The NE name is returned if device types need to be distinguished. The value Common is returned if there is no need to distinguish device types.	EMS & NMS	Indicates the device type. It is generally applicable to all parameters. All policies contain this parameter when the profile is queried.
ShareModeStatus	LR_Ethernet	EnabledDisabled	EMS & NMS	Specifies whether enable sharing mode.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comments
Statistic_Status	LR_Ethernet	EnabledDisabled	EMS & NMS	Specifies whether enable traffic statistic.
Class_Behavior_Relation_Priority_Table_Count	LR_Ethernet	Number [number of table entries]	N/A	Indicates the relation table between the traffic classifier and traffic behavior in the CB traffic policy.
Class_Behavior_Relation_Classification	LR_Ethernet	Structure: <Name#1>,<Name#2>,<Name#n>	N/A	Indicates the relation table between the traffic classifier and traffic behavior in the CB traffic policy.
Class_Behavior_Relation_Behavior	LR_Ethernet	Structure: <Name#1>,<Name#2>,<Name#n>	N/A	Indicates the relation table between the traffic classifier and traffic behavior in the CB traffic policy.

**Parent topic:** [trafficConditioningProfile](#)

## 9.4.6.3.10 Behavior

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This topic describes transmission parameters of traffic behaviors. These transmission parameters of traffic behaviors are used for PTN6900 equipment only.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
ACLAction	LR_Ethernet	Enable/Disable	EMS & NMS	ACL action
ProfileType	LR_Ethernet	Behavior	EMS & NMS	Profile type
DeviceType	LR_Ethernet	The NE name is returned if device types need to be distinguished. The value Common or SWITCH is returned if there is no need to distinguish device types.	EMS & NMS	Indicates the device type. It is a generally applicable parameter. All policies are contained when this parameter is queried.
BandwidthLimit	LR_Ethernet	Enable/Disable	EMS & NMS	Specifies whether to Enable the traffic behavior bandwidth limit.
Car_GreenAction	LR_Ethernet	Pass, Discard	EMS & NMS	Indicates a processing mode.
Car_YellowAction	LR_Ethernet	Pass, Discard	EMS & NMS	Indicates a processing mode.
Car_RedAction	LR_Ethernet	Pass, Discard	EMS & NMS	Indicates a processing mode.
CIR	LR_Ethernet	0-4294967295	EMS & NMS	Indicates the committed information rate.
PIR	LR_Ethernet	0-4294967295	EMS & NMS	Indicates the maximum rate for services to pass.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
CBS	LR_Ethernet	0-4294967295	EMS & NMS	Indicates the committed burst size for traffic to pass in a short time.
PBS	LR_Ethernet	0-4294967295	EMS & NMS	Indicates the peak burst size.

**Parent topic:** [trafficConditioningProfile](#)

## 9.4.6.3.11 Classification

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This topic describes the transmission parameters of traffic classification. These transmission parameters of traffic classification are used for PTN6900 equipment and packet equipment.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
Operator	LR_Ethernet	And, Or	EMS & NMS	Indicates the logical relation type. You can configure the traffic classifier type again when it is Or.
ProfileType	LR_Ethernet	Classification	EMS & NMS	Profile type
DeviceType	LR_Ethernet	The NE name is returned if device types need to be distinguished. The value Common or SWITCH is returned if there is no need to distinguish device types.	EMS & NMS	Indicates the device type. It is a generally applicable parameter. All policies are contained when this parameter is queried.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
MatchAllPackets	LR_Ethernet	Enable	EMS & NMS	Specifies whether to enable the matching of all the packets.
DSCP	LR_Ethernet	0-63 (maximum)	EMS & NMS	DSCPIndicates the differentiated services code point.
IPPriority	LR_Ethernet	0-7 (maximum)	EMS & NMS	Indicates the IP priority.
ACL Group No	LR_Ethernet		EMS & NMS	Indicates the ACL group ID.
802_1P	LR_Ethernet	0-7 (maximum)	EMS & NMS	Indicates the VLAN frame priority.
SourceMAC	LR_Ethernet	String	EMS & NMS	Indicates the source MAC address.
DestinationMAC	LR_Ethernet	String	EMS & NMS	Indicates the destination MAC address.
TcpSYN	LR_Ethernet	0-63	EMS & NMS	Indicates the TCP SYN flag.
MPLSEXP	LR_Ethernet	0-7 (maximum)	EMS & NMS	Indicates the EXP value of MPLS packets.
VLANID	LR_Ethernet	1-4094	EMS & NMS	Indicates the VLAN ID. This parameter is only applicable to switches.

**Parent topic:** [trafficConditioningProfile](#)

## 9.4.6.4 trailNtwProtection

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This topic describes transmission parameters of trailNtwProtection, including the wait-to-restore (WTR) time, switching mode, switching position, and hold-off time.

- [trailNtwProtection](#)

This topic describes transmission parameters of trailNtwProtection, including the wait-to-restore (WTR) time, switching mode, switching position, and hold-off time.

**Parent topic:** [Transmission Parameters](#)

### 9.4.6.4.1 trailNtwProtection

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This topic describes transmission parameters of trailNtwProtection, including the wait-to-restore (WTR) time, switching mode, switching position, and hold-off time.

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
wtrTime		60-720	NMS	Indicates the WTR time at the source end. Unit: s. This parameter is valid in revertive mode.
SwitchMode		SingleEnded, DualEnded, Unknown	NMS	Indicates the switching mode.
SwitchPosition		On WorkingTunnel, On ProtectingTunnel, UnknownCaret	NMS	Indicates the switching position.
HoldOffTime		0-100	NMS	Indicates the hold-off time at the source end. Unit: 100 ms.
SinkWtrTime		60-720	NMS	Indicates the sink WTR time. Unit: s. This parameter is

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
				valid in revertive mode.
SinkHoldOffTime		0-100	NMS	Indicates the sink hold-off time. Unit: 100 ms.

**Parent topic:** [trailNtwProtection](#)

## 9.4.6.5 encapsulationLayerLink

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Transmission parameters managed by encapsulationLayerLink include EncapsulationLayerLink.

- [ELL\\_T](#)

**Parent topic:** [Transmission Parameters](#)

## 9.4.6.5.1 ELL\_T

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Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
ActivateStatus	Indicates the layer rate of the bound SDH trail. The value can be LR_E1_2M, LR_E3_34M, LR_E4_140M, LR_STS3c_and_AU4_VC4, LR_STS12c_and_VC4_4c, LR_STS24c_and_VC4_8c, LR_STS48c_and_VC4_16c, or LR_STS192c_and_VC4_64c.			
Direction	Indicates the layer rate of the bound SDH trail. The value can be LR_E1_2M,			

Parameter Name	Layer Rate	Legal Values	Potentially settable from	Comment
	LR_E3_34M, LR_E4_140M, LR_STS3c_and_AU4_VC4, LR_STS12c_and_VC4_4c, LR_STS24c_and_VC4_8c, LR_STS48c_and_VC4_16c, or LR_STS192c_and_VC4_64c.			
BandNum	Indicates the layer rate of the bound SDH trail. The value can be LR_E1_2M, LR_E3_34M, LR_E4_140M, LR_STS3c_and_AU4_VC4, LR_STS12c_and_VC4_4c, LR_STS24c_and_VC4_8c, LR_STS48c_and_VC4_16c, or LR_STS192c_and_VC4_64c.			

**Parent topic:** [encapsulationLayerLink](#)

## 9.4.6.6 flowDomain

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Services managed by flowDomain include E2E Ethernet services (PWE3 and VPLS) on the U2000.

- **[FlowDomainFragment](#)**

This topic describes the transmission parameters of E2E Ethernet services (PWE3 and VPLS) on the U2000.

**Parent topic:** [Transmission Parameters](#)

### 9.4.6.6.1 FlowDomainFragment

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This topic describes the transmission parameters of E2E Ethernet services (PWE3 and VPLS) on the U2000.

Parameter Name	Layer Rate	Legal Values
Generally applicable parameters		
FlowdomainFragmentType	LR_Ether	FDFRTYPE_EPL/FDFRTYPE_EVPL/FDFRTYPE_EPLAN/FDFRTYPE_QINQ
Terminal	LR_Ether	TRUE/FALSE

**Parent topic:** [flowDomain](#)

## 9.4.7 Format of Notification Events

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In the additionalInfoUsage.pdf and AVC\_SC\_Notifications.pdf among the supporting documentation of the TMF 814 recommendation, the structure of each notification event of the CORBA interface is described. This chapter presents the detailed definitions of the structure of the notification events.

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### NOTE:

By default, the CORBA NBI does not send notifications for access device resource changes. If the OSS needs to know about these changes, set the configuration item BMS\_NOTIFY\_ENABLE\_NBI\_SWITCH for the access subsystem by referring to the "Guidelines for Configuring Configuration Items Using the GUI-based Tool".

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- **[Format of the NT\\_OBJECT\\_CREATION Event](#)**

This topic describes the format of notification events upon the creation of the following objects: inventories, subnet connections, and services.

- **[Format of the NT\\_OBJECT\\_DELETION Event](#)**

This topic describes the format of notification events upon the deletion of the following objects: inventories, subnet connections, and services.

- **[Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event](#)**

This topic describes the format of notification events that are reported when the attributes of the following objects are changed: inventory, subnet connections, and services.

- [Format of the NT\\_STATE\\_CHANGE Event](#)

This topic describes the formats of notification events reported when the status of the following objects are changed: inventories, subnet connections, and services.

- [Format of the NT\\_PROTECTION\\_SWITCH Event](#)

This topic describes the format of notifications on switching of the following objects: linear SDH protection groups, ring SDH protection groups, and OTN subnetwork connection protection (SNCP) groups.

- [Format of the NT\\_ATMPROTECTION\\_SWITCH Event](#)

This topic describes the formats of notification events reported upon the switching of an ATM protection group.

- [Format of the NT\\_WDMPROTECTION\\_SWITCH Event](#)

This topic describes the format of notifications on switching of WDM protection groups and OTN subnetwork connection protection (SNCP) groups (SW or ODUk type).

- [Format of the NT\\_RPRPROTECTION\\_SWITCH Event](#)

This topic describes the formats of notification events reported upon the switching of an RPR protection group.

- [Format of the NT\\_EPROTECTION\\_SWITCH Event](#)

This topic describes the formats of notification events reported upon equipment protection switching.

- [Format of the NT\\_ROUTE\\_CHANGE Event](#)

This topic describes the format of notification events reported when routes of the following objects are changed: subnet connections (SNCs).

- [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event](#)

This topic describes the format of notification events reported when simple network paging protocol (SNPP) links are changed.

- [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event](#)

This topic describes the formats of notification events reported when the file transfer status is changed.

- [Format of the NT\\_PRBTEST\\_STATUS Event](#)

This topic describes the format of notification events reported when the pseudo random binary sequence (PRBS) test status is changed.

- [Format of the NT\\_HEARTBEAT Event](#)

This topic describes the format of heartbeat status change notification events. This notification indicates the network connectivity status.

- [Format of the NT\\_IPPROTECTION\\_SWITCH Event](#)

This topic describes the format of notification events reported upon the switching of an IP protection group of the following objects: linear tunnel protection groups.

**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)

## 9.4.7.1 Format of the NT\_OBJECT\_CREATION Event

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This topic describes the format of notification events upon the creation of the following objects: inventories, subnet connections, and services.

- [Header Format of the NT\\_OBJECT\\_CREATION Event](#)

This topic describes the header format of an object creation event (NT\_OBJECT\_CREATION). The type of the NT\_OBJECT\_CREATION event can be obtained based on its header format.

- [Format of the NT\\_OBJECT\\_CREATION Event \(filterable\\_data\)](#)

This topic describes the format of the filterable\_data of an object creation event (NT\_OBJECT\_CREATION). The object and time of the NT\_OBJECT\_CREATION event can be obtained from the format of its filterable\_data.

- [Format of the NT\\_OBJECT\\_CREATION Event \(remainder\\_of\\_body\)](#)

This topic describes the format of the remainder\_of\_body of an object creation event (NT\_OBJECT\_CREATION). Detailed object information of the NT\_OBJECT\_CREATION event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

### 9.4.7.1.1 Header Format of the NT\_OBJECT\_CREATION Event

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This topic describes the header format of an object creation event (NT\_OBJECT\_CREATION). The type of the NT\_OBJECT\_CREATION event can be obtained based on its header format.

**Table 1 Header format of the NT\_OBJECT\_CREATION event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_OBJECT_CREATION.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_OBJECT\\_CREATION Event](#)

## 9.4.7.1.2 Format of the NT\_OBJECT\_CREATION Event (filterable\_data)

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This topic describes the format of the filterable\_data of an object creation event (NT\_OBJECT\_CREATION). The object and time of the NT\_OBJECT\_CREATION event can be obtained from the format of its filterable\_data.

**Table 1 Format of the filterable\_data in the structure of the NT\_OBJECT\_CREATION event**

Name	Type	Description
notificationId	String	Unique ID of the notification event.
objectName	globaldefs::NamingAttributes_T	Name of the object created.
objectType	notifications::ObjectType_T	Type of the object created.

**Table 1 Format of the fiterrable\_data in the structure of the NT\_OBJECT\_CREATION event**

Name	Type	Description
objectTypeQualifier	String	Type of the reported event. This field is applicable to only the object types added in TMF V3.0.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
edgePointRelated	boolean	If the event relates to a PTP that is an edge point or to a protection group containing a PTP that is an edge point, the value is true. Otherwise, the value is false.

**Parent topic:** [Format of the NT\\_OBJECT\\_CREATION Event](#)

### 9.4.7.1.3 Format of the NT\_OBJECT\_CREATION Event (remainder\_of\_body)

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This topic describes the format of the remainder\_of\_body of an object creation event (NT\_OBJECT\_CREATION). Detailed object information of the NT\_OBJECT\_CREATION event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_OBJECT\_CREATION event is the information model for creating an object. For details, see "Information Model".

**Parent topic:** [Format of the NT\\_OBJECT\\_CREATION Event](#)

## 9.4.7.2 Format of the NT\_OBJECT\_DELETION Event

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This topic describes the format of notification events upon the deletion of the following objects: inventories, subnet connections, and services.

- [Header Format of the NT\\_OBJECT\\_DELETION Event](#)

This topic describes the header format of an object deletion event (NT\_OBJECT\_DELETION). The type of the NT\_OBJECT\_DELETION event can be obtained from its header format.

- [Format of the NT\\_OBJECT\\_DELETION Event \(filterable\\_data\)](#)

This topic describes the format of the filterable\_data of an object deletion event (NT\_OBJECT\_DELETION). The object and time of the NT\_OBJECT\_DELETION event can be obtained from the format of its filterable\_data.

- [Format of the NT\\_OBJECT\\_DELETION Event \(remainder\\_of\\_body\)](#)

This topic describes the format of the remainder\_of\_body of an object deletion event (NT\_OBJECT\_DELETION). Detailed object information of the NT\_OBJECT\_DELETION event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

### 9.4.7.2.1 Header Format of the NT\_OBJECT\_DELETION Event

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This topic describes the header format of an object deletion event (NT\_OBJECT\_DELETION). The type of the NT\_OBJECT\_DELETION event can be obtained from its header format.

**Table 1 Header format of the NT\_OBJECT\_DELETION event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.

**Table 1 Header format of the NT\_OBJECT\_DELETION event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
	type_name		string	Type of a notification event. The value is fixed as NT_OBJECT_DELETION.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_OBJECT\\_DELETION Event](#)

## 9.4.7.2.2 Format of the NT\_OBJECT\_DELETION Event (filterable\_data)

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This topic describes the format of the filterable\_data of an object deletion event (NT\_OBJECT\_DELETION). The object and time of the NT\_OBJECT\_DELETION event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_OBJECT\_DELETION event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
objectName	globaldefs::NamingAttributes_T	Name of the deleted object.
objectType	notifications::ObjectType_T	Type of the deleted object. This field is used for only the object types defined in TMF V2.1 and the earlier versions.

**Table 1 Format of filterable\_data in structure of the NT\_OBJECT\_DELETION event**

Name	Type	Description
objectTypeQualifier	string	Type of the reported event. This field is applicable to only the object types added in TMF V3.0.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
edgePointRelated	boolean	If the event relates to a PTP that is an edge point or to a protection group containing a PTP that is an edge point, the value is true. Otherwise, the value is false.

**Parent topic:** [Format of the NT\\_OBJECT\\_DELETION Event](#)

### **9.4.7.2.3 Format of the NT\_OBJECT\_DELETION Event (remainder\_of\_body)**

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This topic describes the format of the remainder\_of\_body of an object deletion event (NT\_OBJECT\_DELETION). Detailed object information of the NT\_OBJECT\_DELETION event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of an NT\_OBJECT\_DELETION event is always blank. When you delete a cross-connection object, you need to fill in the details of the cross-connection.

**Parent topic:** [Format of the NT\\_OBJECT\\_DELETION Event](#)

### **9.4.7.3 Format of the NT\_ATTRIBUTE\_VALUE\_CHANGE Event**

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This topic describes the format of notification events that are reported when the attributes of the following objects are changed: inventory, subnet connections, and services.

- **[Header Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event](#)**

This topic describes the header format of an object attribute change notification event (NT\_ATTRIBUTE\_VALUE\_CHANGE). The type of the NT\_ATTRIBUTE\_VALUE\_CHANGE event can be obtained from its header format.

- **[Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event \(filterable\\_data\)](#)**

This topic describes the format of the filterable\_data of an object attribute change notification event (NT\_ATTRIBUTE\_VALUE\_CHANGE). The object and time of the NT\_ATTRIBUTE\_VALUE\_CHANGE event can be obtained from the format of its filterable\_data.

- **[Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event \(remainder\\_of\\_body\)](#)**

This topic describes the format of the remainder\_of\_body of an object attribute change notification event (NT\_ATTRIBUTE\_VALUE\_CHANGE). Detailed object information of the NT\_ATTRIBUTE\_VALUE\_CHANGE event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

## 9.4.7.3.1 Header Format of the NT\_ATTRIBUTE\_VALUE\_CHANGE Event

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This topic describes the header format of an object attribute change notification event (NT\_ATTRIBUTE\_VALUE\_CHANGE). The type of the NT\_ATTRIBUTE\_VALUE\_CHANGE event can be obtained from its header format.

**Table 1 Header format of the NT\_ATTRIBUTE\_VALUE\_CHANGE event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_ATTRIBUTE_VALUE_CHANGE.

**Table 1 Header format of the NT\_ATTRIBUTE\_VALUE\_CHANGE event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event](#)

## 9.4.7.3.2 Format of the NT\_ATTRIBUTE\_VALUE\_CHANGE Event (filterable\_data)

This topic describes the format of the filterable\_data of an object attribute change notification event (NT\_ATTRIBUTE\_VALUE\_CHANGE). The object and time of the NT\_ATTRIBUTE\_VALUE\_CHANGE event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_ATTRIBUTE\_VALUE\_CHANGE event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
objectName	globaldefs::NamingAttributes_T	Name of the object of which attributes change.
objectType	notifications::ObjectType_T	Type of the object of which attributes change. This parameter is used for only the object types defined in TMF V2.1 and the earlier versions.

**Table 1 Format of filterable\_data in structure of the NT\_ATTRIBUTE\_VALUE\_CHANGE event**

Name	Type	Description
objectTypeQualifier	string	Type of the reported event. This field is applicable to only the object types added in TMF V3.0.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
edgePointRelated	boolean	If the event relates to a PTP that is an edge point or to a protection group containing a PTP that is an edge point, the value is true. Otherwise, the value is false.
attributeList	notifications::NVList_T	List of changed attributes.

**Parent topic:** [Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event](#)

### **9.4.7.3.3 Format of the NT\_ATTRIBUTE\_VALUE\_CHANGE Event (remainder\_of\_body)**

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This topic describes the format of the remainder\_of\_body of an object attribute change notification event (NT\_ATTRIBUTE\_VALUE\_CHANGE). Detailed object information of the NT\_ATTRIBUTE\_VALUE\_CHANGE event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_ATTRIBUTE\_VALUE\_CHANGE event is always null.

**Parent topic:** [Format of the NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event](#)

## 9.4.7.4 Format of the NT\_STATE\_CHANGE Event

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This topic describes the formats of notification events reported when the status of the following objects are changed: inventories, subnet connections, and services.

- [Header Format of the NT STATE CHANGE Event](#)

This topic describes the header format of an object status change notification event (NT\_STATE\_CHANGE). The type of the NT\_STATE\_CHANGE event can be obtained according to its header format.

- [Format of the NT STATE CHANGE Event \(filterable\\_data\)](#)

This topic describes the format of the filterable\_data of an object status change notification event (NT\_STATE\_CHANGE). The object and time of the NT\_STATE\_CHANGE event can be obtained from the format of its filterable\_data.

- [Format of the NT STATE CHANGE Event \(remainder\\_of\\_body\)](#)

This topic describes the format of the remainder\_of\_body of an object status change notification event (NT\_STATE\_CHANGE). Detailed object information of the NT\_STATE\_CHANGE event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

### 9.4.7.4.1 Header Format of the NT\_STATE\_CHANGE Event

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This topic describes the header format of an object status change notification event (NT\_STATE\_CHANGE). The type of the NT\_STATE\_CHANGE event can be obtained according to its header format.

**Table 1 Header format of the NT\_STATE\_CHANGE event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.

**Table 1 Header format of the NT\_STATE\_CHANGE event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
			string	Type of a notification event. The value is fixed as NT_STATE_CHANGE.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_STATE\\_CHANGE Event](#)

## 9.4.7.4.2 Format of the NT\_STATE\_CHANGE Event (filterable\_data)

---

This topic describes the format of the filterable\_data of an object status change notification event (NT\_STATE\_CHANGE). The object and time of the NT\_STATE\_CHANGE event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_STATE\_CHANGE event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
objectName	globaldefs::NamingAttributes_T	Name of the object of which the state changes.
objectType	notifications::ObjectType_T	Type of the object of which the state changes. This parameter is used for only the object types

**Table 1 Format of filterable\_data in structure of the NT\_STATE\_CHANGE event**

Name	Type	Description
		defined in TMF V2.1 and the earlier versions.
objectTypeQualifier	string	Type of the reported event. This field is applicable to only the object types added in TMF V3.0.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
edgePointRelated	boolean	If the event relates to a PTP that is an edge point or to a protection group containing a PTP that is an edge point, the value is true. Otherwise, the value is false.
attributeList	notifications::NVList_T	List of the values of changed states.

**Parent topic:** [Format of the NT\\_STATE\\_CHANGE Event](#)

### **9.4.7.4.3 Format of the NT\_STATE\_CHANGE Event (remainder\_of\_body)**

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This topic describes the format of the remainder\_of\_body of an object status change notification event (NT\_STATE\_CHANGE). Detailed object information of the NT\_STATE\_CHANGE event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_STATE\_CHANGE event is always null. When you delete a cross-connection object, you need to fill in the details of the cross-connection. For details of the cross-connection, see "Information Model".

**Parent topic:** [Format of the NT\\_STATE\\_CHANGE Event](#)

## **9.4.7.5 Format of the NT\_PROTECTION\_SWITCH Event**

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This topic describes the format of notifications on switching of the following objects: linear SDH protection groups, ring SDH protection groups, and OTN subnetwork connection protection (SNCP) groups.

- **[Header Format of the NT\\_PROTECTION\\_SWITCH Event](#)**

This topic describes the header format of an object protection switching notification event (NT\_PROTECTION\_SWITCH). The type of the NT\_PROTECTION\_SWITCH event can be obtained from its header format.

- **[Format of the NT\\_PROTECTION\\_SWITCH Event \(filterable\\_data\)](#)**

This topic describes the format of the filterable\_data of an NT\_PROTECTION\_SWITCH event. The object and time of the NT\_PROTECTION\_SWITCH event can be obtained according to the format of its filterable\_data.

- **[Format of the NT\\_PROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)](#)**

This topic describes the format of the remainder\_of\_body of an NT\_PROTECTION\_SWITCH event. Detailed object information of the NT\_PROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

### **9.4.7.5.1 Header Format of the NT\_PROTECTION\_SWITCH Event**

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This topic describes the header format of an object protection switching notification event (NT\_PROTECTION\_SWITCH). The type of the NT\_PROTECTION\_SWITCH event can be obtained from its header format.

**Table 1 Header format of the NT\_PROTECTION\_SWITCH event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.

**Table 1 Header format of the NT\_PROTECTION\_SWITCH event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
		type_name	string	Type of a notification event. The value is fixed as NT_PROTECTION_SWITCH.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_PROTECTION\\_SWITCH Event](#)

## **9.4.7.5.2 Format of the NT\_PROTECTION\_SWITCH Event (filterable\_data)**

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This topic describes the format of the filterable\_data of an NT\_PROTECTION\_SWITCH event. The object and time of the NT\_PROTECTION\_SWITCH event can be obtained according to the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_PROTECTION\_SWITCH event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.

**Table 1 Format of filterable\_data in structure of the NT\_PROTECTION\_SWITCH event**

Name	Type	Description
ProtectionType	protection::ProtectionType_T	Protection type.
switchReason	protection::switchReason_T	Reason why the switching occurs.
layerRate	transmissionParameters::LayerRate_T	Layer rate that the switching is associated to.
groupName	globaldefs::NamingAttributes_T	Name of the protection group where the switching occurs. If the protection type is SNCP, this field is an empty name can be reported.
protectedTP	globaldefs::NamingAttributes_T	Protected TP when the switching occurs. For SNCP, the value is always the reliable TP. For a notification of two-fiber BLSR switching, the value is the TP that is inactive during the switching. For a notification of four-fiber MSP ring switching, the value is the working TP that is inactive during the switching. For a notification of 1:N MSP switching, the value is the working TP for which the protection switching occurs. For a notification of revertive 1+1 MSP switching, the value is the working TP. For a notification of non-revertive 1+1 MSP switching, the value is the TP that was active before the switching (After the switching, the protected TP changes).
switchAwayFromTP	globaldefs::NamingAttributes_T	Source TP that is switched away from. For two-fiber MSP switching, the value is the TP that is switched. For four-fiber MSP ring switching, the value is one of the TPs in the MSP 1:N protection groups (working or

**Table 1 Format of filterable\_data in structure of the NT\_PROTECTION\_SWITCH event**

Name	Type	Description
		protection). For four-fiber ring switching, the value is the working TP of the span that is switched. For example, if the east span switches to the west span, the value is the east working TP.
switchToTP	globaldefs::NamingAttributes_T	Destination TP that is switched to. This TP is the source TP that is activated after the switching or the current active TP if no protection switching occurs
nativeEMSName	string	Name of the protection group where the protection switching occurs.
additionalInfo	notifications::NVList_T	Additional information about the protection switching event, For details, see "NT_PROTECTION_SWITCH" in "AdditionalInfo Description".

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**NOTE:**

additionalInfo in the NT\_PROTECTION\_SWITCH event structure of the CORBA interface is an extended field. This field stores the type of the equipment where the protection switching occurs.

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**Parent topic:** [Format of the NT\\_PROTECTION\\_SWITCH Event](#)

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### **9.4.7.5.3 Format of the NT\_PROTECTION\_SWITCH Event (remainder\_of\_body)**

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This topic describes the format of the remainder\_of\_body of an NT\_PROTECTION\_SWITCH event. Detailed object information of the NT\_PROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_PROTECTION\_SWITCH event is always null.

**Parent topic:** [Format of the NT\\_PROTECTION\\_SWITCH Event](#)

## 9.4.7.6 Format of the NT\_ATMPROTECTION\_SWITCH Event

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This topic describes the formats of notification events reported upon the switching of an ATM protection group.

- [Header Format of the NT\\_ATMPROTECTION SWITCH Event](#)

This topic describes the header format of an ATM protection group switching notification event (NT\_ATMPROTECTION\_SWITCH). The type of the NT\_ATMPROTECTION\_SWITCH event can be obtained from its header format.

- [Format of the NT\\_ATMPROTECTION SWITCH Event \(filterable\\_data\)](#)

This topic describes the format of the filterable\_data of an NT\_ATMPROTECTION\_SWITCH event. The object and time of the NT\_ATMPROTECTION\_SWITCH event can be obtained from the format of its filterable\_data.

- [Format of the NT\\_ATMPROTECTION SWITCH Event \(remainder\\_of\\_body\)](#)

This topic describes the format of the remainder\_of\_body of an NT\_ATMPROTECTION\_SWITCH event. Detailed object information of the NT\_ATMPROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

### 9.4.7.6.1 Header Format of the NT\_ATMPROTECTION\_SWITCH Event

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This topic describes the header format of an ATM protection group switching notification event (NT\_ATMPROTECTION\_SWITCH). The type of the NT\_ATMPROTECTION\_SWITCH event can be obtained from its header format.

**Table 1 Header format of the NT\_ATMPROTECTION\_SWITCH event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_ATMPROTECTION_SWITCH.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_ATMPROTECTION\\_SWITCH Event](#)

## **9.4.7.6.2 Format of the NT\_ATMPROTECTION\_SWITCH Event (filterable\_data)**

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This topic describes the format of the filterable\_data of an NT\_ATMPROTECTION\_SWITCH event. The object and time of the NT\_ATMPROTECTION\_SWITCH event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_ATMPROTECTION\_SWITCH event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.

**Table 1 Format of filterable\_data in structure of the NT\_ATMPROTECTION\_SWITCH event**

Name	Type	Description
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
pgName	globaldefs::NamingAttributes_T	Name of the ATM protection group where the switching occurs.
switchMode	SwitchMode_T	Switching mode.
protectType	HW_mstpProtection::HW_AtmProtectType_T	Protection type.
srcEndSwitchPara	HW_mstpProtection::HW_AtmPGSingleEndSwitchPara_T	Parameters of the source-end switching. This field describes the reason, the state and other information about the source-end switching.
snkEndSwitchPara	HW_mstpProtection::HW_AtmPGSingleEndSwitchPara_T	Parameters of the sink-end switching. This field describes the reason, the state and other information about the sink-end switching.

**Parent topic:** [Format of the NT\\_ATMPROTECTION\\_SWITCH Event](#)

## **9.4.7.6.3 Format of the NT\_ATMPROTECTION\_SWITCH Event (remainder\_of\_body)**

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This topic describes the format of the remainder\_of\_body of an NT\_ATMPROTECTION\_SWITCH event. Detailed object information of the NT\_ATMPROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_ATMPROTECTION\_SWITCH event is always null.

**Parent topic:** [Format of the NT\\_ATMPROTECTION\\_SWITCH Event](#)

## **9.4.7.7 Format of the NT\_WDMPROTECTION\_SWITCH Event**

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This topic describes the format of notifications on switching of WDM protection groups and OTN subnetwork connection protection (SNCP) groups (SW or ODUk type).

- [\*\*Header Format of the NT\\_WDMPROTECTION\\_SWITCH Event\*\*](#)

This topic describes the header format of notifications on switching of WDM protection groups and OTN subnetwork connection protection (SNCP) groups (SW or ODUk type). You can learn about the notification type.

- [\*\*Format of the NT\\_WDMPROTECTION\\_SWITCH Event \(filterable\\_data\)\*\*](#)

This topic describes the format of data in the notifications on switching of WDM protection groups and OTN subnetwork connection protection (SNCP) groups. You can get information about a protection switching from the data, such as object that generates the event and the event time.

- [\*\*Format of the NT\\_WDMPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)\*\*](#)

This topic describes the format of the remainder\_of\_body of an NT\_WDMPROTECTION\_SWITCH event. Detailed object information of the NT\_WDMPROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

## **9.4.7.7.1 Header Format of the NT\_WDMPROTECTION\_SWITCH Event**

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This topic describes the header format of notifications on switching of WDM protection groups and OTN subnetwork connection protection (SNCP) groups (SW or ODUk type). You can learn about the notification type.

**Table 1 Header format of the NT\_WDMPROTECTION\_SWITCH event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Indicates the domain of a notification event. The value is always tmf_mtnm.
		type_name	string	Indicates the type of a notification event. The value is fixed as NT_WDMPROTECTION_SWITCH.
	event_name		string	Indicates the name of a notification event. This parameter is always left blank.
variable_header	Timeout		string	Indicates the timeout period of a notification event.

**Parent topic:** [Format of the NT\\_WDMPROTECTION\\_SWITCH Event](#)

## **9.4.7.7.2 Format of the NT\_WDMPROTECTION\_SWITCH Event (filterable\_data)**

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This topic describes the format of data in the notifications on switching of WDM protection groups and OTN subnetwork connection protection (SNCP) groups. You can get information about a protection switching from the data, such as object that generates the event and the event time.

**Table 1 Format of filterable\_data in structure of the NT\_WDMPROTECTION\_SWITCH event**

Parameter	Type	Description
notificationId	string	Indicates the unique ID of the notification.
emsTime	globaldefs::Time_T	Indicates the time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Indicates the time (UTC) of the event reported by the NE. If the NE does not report the time, this parameter is blank.
ProtectionType	protection::WDMProtectionGroup_T	Indicates the type of the protection group.
layerRate	layerRate::LayerRateType	Indicates the layer rate.
switchReason	protection::switchReason_T	Indicates the cause for the switching.
groupName	globaldefs::NamingAttributes_T	Indicates the name of the protection group where the switching occurs.
protectedTP	globaldefs::NamingAttributes_T	Name of the protected TP during the switching.
switchAwayFromTP	globaldefs::NamingAttributes_T	Indicates the name of the source TP that is switched away from.
switchToTP	globaldefs::NamingAttributes_T	Indicates the name of the destination TP that is switched to.
nativeEMSName	string	Indicates the information about the WDM protection group where the switching occurs.
additionalInfo	notifications::NVList_T	Indicates the additional information about the protection switching event. For details, see "NT_WDMPROTECTION_SWITCH" in "AdditionalInfo Description".

---

 **NOTE:**

"additionalInfo" in the NT\_WDMPROTECTION\_SWITCH event structure of the CORBA interface is an extended parameter. This parameter stores the type of the equipment where the WDM/OTN protection switching occurs.

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**Parent topic:** [Format of the NT\\_WDMPROTECTION\\_SWITCH Event](#)

### **9.4.7.7.3 Format of the NT\_WDMPROTECTION\_SWITCH Event (remainder\_of\_body)**

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This topic describes the format of the remainder\_of\_body of an NT\_WDMPROTECTION\_SWITCH event. Detailed object information of the NT\_WDMPROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_WDMPROTECTION\_SWITCH event is always null.

**Parent topic:** [Format of the NT\\_WDMPROTECTION\\_SWITCH Event](#)

### **9.4.7.8 Format of the NT\_RPRPROTECTION\_SWITCH Event**

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This topic describes the formats of notification events reported upon the switching of an RPR protection group.

- [\*\*Header Format of the NT\\_RPRPROTECTION\\_SWITCH Event\*\*](#)

This topic describes the header format of an RPR protection group switching notification event (NT\_RPRPROTECTION\_SWITCH). The type of the NT\_RPRPROTECTION\_SWITCH event can be obtained from its header format.

- [\*\*Format of the NT\\_RPRPROTECTION\\_SWITCH Event \(filterable\\_data\)\*\*](#)

This topic describes the format of the filterable\_data of an NT\_RPRPROTECTION\_SWITCH event. The object and time of the NT\_RPRPROTECTION\_SWITCH event can be obtained from the format of its filterable\_data.

- [\*\*Format of the NT\\_RPRPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)\*\*](#)

This topic describes the format of the remainder\_of\_body of an NT\_RPRPROTECTION\_SWITCH event. Detailed object information of the NT\_RPRPROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

## **9.4.7.8.1 Header Format of the NT\_RPRPROTECTION\_SWITCH Event**

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This topic describes the header format of an RPR protection group switching notification event (NT\_RPRPROTECTION\_SWITCH). The type of the NT\_RPRPROTECTION\_SWITCH event can be obtained from its header format.

**Table 1 Header format of the NT\_RPRPROTECTION\_SWITCH event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_RPRPROTECTION_SWITCH.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_RPRPROTECTION\\_SWITCH Event](#)

## **9.4.7.8.2 Format of the NT\_RPRPROTECTION\_SWITCH Event (filterable\_data)**

---

This topic describes the format of the filterable\_data of an NT\_RPRPROTECTION\_SWITCH event. The object and time of the NT\_RPRPROTECTION\_SWITCH event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_RPRPROTECTION\_SWITCH event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
nodeName	globaldefs::NamingAttributes_T	Name of the node.
switchState	HW_SwitchState_T	Switching state.
switchReason	protection::SwitchReason_T	Switching cause.
switchPosition	HW_SwitchPosition_T	Switching position.
switchParameters	globaldefs::NVSLList_T	switchParameters supports the following parameters: switchPosition switchState protectType SwitchCountTimes ProtectCountTime LastSwitchCommand The parameters for switchParameters in a HW_RPRSwitchData_T structure contain east and west switching parameters.

**Parent topic:** [Format of the NT\\_RPRPROTECTION\\_SWITCH Event](#)

## **9.4.7.8.3 Format of the NT\_RPRPROTECTION\_SWITCH Event (remainder\_of\_body)**

---

This topic describes the format of the remainder\_of\_body of an NT\_RPRPROTECTION\_SWITCH event. Detailed object information of the NT\_RPRPROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_RPRPROTECTION\_SWITCH event is always null.

**Parent topic:** [Format of the NT\\_RPRPROTECTION\\_SWITCH Event](#)

## **9.4.7.9 Format of the NT\_EPROTECTION\_SWITCH Event**

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This topic describes the formats of notification events reported upon equipment protection switching.

- [\*\*Header Format of the NT\\_EPROTECTION\\_SWITCH Event\*\*](#)

This topic describes the header format of the equipment protection switch notification events (NT\_EPROTECTION\_SWITCH). The type of the NT\_EPROTECTION\_SWITCH event can be obtained from its header format.

- [\*\*Format of the NT\\_EPROTECTION\\_SWITCH Event \(filterable\\_data\)\*\*](#)

This topic describes the format of the filterable\_data of the equipment protection switching. The object and time of an NT\_EPROTECTION\_SWITCH event can be obtained according to the format of its filterable\_data.

- [\*\*Format of the NT\\_EPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)\*\*](#)

This topic describes the format of the remainder\_of\_body of notification events of equipment protection switching. Detailed object information of the NT\_EPROTECTION\_SWITCH event can be obtained according to the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

## **9.4.7.9.1 Header Format of the NT\_EPROTECTION\_SWITCH Event**

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This topic describes the header format of the equipment protection switch notification events (NT\_EPROTECTION\_SWITCH). The type of the NT\_EPROTECTION\_SWITCH event can be obtained from its header format.

**Table 1 Header format of the NT\_EPROTECTION\_SWITCH event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_EPROTECTION_SWITCH.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_EPROTECTION\\_SWITCH Event](#)

## **9.4.7.9.2 Format of the NT\_EPROTECTION\_SWITCH Event (filterable\_data)**

---

This topic describes the format of the filterable\_data of the equipment protection switching. The object and time of an NT\_EPROTECTION\_SWITCH event can be obtained according to the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_EPROTECTION\_SWITCH event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
eProtectionGroupType	protection::EProtectionGroupType_T	Type of the reported equipment protection group.
eSwitchReason	protection::ESwitchReason_T	Reason why the switching occurs.
groupName	globaldefs::NamingAttributes_T	Name of the equipment group where the switching occurs.
protectedE	globaldefs::NamingAttributes_T	Protected equipment during the switching. For an m:n protection group, the protected equipment is the working equipment during the switching.
switchAwayFromE	globaldefs::NamingAttributes_T	Source equipment that is switched away from.
switchToE	globaldefs::NamingAttributes_T	Destination equipment that is switched to.
nativeEMSNName	string	Detailed information about the equipment protection group where the switching occurs.
additionalInfo	globaldefs::NVSLlist_T	Additional information, For details, see "NT_EPROTECTION_SWITCH" in "AdditionalInfo Description".

 **NOTE:**

additionalInfo in the NT\_EPROTECTION\_SWITCH event structure of the CORBA interface is an extended field. This field stores the information about the type of equipment where the protection switching occurs.

**Parent topic:** [Format of the NT\\_EPROTECTION\\_SWITCH Event](#)

## **9.4.7.9.3 Format of the NT\_EPROTECTION\_SWITCH Event (remainder\_of\_body)**

---

This topic describes the format of the remainder\_of\_body of notification events of equipment protection switching. Detailed object information of the NT\_EPROTECTION\_SWITCH event can be obtained according to the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_EPROTECTION\_SWITCH event is always null.

**Parent topic:** [Format of the NT\\_EPROTECTION\\_SWITCH Event](#)

## **9.4.7.10 Format of the NT\_ROUTE\_CHANGE Event**

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This topic describes the format of notification events reported when routes of the following objects are changed: subnet connections (SNCs).

- [\*\*Header Format of the NT\\_ROUTE\\_CHANGE Event\*\*](#)  
This topic describes the header format of an object route change notification event (NT\_ROUTE\_CHANGE). The type of the NT\_ROUTE\_CHANGE event can be obtained from its header format.
- [\*\*Format of the NT\\_ROUTE\\_CHANGE Event \(filterable\\_data\)\*\*](#)  
This topic describes the format of the filterable\_data of a route change notification event. The object and time of the NT\_ROUTE\_CHANGE event can be obtained from the format of its filterable\_data.
- [\*\*Format of the NT\\_ROUTE\\_CHANGE Event \(remainder\\_of\\_body\)\*\*](#)  
This topic describes the format of the remainder\_of\_body of a route change notification event. Detailed object information of the NT\_ROUTE\_CHANGE event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

## **9.4.7.10.1 Header Format of the NT\_ROUTE\_CHANGE Event**

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This topic describes the header format of an object route change notification event (NT\_ROUTE\_CHANGE). The type of the NT\_ROUTE\_CHANGE event can be obtained from its header format.

**Table 1 Header format of the NT\_ROUTE\_CHANGE event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_ROUTE_CHANGE.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_ROUTE\\_CHANGE Event](#)

## **9.4.7.10.2 Format of the NT\_ROUTE\_CHANGE Event (filterable\_data)**

---

This topic describes the format of the filterable\_data of a route change notification event. The object and time of the NT\_ROUTE\_CHANGE event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_ROUTE\_CHANGE event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
objectName	globaldefs::NamingAttributes_T	Name of the object that reports the event.
objectType	notifications::ObjectType_T	Type of the object that reports the event.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
routeChangeEvent	subnetworkConnection::RerouteChangeEvent_T	Status information during the route change. The value is RerouteStarted, RerouteCompleted or RerouteFailed.
route	subnetworkConnection::Route_T	Detailed information about the new route.

**Parent topic:** [Format of the NT\\_ROUTE\\_CHANGE Event](#)

### **9.4.7.10.3 Format of the NT\_ROUTE\_CHANGE Event (remainder\_of\_body)**

---

This topic describes the format of the remainder\_of\_body of a route change notification event. Detailed object information of the NT\_ROUTE\_CHANGE event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_ROUTE\_CHANGE event is always null.

**Parent topic:** [Format of the NT\\_ROUTE\\_CHANGE Event](#)

## 9.4.7.11 Format of the NT\_ASON\_RESOURCE\_CHANGE Event

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This topic describes the format of notification events reported when simple network paging protocol (SNPP) links are changed.

- [Header Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event](#)

This topic describes the header format of a resource change notification event (NT\_ASON\_RESOURCE\_CHANGE). The type of the NT\_ASON\_RESOURCE\_CHANGE event can be obtained from its header format.

- [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event \(filterable\\_data\)](#)

This topic describes the format of the filterable\_data of a resource notification event. The object and time of the NT\_ASON\_RESOURCE\_CHANGE event can be obtained from the format of its filterable\_data.

- [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event \(remainder\\_of\\_body\)](#)

This topic describes the format of the remainder\_of\_body of a resource notification event. Detailed object information of the NT\_ASON\_RESOURCE\_CHANGE event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

### 9.4.7.11.1 Header Format of the NT\_ASON\_RESOURCE\_CHANGE Event

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This topic describes the header format of a resource change notification event (NT\_ASON\_RESOURCE\_CHANGE). The type of the NT\_ASON\_RESOURCE\_CHANGE event can be obtained from its header format.

**Table 1 Header format of the NT\_ASON\_RESOURCE\_CHANGE event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_ASON_RESOURCE_CHANGE.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event](#)

## **9.4.7.11.2 Format of the NT\_ASON\_RESOURCE\_CHANGE Event (filterable\_data)**

This topic describes the format of the filterable\_data of a resource notification event. The object and time of the NT\_ASON\_RESOURCE\_CHANGE event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_ASON\_RESOURCE\_CHANGE event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
objectName	globaldefs::NamingAttributes_T	Name of the object that reports the event.

**Table 1 Format of filterable\_data in structure of the NT\_ASON\_RESOURCE\_CHANGE event**

Name	Type	Description
objectTypeQualifier	string	Object (ASON domain or ASON node) of the reported event. The value is ROUTING_AREA or ROUTING_NODE.
notifyType	string	Type (creation or deletion) of the reported event. The value is OBJECT_CREATE or OBJECT_DELETE.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
edgePointRelated	boolean	If the event relates to a PTP that is an edge point or to a protection group containing a PTP that is an edge point, the value is true. Otherwise, the value is false.

**Parent topic:** [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event](#)

### **9.4.7.11.3 Format of the NT\_ASON\_RESOURCE\_CHANGE Event (remainder\_of\_body)**

---

This topic describes the format of the remainder\_of\_body of a resource notification event. Detailed object information of the NT\_ASON\_RESOURCE\_CHANGE event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_ASON\_RESOURCE\_CHANGE event is always null.

**Parent topic:** [Format of the NT\\_ASON\\_RESOURCE\\_CHANGE Event](#)

## 9.4.7.12 Format of the NT\_FILE\_TRANSFER\_STATUS Event

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This topic describes the formats of notification events reported when the file transfer status is changed.

- [\*\*Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(header\)\*\*](#)

This topic describes the header format of an file transfer status change notification event (NT\_FILE\_TRANSFER\_STATUS). The type of the NT\_FILE\_TRANSFER\_STATUS event can be obtained from its header format.

- [\*\*Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(filterable\\_data\)\*\*](#)

This topic describes the format of the filterable\_data of an file transfer status change notification event (NT\_FILE\_TRANSFER\_STATUS). The object and time of the NT\_FILE\_TRANSFER\_STATUS event can be obtained from the format of its filterable\_data.

- [\*\*Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event \(remainder\\_of\\_body\)\*\*](#)

This topic describes the format of the remainder\_of\_body of an file transfer status event (NT\_FILE\_TRANSFER\_STATUS). Detailed object information of the NT\_FILE\_TRANSFER\_STATUS event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

### 9.4.7.12.1 Format of the NT\_FILE\_TRANSFER\_STATUS Event (header)

---

This topic describes the header format of an file transfer status change notification event (NT\_FILE\_TRANSFER\_STATUS). The type of the NT\_FILE\_TRANSFER\_STATUS event can be obtained from its header format.

**Table 1 Header format of the NT\_FILE\_TRANSFER\_STATUS event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_FILE_TRANSFER_STATUS.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event](#)

## **9.4.7.12.2 Format of the NT\_FILE\_TRANSFER\_STATUS Event (filterable\_data)**

This topic describes the format of the filterable\_data of an file transfer status change notification event (NT\_FILE\_TRANSFER\_STATUS). The object and time of the NT\_FILE\_TRANSFER\_STATUS event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_FILE\_TRANSFER\_STATUS event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
filename	string	File directory and file name that are entered. For example, /tmp/alarm4.txt.

**Table 1 Format of filterable\_data in structure of the NT\_FILE\_TRANSFER\_STATUS event**

Name	Type	Description
transferStatus	FileTransferStatus_T	Transfer status. When transfer fails, the value is FT_FAILED. When transfer is completed, the value is FT_COMPLETED. When transfer is in process, the value is FT_IN_PROGRESS.
percentComplete	short	Progress of the transfer expressed in percentage. The value ranges from 0 to 100. For example, 100 percent.
failureReason	string	Cause of the file transfer failure. When the transfer succeeds, the value is null. When the transfer fails, details of the failure are described. For example, when the IP address is incorrect, the message "connection to 10.71.227.26 failed" is displayed. When the user name or password is incorrect, the message "530 Login incorrect" is displayed.

**Parent topic:** [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event](#)

### **9.4.7.12.3 Format of the NT\_FILE\_TRANSFER\_STATUS Event (remainder\_of\_body)**

---

This topic describes the format of the remainder\_of\_body of an file transfer status event (NT\_FILE\_TRANSFER\_STATUS). Detailed object information of the

NT\_FILE\_TRANSFER\_STATUS event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_FILE\_TRANSFER\_STATUS event is always null.

**Parent topic:** [Format of the NT\\_FILE\\_TRANSFER\\_STATUS Event](#)

## 9.4.7.13 Format of the NT\_PRBTEST\_STATUS Event

---

This topic describes the format of notification events reported when the pseudo random binary sequence (PRBS) test status is changed.

- [Header Format of the NT\\_PRBTEST\\_STATUS Event](#)

This topic describes the header format of an PRBS test enable status change notification event (NT\_PRBTEST\_STATUS). The type of the NT\_PRBTEST\_STATUS event can be obtained from its header format.

- [Format of the NT\\_PRBTEST\\_STATUS Event \(filterable\\_data\)](#)

This topic describes the filterable\_data format of a notification event of PRBS test status. The object and time of the NT\_PRBTEST\_STATUS event can be obtained from the format of its filterable\_data.

**Parent topic:** [Format of Notification Events](#)

### 9.4.7.13.1 Header Format of the NT\_PRBTEST\_STATUS Event

---

This topic describes the header format of an PRBS test enable status change notification event (NT\_PRBTEST\_STATUS). The type of the NT\_PRBTEST\_STATUS event can be obtained from its header format.

**Table 1 Header format of the NT\_PRBTEST\_STATUS event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_PRBTEST_STATUS.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_PRBTEST\\_STATUS Event](#)

## **9.4.7.13.2 Format of the NT\_PRBTEST\_STATUS Event (filterable\_data)**

This topic describes the filterable\_data format of a notification event of PRBS test status. The object and time of the NT\_PRBTEST\_STATUS event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_PRBTEST\_STATUS event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
TPName	globaldefs::NamingAttributes_T	Name of the TP for which a 2 Mbit/s PRBS test is performed.
TestStatus	notifications::FileTransferStatus_T	Status of the 2 Mbit/s PRBS test.

**Table 1 Format of filterable\_data in structure of the NT\_PRBTEST\_STATUS event**

Name	Type	Description
		The value is FT_COMPLETED or FT_IN_PROGRESS.
percentComplete	short	Progress of the test. The value ranges from 0 to 100.

**Parent topic:** [Format of the NT\\_PRBTEST\\_STATUS Event](#)

## **9.4.7.14 Format of the NT\_HEARTBEAT Event**

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This topic describes the format of heartbeat status change notification events. This notification indicates the network connectivity status.

- [\*\*Header Format of the NT\\_HEARTBEAT Event\*\*](#)

This topic describes the header format of a heartbeat status change notification event (NT\_HEARTBEAT). The type of the NT\_HEARTBEAT event can be obtained from its header format.

- [\*\*Format of the NT\\_HEARTBEAT Event \(filterable\\_data\)\*\*](#)

This topic describes the format of the filterable\_data of a heartbeat notification event. The object and time of the NT\_HEARTBEAT event can be obtained from the format of its filterable\_data.

**Parent topic:** [Format of Notification Events](#)

### **9.4.7.14.1 Header Format of the NT\_HEARTBEAT Event**

---

This topic describes the header format of a heartbeat status change notification event (NT\_HEARTBEAT). The type of the NT\_HEARTBEAT event can be obtained from its header format.

**Table 1 Header format of the NT\_HEARTBEAT event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_HEARTBEAT.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_HEARTBEAT Event](#)

## **9.4.7.14.2 Format of the NT\_HEARTBEAT Event (filterable\_data)**

---

This topic describes the format of the filterable\_data of a heartbeat notification event. The object and time of the NT\_HEARTBEAT event can be obtained from the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_HEARTBEAT event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.

**Table 1 Format of filterable\_data in structure of the NT\_HEARTBEAT event**

Name	Type	Description
objectName	globaldefs::NamingAttributes_T	Name of the object that reports the event.
objectType	notifications:: ObjectType_T	Type of the object that reports the event.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.

**Parent topic:** [Format of the NT\\_HEARTBEAT Event](#)

## **9.4.7.15 Format of the NT\_IPPROTECTION\_SWITCH Event**

---

This topic describes the format of notification events reported upon the switching of an IP protection group of the following objects: linear tunnel protection groups.

- [\*\*Header Format of the NT\\_IPPROTECTION\\_SWITCH Event\*\*](#)

This topic describes the header format of an IP protection group switching notification event (NT\_IPPROTECTION\_SWITCH). The type of the NT\_IPPROTECTION\_SWITCH event can be obtained from its header format.

- [\*\*Format of the NT\\_IPPROTECTION\\_SWITCH Event \(filterable\\_data\)\*\*](#)

This topic describes the format of the filterable\_data of an NT\_IPPROTECTION\_SWITCH event. The object and time of the NT\_IPPROTECTION\_SWITCH event can be obtained according to the format of its filterable\_data.

- [\*\*Format of the NT\\_IPPROTECTION\\_SWITCH Event \(remainder\\_of\\_body\)\*\*](#)

This topic describes the format of the remainder\_of\_body of an NT\_IPPROTECTION\_SWITCH event. Detailed object information of the NT\_IPPROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

**Parent topic:** [Format of Notification Events](#)

## **9.4.7.15.1 Header Format of the NT\_IPPROTECTION\_SWITCH Event**

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This topic describes the header format of an IP protection group switching notification event (NT\_IPPROTECTION\_SWITCH). The type of the NT\_IPPROTECTION\_SWITCH event can be obtained from its header format.

**Table 1 Header format of the NT\_IPPROTECTION\_SWITCH event**

Event Header Type	Name		Type	Description
	Level-1 Name	Level-2 Name		
fixed_header	event_type	domain_name	string	Domain of a notification event. The value is fixed as tmf_mtnm.
		type_name	string	Type of a notification event. The value is fixed as NT_IPPROTECTION_SWITCH.
	event_name		string	Name of a notification event. The value is always null.
variable_header	Timeout		string	Timeout period of a notification event.

**Parent topic:** [Format of the NT\\_IPPROTECTION\\_SWITCH Event](#)

## **9.4.7.15.2 Format of the NT\_IPPROTECTION\_SWITCH Event (filterable\_data)**

---

This topic describes the format of the filterable\_data of an NT\_IPPROTECTION\_SWITCH event. The object and time of the NT\_IPPROTECTION\_SWITCH event can be obtained according to the format of its filterable\_data.

**Table 1 Format of filterable\_data in structure of the NT\_IPPROTECTION\_SWITCH event**

Name	Type	Description
notificationId	string	Unique ID of the notification event.
emsTime	globaldefs::Time_T	Time (UTC) when the EMS reports the event.
neTime	globaldefs::Time_T	Time (UTC) of the event reported by the NE. If the NE does not report the time, the value is null.
protectionType	string	Type of a tunnel APS protection group.
switchReason	SwitchReason_T	Cause of the switching.
layerRate	transmissionParameters::LayerRate_T	layer rate
groupName	globaldefs::NamingAttributes_T	Name of a tunnel APS protection group where the switching occurs.
protectedList	globaldefs::NamingAttributesList_T	List of tunnels under protection where the switching occurs.
switchAwayFromList	globaldefs::NamingAttributesList_T	List of source tunnels where the switching occurs.
switchToList	globaldefs::NamingAttributesList_T	List of destination tunnels where the switching occurs.
nativeEMSNName	string	Details about a tunnel APS protection group where the switching occurs.
additionalInfo	globaldefs::NVSLList_T	Additional information. Currently, this field is null.

**Parent topic:** [Format of the NT\\_IPPROTECTION\\_SWITCH Event](#)

## **9.4.7.15.3 Format of the NT\_IPPROTECTION\_SWITCH Event (remainder\_of\_body)**

---

This topic describes the format of the remainder\_of\_body of an NT\_IPPROTECTION\_SWITCH event. Detailed object information of the NT\_IPPROTECTION\_SWITCH event can be obtained from the format of its remainder\_of\_body.

The remainder\_of\_body of the NT\_IPPROTECTION\_SWITCH event is always null.

**Parent topic:** [Format of the NT\\_IPPROTECTION\\_SWITCH Event](#)

## **9.4.8 Notification Event Samples**

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This topic describes samples of notification events that the CORBA NBI supports.

- [\*\*NT\\_OBJECT\\_CREATION Event Sample\*\*](#)

This topic provides a sample notification of creating an object.

- [\*\*NT\\_OBJECT\\_DELETION Event Sample\*\*](#)

This topic provides a sample notification of deleting an object.

- [\*\*NT\\_ATTRIBUTE\\_VALUE\\_CHANGE Event Sample\*\*](#)

This topic provides a sample notification of changing object attributes.

- [\*\*NT\\_STATE\\_CHANGE Event Sample\*\*](#)

This topic provides a sample notification of changing object status.

- [\*\*NT\\_PROTECTION\\_SWITCH Event Sample\*\*](#)

This topic provides a sample notification of switching protection.

- [\*\*NT\\_ATMPROTECTION\\_SWITCH Event Sample\*\*](#)

This topic provides a sample notification of switching ATM protection groups.

- [\*\*NT\\_WDMPROTECTION\\_SWITCH Event Sample\*\*](#)

This topic provides a sample notification of switching WDM protection groups.

- [\*\*NT\\_RPRPROTECTION\\_SWITCH Event Sample\*\*](#)

This topic provides a sample notification of switching RPR protection groups.

- [\*\*NT\\_EPROTECTION\\_SWITCH Event Sample\*\*](#)

This topic provides a sample notification of switching equipment protection groups.

- [\*\*NT\\_ASON\\_RESOURCE\\_CHANGE Event Sample\*\*](#)  
This topic provides a sample notification on changing object resources.

- [\*\*NT\\_PRBTEST\\_STATUS Event Sample\*\*](#)  
This topic provides a sample notification of the PRBS test.

- [\*\*NT\\_ROUTE\\_CHANGE Event Sample\*\*](#)  
This topic provides a sample notification of changing the routing.

- [\*\*NT\\_HEARTBEAT Event Sample\*\*](#)  
This topic provides a sample notification of a heartbeat event.

- [\*\*NT\\_IPPROTECTION\\_SWITCH Event Sample\*\*](#)  
This topic provides a sample notification of switching IP protection groups.

**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)

## 9.4.8.1 NT\_OBJECT\_CREATION Event Sample

This topic provides a sample notification of creating an object.

**Table 1 NT\_OBJECT\_CREATION event sample**

Sample contents				Remarks	
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	N/A	
			Type_name: "NT_OBJECT_CREATION"	N/A	
		Event_name	""	N/A	
	variable_header	name Timeout value 864000000000		N/A	
filterable_data	notificationId	0315155247167		N/A	
	objectName	name EMS value Huawei/U2000		N/A	
		name ManagedElement value 589895			
		name EquipmentHolder value /rack=1/shelf=1/slot=5			

**Table 1 NT\_OBJECT\_CREATION event sample**

Sample contents		Remarks
	name Equipment value 1	
	objectType OT_EQUIPMENT	N/A
	objectTypeQualifier ""	Null
	emsTime 20060315091345.0Z	N/A
	neTime 20060315091343.0Z	N/A
	edgePointRelated false	N/A
remainder_of_body	name name EMS value Huawei/U2000	N/A
	name ManagedElement value 589895	
	name EquipmentHolder value /rack=1/shelf=1/slot=5	
	name Equipment value 1	
	userLabel ""	N/A
	nativeEMSName S16	N/A
	owner ""	N/A
	alarmReportingIndicator true	N/A
	serviceState OUT_OF_SERVICE	N/A
	expectedEquipmentObjectType S16(160)	N/A
	installedEquipmentObjectType S16(160)	N/A
	installedPartNumber ""	N/A
	installedVersion 4.02	N/A
	installedSerialNumber ""	N/A
	additionalInfo name AlarmSeverity value ""	N/A

**Parent topic:** [Notification Event Samples](#)

## 9.4.8.2 NT\_OBJECT\_DELETION Event Sample

This topic provides a sample notification of deleting an object.

**Table 1 NT\_OBJECT\_DELETION event sample**

Sample contents				Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	N/A
			Type_name: "NT_OBJECT_DELETION"	N/A
		Event_name	""	N/A
	variable_header	name Timeout value 864000000000		N/A
filterable_data	notificationId	0315155247223		N/A
	objectName	name EMS value Huawei/U2000		N/A
		name ManagedElement value 589895		N/A
		name EquipmentHolder value /rack=1/shelf=1/slot=5		N/A
		name Equipment value 1		N/A
	objectType	OT_EQUIPMENT		N/A
	objectTypeQualifier	""		Null
	emsTime	20060315094047.0Z		N/A
	neTime	20060315094047.0Z		N/A
	edgePointRelated	false		N/A

**Parent topic:** [Notification Event Samples](#)

## 9.4.8.3 NT\_ATTRIBUTE\_VALUE\_CHANGE Event Sample

---

This topic provides a sample notification of changing object attributes.

**Table 1 NT\_ATTRIBUTE\_VALUE\_CHANGE event sample**

Sample contents				Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	N/A
			Type_name: "NT_ATTRIBUTE_VALUE_CHANGE"	N/A
		Event_name	""	N/A
	variable_header	name Timeout value	864000000000	N/A
<hr/>				
filterable_data	notificationId	0315155247477		N/A
	objectName	name EMS value Huawei/U2000		N/A
		name ManagedElement value 590174		
		name PTP value /rack=1/shelf=1/slot=2/domain=eth/type=mp/port=1		
	objectType	OT_PHYSICAL_TERMINATION_POINT		N/A
	objectTypeQualifier	OT_MSTP_END_POINT		N/A
	emsTime	20060315114900.0Z		N/A
	neTime	20060315114900.0Z		N/A
	edgePointRelated	false		N/A
attributeList	transmissionParams	layer 96 transmissionParams	name EntranceDetect value Disable	N/A
		layer 98 transmissionParams	NULL	

**Table 1 NT\_ATTRIBUTE\_VALUE\_CHANGE event sample**

Sample contents				Remarks
		layer 99 transmissionParams	NULL	

**Parent topic:** [Notification Event Samples](#)

## 9.4.8.4 NT\_STATE\_CHANGE Event Sample

---

This topic provides a sample notification of changing object status.

**Table 1 NT\_STATE\_CHANGE event sample**

Sample contents				Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	N/A
			Type_name: "NT_STATE_CHANGE"	N/A
		Event_name	""	N/A
	variable_header	name Timeout value 864000000000		N/A
filterable_data	notificationId	0315155247536		N/A
	objectName	name EMS value Huawei/U2000		N/A
		name ManagedElement value 590174		
	objectType	OT_MANAGED_ELEMENT		
	objectTypeQualifier	""		Null
	emsTime	20060315121151.0Z		N/A
neTime		20060315121151.0Z		N/A

**Table 1 NT\_STATE\_CHANGE event sample**

Sample contents		Remarks
	edgePointRelated	false
	attributeList	name communicationState value CS_UNAVAILABLE

**Parent topic:** [Notification Event Samples](#)

## 9.4.8.5 NT\_PROTECTION\_SWITCH Event Sample

---

This topic provides a sample notification of switching protection.

**Table 1 NT\_PROTECTION\_SWITCH event sample**

Sample contents		Remarks
header	fixed_header	Domain_name: "tmf_mtnm"
		Type_name: "NT_PROTECTION_SWITCH"
	Event_name	""
	variable_header	name Timeout value 864000000000
filterable_data	notificationId	N/A
	emsTime	N/A
	neTime	N/A
	ProtectionType	PT_MSP_APS
	switchReason	SR_RESTORED

**Table 1 NT\_PROTECTION\_SWITCH event sample**

Sample contents		Remarks
layerRate	26	N/A
groupName	name EMS value Huawei/U2000	N/A
	name ManagedElement value 589965	
	name PGP value 1/1/17	
protectedTP	name EMS value Huawei/U2000	N/A
	name ManagedElement value 589965	
	name PTP value /rack=1/shelf=1/slot=5/domain=sdh/port=2	
switchAwayFromTP	name EMS value Huawei/U2000	N/A
	name ManagedElement value 589965	
	name PTP value /rack=1/shelf=1/slot=5/domain=sdh/port=1	
switchToTP	name EMS value Huawei/U2000	N/A
	name ManagedElement value 589965	
	name PTP value /rack=1/shelf=1/slot=5/domain=sdh/port=2	
nativeEMSName	Huawei/U2000;NE141;1/1/17	N/A
additionalInfo	name ProductName value OptiX Metro 1000V3	N/A

**Parent topic:** [Notification Event Samples](#)

## 9.4.8.6 NT\_ATMPROTECTION\_SWITCH Event Sample

This topic provides a sample notification of switching ATM protection groups.

**Table 1 NT\_ATMPROTECTION\_SWITCH event sample**

Sample contents				Remarks	
Header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	N/A	
			Type_name: "NT_ATMPROTECTION_SWITCH"	N/A	
		Event_name	""	N/A	
	variable_header	name Timeout value 864000000000		N/A	
filterable_data	notificationId	0315155247622		N/A	
	emsTime	20060315123300.0Z		N/A	
	neTime	20060315123300.0Z		N/A	
	pgName	name EMS value Huawei/U2000		N/A	
		name ManagedElement value 589895			
		name AtmPG value 1			
	switchMode	SingleEnded		N/A	
	protectType	HW_APT_1PLUS1		N/A	
	snkEndSwitchPara	switchReason SR_MANUAL		N/A	
		switchState HW_SS_SWITCH			
		additionalInfo ""			

**Parent topic:** [Notification Event Samples](#)

## 9.4.8.7 NT\_WDMPROTECTION\_SWITCH Event Sample

This topic provides a sample notification of switching WDM protection groups.

**Table 1 NT\_WDMPROTECTION\_SWITCH event sample**

Sample contents				Remarks	
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	N/A	
			Type_name: "NT_WDMPROTECTION_SWITCH"	N/A	
			Event_name ""	N/A	
variable_header		name Timeout value 864000000000		N/A	
filterable_data	notificationId	0223112118245		N/A	
	emsTime	20060223043554.0Z		N/A	
	neTime	20060223043554.0Z		N/A	
	protectionGroupType	1P1		N/A	
	switchReason	"SR_MANUAL"		N/A	
	groupName	name EMS value Huawei/U2000		N/A	
		name ManagedElement value 33554438		N/A	
		name WDMPG value /pgtype=1/shelf=589847/pgID=1		N/A	
	protectedTP	name EMS value Huawei/U2000		N/A	
		name ManagedElement value 33554438		N/A	
		name PTP value /rack=1/shelf=589847/slot=10/domain=wdm/port=1		N/A	
	switchAwayFromTP	name EMS value Huawei/U2000		N/A	
		name ManagedElement value 33554438		N/A	
		name PTP value /rack=1/shelf=589847/slot=11/domain=wdm/port=1		N/A	
	switchToTP	name EMS value Huawei/U2000		N/A	
		name ManagedElement value 33554438		N/A	

**Table 1 NT\_WDMPROTECTION\_SWITCH event sample**

Sample contents		Remarks
	name PTP value /rack=1/shelf=589847/slot=10/domain=wdm/port=1	N/A
nativeEMSName	Huawei/U2000;otm;/pgtype=1/shelf=NE23/pgID=1	N/A
additionalInfo	name ProductName value OptiX BWS1600G	N/A

**Parent topic:** [Notification Event Samples](#)

## 9.4.8.8 NT\_RPRPROTECTION\_SWITCH Event Sample

---

This topic provides a sample notification of switching RPR protection groups.

**Table 1 NT\_RPRPROTECTION\_SWITCH event sample**

Sample contents			Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"
			Type_name: "NT_RPRPROTECTION_SWITCH"
		Event_name	""
	variable_header	name Timeout value	864000000000
filterable_data	notificationId	0317124742222	N/A
	emsTime	20060317051751.0Z	N/A
	neTime	20060317051751.0Z	N/A
	nodeName	name EMS value	Huawei/U2000

**Table 1 NT\_RPRPROTECTION\_SWITCH event sample**

Sample contents		Remarks
	name ManagedElement value 590070	N/A
	name RPRNode value /rack=1/shelf=1/slot=8/node=1	N/A
switchState	HW_SS_NA	N/A
switchReason	SR_NA	N/A
switchPosition	HW_SP_NA	N/A
switchParameters	name switchPosition value east	N/A
	name switchState value switch	
	name protectType value 5	
	name SwitchCountTimes value 1	
	name ProtectCountTime value 00:00:00	
	name LastSwitchCommand value protection::PC_FORCED_SWITCH	
	name switchPosition value west	
	name switchState value switch	
	name protectType value 4	
	name SwitchCountTimes value 1	
	name ProtectCountTime value 00:00:00	
	name LastSwitchCommand value protection::PC_CLEAR	

**Parent topic:** [Notification Event Samples](#)

## 9.4.8.9 NT\_EPROTECTION\_SWITCH Event Sample

This topic provides a sample notification of switching equipment protection groups.

**Table 1 NT\_EPROTECTION\_SWITCH event sample**

Sample contents				Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	N/A
		Type_name: "NT_EPROTECTION_SWITCH"		N/A
		Event_name	""	N/A
	variable_header	name Timeout value	864000000000	N/A
filterable_data	notificationId	0317093205535		N/A
	emsTime	20060317032501.0Z		N/A
	neTime	""		N/A
	eProtectionGroupType	1_PLUS_1		N/A
	eSwitchReason	SR_NA		N/A
	groupName	name EMS value Huawei/U2000		N/A
		name ManagedElement value 589936		N/A
		name EPGP value 589936/1/1/1		N/A
	protectedE	name EMS value Huawei/U2000		N/A
		name ManagedElement value 589936		N/A
		name EquipmentHolder value /rack=1/shelf=1/slot=8		N/A
		name Equipment value 1		N/A
	switchAwayFromE	name EMS value Huawei/U2000		N/A

**Table 1 NT\_EPROTECTION\_SWITCH event sample**

Sample contents		Remarks
	name ManagedElement value 589936	N/A
	name EquipmentHolder value /rack=1/shelf=1/slot=8	N/A
	name Equipment value 1	N/A
switchToE	name EMS value Huawei/U2000	N/A
	name ManagedElement value 589936	N/A
	name EquipmentHolder value /rack=1/shelf=1/slot=7	N/A
	name Equipment value 1	N/A
nativeEMSName	Huawei/U2000;NE112;589936/1/1/1	N/A
additionalInfo	name ProductName value OptiX 2500+	N/A

**Parent topic:** [Notification Event Samples](#)

## 9.4.8.10 NT\_ASON\_RESOURCE\_CHANGE Event Sample

---

This topic provides a sample notification on changing object resources.

**Table 1 NT\_ASON\_RESOURCE\_CHANGE event sample**

Sample contents				Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"	N/A
			Type_name:"NT_ASON_RESOURCE_CHANGE"	N/A
		Event_name	""	N/A

**Table 1 NT\_ASON\_RESOURCE\_CHANGE event sample**

Sample contents			Remarks
	variable_header	name Timeout value 864000000000	N/A
filterable_data	notificationId	031717054427	N/A
	objectName	name EMS value Huawei/U2000	N/A
		name ManagedElement value 589835	N/A
	objectTypeQualifier	OT_ROUTING_NODE	N/A
	notifyType	OBJECT_CREATE	N/A
	emsTime	20060317091722.0Z	N/A
	neTime	20060317091722.0Z	N/A
	edgePointRelated	false	N/A

**Parent topic:** [Notification Event Samples](#)

## 9.4.8.11 NT\_PRBTEST\_STATUS Event Sample

This topic provides a sample notification of the PRBS test.

**Table 1 NT\_PRBTEST\_STATUS event sample**

Sample contents			Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"
			Type_name:"NT_PRBTEST_STATUS"
		Event_name	""
	variable_header	name Timeout value 864000000000	N/A

**Table 1 NT\_PRBTEST\_STATUS event sample**

Sample contents			Remarks
filterable_data	notificationId TPName	0318140108344	N/A
		name EMS value Huawei/U2000	N/A
		name ManagedElement value 589849	N/A
		name PTP value /rack=1/shelf=1/slot=3/domain=sdh/port=1	N/A
	TestStatus	FT_COMPLETED	N/A
	percentComplete	100	N/A

**Parent topic:** [Notification Event Samples](#)

## **9.4.8.12 NT\_ROUTE\_CHANGE Event Sample**

This topic provides a sample notification of changing the routing.

**Table 1 NT\_ROUTE\_CHANGE event sample**

Sample contents			Remark
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"
			Type_name: "NT_ROUTE_CHANGE"
		Event_name	""
	variable_header	name Timeout value 864000000000	
filterable_data	notificationId	0316135944420	
	objectName	name EMS value Huawei/U2000	

**Table 1 NT\_ROUTE\_CHANGE event sample**

Sample contents			Remark						
		name MultiLayerSubnetwork value 1	N/A						
		name SubnetworkConnection value 2006-03-16 14:07:23-47	N/A						
objectType		OT_SUBNETWORK_CONNECTION	N/A						
emsTime		20060316061019.0Z	N/A						
neTime		""	N/A						
routeChangeEvent		RerouteCompleted	N/A						
route	0	active:true	N/A						
		direction: CD_UNI	N/A						
		cctype: ST_SIMPLE	N/A						
		aEndNameList	<table border="1"> <tr> <td>name EMS value Huawei/U2000</td><td>N/A</td></tr> <tr> <td>name ManagedElement value 589844</td><td>N/A</td></tr> <tr> <td>name PTP value /rack=1/shelf=1/slot=12/domain=sdh/port=1</td><td>N/A</td></tr> <tr> <td>name CTP value /sts3c_au4-j=4</td><td>N/A</td></tr> </table>	name EMS value Huawei/U2000	N/A	name ManagedElement value 589844	N/A	name PTP value /rack=1/shelf=1/slot=12/domain=sdh/port=1	N/A
name EMS value Huawei/U2000	N/A								
name ManagedElement value 589844	N/A								
name PTP value /rack=1/shelf=1/slot=12/domain=sdh/port=1	N/A								
name CTP value /sts3c_au4-j=4	N/A								
zEndNameList	<table border="1"> <tr> <td>name EMS value Huawei/U2000</td><td>N/A</td></tr> <tr> <td>name ManagedElement value 589844</td><td>N/A</td></tr> <tr> <td>name PTP value /rack=1/shelf=1/slot=8/domain=sdh/port=1</td><td></td></tr> <tr> <td>name CTP value /sts3c_au4-j=16</td><td>N/A</td></tr> </table>	name EMS value Huawei/U2000	N/A	name ManagedElement value 589844	N/A	name PTP value /rack=1/shelf=1/slot=8/domain=sdh/port=1		name CTP value /sts3c_au4-j=16	N/A
name EMS value Huawei/U2000	N/A								
name ManagedElement value 589844	N/A								
name PTP value /rack=1/shelf=1/slot=8/domain=sdh/port=1									
name CTP value /sts3c_au4-j=16	N/A								
<table border="1"> <tr> <td>additionalInfo</td><td>name Direction value Obverse</td><td>N/A</td></tr> </table>	additionalInfo	name Direction value Obverse	N/A						
additionalInfo	name Direction value Obverse	N/A							
1	<table border="1"> <tr> <td>active:true</td><td>N/A</td></tr> <tr> <td>direction: CD_UNI</td><td>N/A</td></tr> <tr> <td>cctype: ST_SIMPLE</td><td>N/A</td></tr> </table>	active:true	N/A	direction: CD_UNI	N/A	cctype: ST_SIMPLE	N/A		
active:true	N/A								
direction: CD_UNI	N/A								
cctype: ST_SIMPLE	N/A								

**Table 1 NT\_ROUTE\_CHANGE event sample**

Sample contents			Remark
	aEndNameList	name EMS value Huawei/U2000	N/A
		name ManagedElement value 589845	N/A
		name PTP value /rack=1/shelf=1/slot=7/domain=sdh/port=1	N/A
		name CTP value /sts3c_au4-j=16	N/A
	zEndNameList	name EMS value Huawei/U2000	N/A
		name ManagedElement value 589845	N/A
		name PTP value /rack=1/shelf=1/slot=8/domain=sdh/port=1	N/A
		name CTP value /sts3c_au4-j=4	N/A
	additionalInfo	name Direction value Obverse	N/A

**Parent topic:** [Notification Event Samples](#)

## 9.4.8.13 NT\_HEARTBEAT Event Sample

This topic provides a sample notification of a heartbeat event.

**Table 1 NT\_HEARTBEAT event sample**

Sample contents			Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mtnm"
			Type_name:"NT_HEARTBEAT"
	Event_name	""	N/A
	variable_header	name Timeout value 300000000	N/A

**Table 1 NT\_HEARTBEAT event sample**

Sample contents			Remarks
filterable_data	notificationId	03160939255	N/A
	objectName	name EMS value Huawei/U2000	N/A
	objectType	OT_EMS	N/A
	emsTime	20060316014052.0Z	N/A

**Parent topic:** [Notification Event Samples](#)

## 9.4.8.14 NT\_IPPROTECTION\_SWITCH Event Sample

---

This topic provides a sample notification of switching IP protection groups.

**Table 1 NT\_IPPROTECTION\_SWITCH event sample**

Sample contents			Remarks
header	fixed_header	Event_type	Domain_name: "tmf_mttnm"
			Type_name: "NT_IPPROTECTION_SWITCH"
		Event_name	""
	variable_header	name Timeout value	864000000000
filterable_data	notificationId	0317093205535	
	emsTime	20100117032501.0Z	
	neTime	""	

**Table 1 NT\_IPPROTECTION\_SWITCH event sample**

	Sample contents	Remarks
IPProtectionGroupType	PGT_MSP_1_PLUS_1 PGT_MSP_1_FOR_1 PGT_MSP_1_FOR_N	
groupName	name EMS value Huawei/U2000	
	name ManagedElement value 589936	
	name TunnelPG value /pgType=PT_MSPAPS/pgID=128	
switchReason	SR_NA	
reversionMode	RM_UNKNOWN RM_NON_REVERTIVE RM_REVERTIVE	
protectedList	name EMS value Huawei/U2000	
	name ManagedElement value 589936	
	name IPCrossConnection value TUNNEL=1 1 10.10.8.51 2.2.2.2 2000  1	
switchAwayFromList	name EMS value Huawei/U2000	
	name ManagedElement value 589936	
	name IPCrossConnection value TUNNEL=1 1 2.2.2.2 10.10.8.51 2000  3	
switchToList	name EMS value Huawei/U2000	
	name ManagedElement value 589936	
	name IPCrossConnection value TUNNEL=1 1 10.17.8.51 2.2.2.6 201  1	

**Parent topic:** [Notification Event Samples](#)

## **9.4.9 Object Naming Rules**

---

This chapter lists the naming rules for various objects in the U2000 CORBA interface. The naming rules are in accordance with the TMF recommendations.

The objects contain the following:

- [\*\*AID\*\*](#)  
AID indicates an object that is not managed by the CORBA NBI.
- [\*\*AtmPG\*\*](#)  
This topic describes the naming rule for an asynchronous transfer mode (ATM) protection group.
- [\*\*AtmService\*\*](#)  
This topic describes the naming rule for an ATM service.
- [\*\*CTP\*\*](#)  
This topic describes the naming rule for a connection termination point (CTP). A CTP is a port of a PTP or an FTP.
- [\*\*EMS\*\*](#)  
This topic describes the naming rule for an element management system (EMS), including the managed subnets and the EMS itself.
- [\*\*EncapsulationLayerLink\*\*](#)  
This topic describes the naming rule for an encapsulation layer link (ELL).
- [\*\*EProtectionGroup\*\*](#)  
This topic describes the naming rule of a equipment protection group.
- [\*\*Equipment\*\*](#)  
This topic describes the naming rule for a device. A device represents a manageable physical component of an NE, such as a circuit board or a fan.
- [\*\*EquipmentHolder\*\*](#)  
This topic describes the naming rule for the equipment holder. Equipment holder is a resource that can hold other physical components. Currently, equipment holders supported by the CORBA NBI include racks, shelves, slots, and subslots.
- [\*\*ERPSPG\*\*](#)  
This topic describes the naming rule for an Ethernet ring protection switching (ERPS) protection group.
- [\*\*EthService\*\*](#)  
This topic describes the naming rule for an Ethernet service.
- [\*\*Flow\*\*](#)  
This topic describes the naming rule for a flow.

- [\*\*Flowdomain\*\*](#)  
This topic describes the naming rule for a flow domain.
- [\*\*FlowDomainFragment\*\*](#)  
This topic describes the naming rule for a flow domain fragment (FDFr).
- [\*\*FTP\*\*](#)  
This topic describes the naming rule for a floating termination point (FTP). An FTP is a logical port.
- [\*\*IFProtectionGroup\*\*](#)  
This topic describes the naming rule for an intermediate frequency (IF) protection group.
- [\*\*IPCrossConnection\*\*](#)  
This topic describes the naming rule for a static tunnel. A static tunnel can be a static MPLS tunnel or PW Switch service.
- [\*\*LinkAggregationGroup\*\*](#)  
This topic describes the naming rule for a link aggregation group.
- [\*\*MaintenanceAssociation\*\*](#)  
This topic describes the naming rule for a maintenance association (MA).
- [\*\*MaintenanceDomain\*\*](#)  
This topic describes the naming rule for a maintenance domain.
- [\*\*ManagedElement\*\*](#)  
This topic describes the naming rule for a managed element. A managed element is an NE managed by the EMS.
- [\*\*MatrixFlowDomainFragment\*\*](#)  
This topic describes the naming rule for a matrix FDFr (MFDFr). An MFDFr can correspond to a PWE3, VPLS or NativeETH service.
- [\*\*MEP\*\*](#)  
This topic describes the naming rule for a maintenance end point (MEP).
- [\*\*MIP\*\*](#)  
This topic describes the naming rule for a maintenance intermediate point (MIP).
- [\*\*ProtectionGroup\*\*](#)  
This topic describes the naming rule for a protection group.
- [\*\*ProtectionSubnetwork\*\*](#)  
This topic describes the naming rule for a protection subnet.
- [\*\*PTP\*\*](#)  
This topic describes the naming rule for a physical termination point (PTP). A PTP is a physical port.

- [\*\*QosRule\*\*](#)  
This topic describes the naming rule for a QoS rule.
- [\*\*RMEP\*\*](#)  
This topic describes the naming rule for a remote maintenance end point (REMP).
- [\*\*Routing Area\*\*](#)  
This topic describes the naming rule for a routing area.
- [\*\*RPRNode\*\*](#)  
This topic describes the naming rule for an resilient racket ring RPR node.
- [\*\*SNPPLink\*\*](#)  
This topic describes the naming rule for an Subnetwork Point Pool (SNPP) link.
- [\*\*Subnetwork\*\*](#)  
This topic describes the naming rule for a subnet. A subnet is a topology managed by the EMS.
- [\*\*SubnetworkConnection\*\*](#)  
This topic describes the naming rule of a subnet connection (SNC). An SNC can be a connection between two ports within a subnet, or between subnets.
- [\*\*TCProfile\*\*](#)  
This topic describes the naming rule for a traffic control policy.
- [\*\*TopologicalLink\*\*](#)  
This topic describes the naming rule for a topological link. A topological link can be a physical connection between two ports or a logical link between two logical ports.
- [\*\*TopoSubnetwork\*\*](#)  
This topic describes the naming rule for a topology object in a subnet.
- [\*\*TrafficDescriptor\*\*](#)  
This topic describes the naming rule for a traffic descriptor. A traffic descriptor is used to describe a series of features, such as bandwidth or QoS features.
- [\*\*TrafficTrunk\*\*](#)  
This topic provides an example for naming a traffic trunk. A traffic trunk can be a dynamic MPLS tunnel, an IP tunnel, or a PW.
- [\*\*TunnelPG\*\*](#)  
This topic describes the naming rule for an IP protection group.
- [\*\*VirtualBridge\*\*](#)  
This topic describes the naming rule for a virtual bridge.
- [\*\*VLAN\*\*](#)  
This topic describes the naming rule for a virtual local area network (VLAN).
- [\*\*WDMPG\*\*](#)  
This topic describes the naming rule for a WDM protection group.

- [XPICGroup](#)  
This topic describes the naming rule for a cross polarization interference cancellation (XPIC) group.
- [TrailNtwProtection](#)  
This topic describes the naming rule for a tunnel APS protection group.

**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)

## 9.4.9.1 AID

---

AID indicates an object that is not managed by the CORBA NBI.

**Table 1 CTP**

Object name	AID
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145736" 3.name="AID"; value="/shelf=1/slot=4294967295/fb=0/domain=UNKNOWN/port=123/highPath=0/lowPath=0"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.2 AtmPG

---

This topic describes the naming rule for an asynchronous transfer mode (ATM) protection group.

**Table 1 ATM ProtectGroup**

Object name	ATM ProtectGroup
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="AtmPG"; value="ATMPGName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="AtmPG"; value="1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

### 9.4.9.3 AtmService

---

This topic describes the naming rule for an ATM service.

**Table 1 AtmService**

Object name	ATM Service
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="AtmService"; value="ATMServicename"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="AtmService"; value="1"
Remarks	The OSS cannot directly parse the name example in the object name but can only read it as an entire character string.

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.4 CTP

This topic describes the naming rule for a connection termination point (CTP). A CTP is a port of a PTP or an FTP.

**Table 1 CTP**

Object Name	CTP		
Naming rule in TMF	1.name="EMS"; value="CompanyName/EMSname" 2.name="ManagedElement"; value="ManagedElementName" 3.name="PTP"; value="PTPName" or name="FTP"; value="FTPName" 4.name="CTP"; value="CTPName"		
Name example in theU2000 CORBA NBI	SDH	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="589825" 3.name="PTP"; value="/rack=1/shelf=1/slot=5/domain=sdh/port=2" 4.name="CTP"; value="/sts3c_au4-j=1/vt2_tu12-k=1-l=3-m=2"	
	WDM	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="33554433" 3.name="PTP"; value="/rack=1/shelf=590224/slot=2/domain=wdm/port=1" 4.name="CTP"; value="/och=1/dsr=2"	
OTN	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="33554433" 3.name="PTP"; value="/rack=1/shelf=590224/slot=2/domain=wdm/port=1" 4.name="CTP"; value="/och=1/dsr=1"		
MSTP	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="590174" 3.name="PTP"; value="/rack=1/shelf=1/slot=4/domain=eth/type=mac/port=1" 4.name="CTP"; value="/tunnellabel=16/vclabel=0"		
PTN	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145766" 3.name="PTP"; value="/rack=1/shelf=1/slot=1/domain=ptn/type=physical/port=15" 4.name="CTP"; value="/outLabel=41"		

**Table 1 CTP**

Object Name	CTP	
Remarks	SDH	<p>According to the actual scenario, the SDH CTP has the following several formats.</p> <ol style="list-style-type: none"><li>1. name="CTP"; value="/sts3c_au4-j=1/vt2_tu12-k=2-l=1-m=1" Scenario: VC12 CTP</li><li>2. name="CTP"; value="/sts3c_au4-j=1/tu3_vc3-k=2" Scenario: VC3 CTP</li><li>3. name="CTP"; value="/sts3c_au4-j=3" Scenario: VC4 CTP</li><li>4. name="CTP"; value="/sts3c_au4=1" Scenario: E4 level CTP included in PDH port</li><li>5. name="CTP"; value="/tu3_vc3=1" Scenario: E3 level CTP included in PDH port</li><li>6. name="CTP"; value="/vt2_tu12=1" Scenario: E1 level CTP included in PDH port</li><li>7. name="CTP"; value="/vt15_tu11=1" Scenario: T1 level CTP included in PDH port</li></ol>
	WDM	<p>According to the actual scenario, the WDM CTP has the following several formats.</p> <ol style="list-style-type: none"><li>1. name="CTP"; value="/dsr=1" Scenario: the client-side interface of the service convergence board and bidirectional wavelength conversion board</li><li>2. name="CTP"; value="/dsr=1/och=1" Scenario: unidirectional wavelength conversion board only</li><li>3. name="CTP"; value="/och=1/dsr=1" Scenario: line-side interface of the service convergence board</li><li>4. name="CTP"; value="/och=1" Scenario: line-side interface of the service convergence board and bidirectional wavelength conversion board</li><li>5. name="CTP"; value="/oms=1" Scenario: line-side interface of the multiplexer board, demultiplexer board and add/drop multiplexing board</li><li>6. name="CTP"; value="/os=1" Scenario: optical amplifier board, optical attenuation board and optical line protection (OLP) board</li></ol>
	OTN	<p>According to the actual scenario, OTN CTP has the following several formats:</p> <ol style="list-style-type: none"><li>1. name="CTP"; value="/odu1=1"</li></ol>

**Table 1 CTP**

Object Name	CTP
	<p>Scenario: internal logical port</p> <p>2. name="CTP"; value="/otu1=1"</p> <p>Scenario: client-side interface of an OTU board that receives colorless OTN signals</p> <p>3. name="CTP"; value="/och=1/otu1=1"</p> <p>Scenario: Scenario: client-side interface of an OTU board that receives color OTN signals</p> <p>4. name="CTP"; value="/och=1/dsr=1"</p> <p>Scenario: line-side interface of a service-convergence board</p> <p>5. name="CTP"; value="/fragment=1/odu1=1"</p> <p>Scenario: inverse-multiplexing virtual concatenation on an OTN board</p>
MSTP	<p>The Ethernet CTP is divided by adding labels of flow points to the PTP. The labels are in the following several formats.</p> <p>1. name="CTP"; value="/tunnellabel=16/vclabel=0"</p> <p>Scenario: MPLS ports and the tunnel label cannot be "0"</p> <p>2. name="CTP"; value="/ethvid=0"</p> <p>Scenario: general ports, ethvid=0 indicates exclusive, ethvid&gt;0 indicates VLAN shared</p> <p>3. name="CTP"; value="/ethcvid=2/ethsvid=1"</p> <p>Scenario: QinQ ports</p> <p>4. name="CTP"; value="/eth=1"</p> <p>Scenario: QinQ services based on port transparent transmission</p>
PTN	<p>According to the actual scenario, there are the following several formats:</p> <p>1. name="CTP"; value="/outLabel=16"</p> <p>Scenario: source end of Tunnel</p> <p>2. name="CTP"; value="/inLabel=16"</p> <p>Scenario: sink end of Tunnel</p> <p>3. name="CTP"; value="AP=2 74 1"</p> <p>Scenario: service access point of PWE3</p>

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.5 EMS

---

This topic describes the naming rule for an element management system (EMS), including the managed subnets and the EMS itself.

**Table 1 EMS**

Object name	EMS
Naming rule in TMF	name="EMS"; value="CompanyName/EMSname"
Name example in theU2000 CORBA NBI	name="EMS"; value="Huawei/U2000"
Remarks	If it is necessary to manage several iManager U2000s at the same time, modify the U2000 names through the Msuite to ensure that each U2000 name is unique in the NMS management domain. For the details, refer to "Deploying and Configuring the CORBA NBI" in "CORBA NBI User Guide".

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.6 EncapsulationLayerLink

---

This topic describes the naming rule for an encapsulation layer link (ELL).

**Table 1 EncapsulationLayerLink**

Object name	EncapsulationLayerLink
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="EncapsulationLayerLink "; value="EncapsulationLayerLinkName "
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="EncapsulationLayerLink"; value="2005-12-22 16:59:35 - 1770 - eth"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.7 EProtectionGroup

---

This topic describes the naming rule of a equipment protection group.

**Table 1 EP GP**

Object name	EP ProtectionGroup
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="EPGP"; value="EPGPName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="EPGP"; value="589825/1/2/1"
Remarks	As for the EPGP value "589825/1/2/1", "589825" represents NE ID. The following "1" represents the Subrack ID. "2" represents the EPGP ID. The last "1" represents the extended ID.

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.8 Equipment

---

This topic describes the naming rule for a device. A device represents a manageable physical component of an NE, such as a circuit board or a fan.

**Table 1 Equipment**

Object name	Equipment
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="EquipmentHolder"; value="EquipmentHolderName" 4. name="Equipment"; value="EquipmentName"

**Table 1 Equipment**

Object name	Equipment
Name example in theU2000 CORBA NBI	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="EquipmentHolder"; value="/rack=1/shelf=1/slot=5" 4. name="Equipment"; value="1"
Remarks	N/A

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.9 EquipmentHolder

---

This topic describes the naming rule for the equipment holder. Equipment holder is a resource that can hold other physical components. Currently, equipment holders supported by the CORBA NBI include racks, shelves, slots, and subslots.

**Table 1 EquipmentHolder**

Object Name	EquipmentHolder	
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="EquipmentHolder"; value="EquipmentHolderName"	
Name example in theU2000 CORBA NBI	SDH NE	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="EquipmentHolder"; value="/rack=1/shelf=1/slot=5"
	WDM NE	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="33554433" 3. name="EquipmentHolder"; value="/rack=1/shelf=590225/slot=1"
Remarks	Currently, the U2000 CORBA interface supports four types of EquipmentHolder objects: rack, shelf, slot, and subslot.	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.10 ERPSPG

---

This topic describes the naming rule for an Ethernet ring protection switching (ERPS) protection group.

**Table 1 ERPSPG**

Object Name	ERPSPG
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145729" 4.name="ERPSPG"; value="1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.11 EthService

---

This topic describes the naming rule for an Ethernet service.

**Table 1 Ethernet Service**

Object name	ETH Service
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="EthService"; value="EthServiceName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="EthService"; value="1/4/1/2"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.12 Flow

---

This topic describes the naming rule for a flow.

**Table 1 Flow**

Object name	Flow
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="Flow"; value="FlowName "
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="Flow"; value="/rack=1/shelf=1/slot=1/flow=1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.13 Flowdomain

---

This topic describes the naming rule for a flow domain.

**Table 1 Flow Domain**

Object name	FlowDomain
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="Flowdomain"; value="FlowDomainName "
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="Flowdomain"; value="1"
Remarks	Currently there is only one flow domain in the U2000.

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.14 FlowDomainFragment

---

This topic describes the naming rule for a flow domain fragment (FDFr).

**Table 1 FlowDomainFragment**

Object name	FlowDomainFragment
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="Flowdomain"; value=" FlowdomainName" 3. name="FlowdomainFragment "; value="FlowdomainFragmentName "
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="Flowdomain"; value="1" 3. name="FlowdomainFragment"; value="2005-12-22 16:46:07 - 54 -eth"
Remarks	The OSS cannot directly parse the name example in the object name but can only read it as an entire character string.

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.15 FTP

---

This topic describes the naming rule for a floating termination point (FTP). An FTP is a logical port.

**Table 1 FTP**

Object name	FTP
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="FTP"; value="FTPName"
Name example in	WDM 1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="33554433" 3. name="FTP"; value="/rack=1/shelf=590225/slot=8/domain=wdm/port=201"

**Table 1 FTP**

Object name	FTP	
theU2000 CORBA NBI	PTN	<p>1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145433" 3. name="FTP"; value="/rack=1/shelf=1/domain=ptn/type=mp/port=1"</p> <p>PTN6900 Tunnel: 1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145728" 3.name="FTP"; value="/rack=1/shelf=1/slot=0/sub_slot=0/type=tunnelif/port=1/cli_name=Tunnel0/0/1"</p> <p>PTN6900 Eth-Trunk: 1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145728" 3.name="FTP"; value="/rack=1/shelf=1/type=ethtrunk/port=10/cli_name=Eth-Trunk10"</p> <p>FTP of PW: 1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145766" 3.name="FTP"; value="PW=26 5   "</p>
	PTN	In the case of the FTP in the PTN domain, the port type can be any of the following: mp: MP group ethtrunk: link aggregation group (LAG) EoVLAN: VLAN subport EoATM: virtual Ethernet port based on the DSL port (ATM bound group) EoEFM: virtual Ethernet port based on the DSL port (EFM bound group) serial: logical serial port ima: ATM IMA group eth: virtual Ethernet port
Remarks	For naming rules for the rack, shelf in an FTP name, refer to section <a href="#">EquipmentHolder</a> .	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.16 IFProtectionGroup

This topic describes the naming rule for an intermediate frequency (IF) protection group.

**Table 1 IFProtectionGroup**

Object Name	IFProtectionGroup
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145729" 4.name="PGP"; value="1/1/7"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.17 IPCrossConnection

---

This topic describes the naming rule for a static tunnel. A static tunnel can be a static MPLS tunnel or PW Switch service.

**Table 1 IPCrossConnection**

Object Name	IPCrossConnection		
Naming rule in TMF	N/A		
Naming example of parameters in U2000 CORBA interface	PW	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145787" 3.name="IPCrossConnection"; value="PWSW=120      "	
	Tunnel	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145787" 3. name="IPCrossConnection"; value="TUNNEL=1 4 1.0.0.1 1.1.4.8 3  1  "	
Remarks			

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.18 LinkAggregationGroup

---

This topic describes the naming rule for a link aggregation group.

**Table 1 LinkAggregationGroup**

Object name	LinkAggregationGroup
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="LAG"; value="LAGName"
Naming example of parameters in U2000 CORBA interface	1. name "EMS"; value="Huawei/U2000" 2. name " ManagedElement"; value="590174" 3. name "LAG"; value="262145"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.19 MaintenanceAssociation

---

This topic describes the naming rule for a maintenance association (MA).

**Table 1 MaintenanceAssociation**

Object Name	MaintenanceAssociation
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145787" 3.name="MaintenanceDomain"; value="5" 4.name=" MaintenanceAssociation"; value="1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.20 MaintenanceDomain

---

This topic describes the naming rule for a maintenance domain.

**Table 1 MaintenanceDomain**

Object Name	MaintenanceDomain
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145787" 3.name=" MaintenanceDomain"; value="1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.21 ManagedElement

---

This topic describes the naming rule for a managed element. A managed element is an NE managed by the EMS.

**Table 1 ManagedElement**

Object Name	ManagedElement
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName"
Name example in theU2000 CORBA NBI	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825"
Remarks	N/A

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.22 MatrixFlowDomainFragment

---

This topic describes the naming rule for a matrix FDFr (MFDFr). An MFDFr can correspond to a PWE3, VPLS or NativeETH service.

**Table 1 MatrixFlowDomainFragment**

Object Name	MatrixFlowDomainFragment
Naming rule in TMF	1.name="EMS"; value="CompanyName/EMSname" 2.name="Flowdomain"; value=" FlowdomainName" 3.name="MatrixFlowdomainFragment "; value="MatrixFlowdomainFragmentName "
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145734" 3.name="MatrixFlowdomainFragment"; value="PWE3=2 8910 "
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145734" 3.name="MatrixFlowdomainFragment"; value="VSI=348 "
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145734" 3.name="MatrixFlowdomainFragment"; value="NETH=1111"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.23 MEP

---

This topic describes the naming rule for a maintenance end point (MEP).

**Table 1 MEP**

Object Name	MEP
Naming rule in TMF	None.

**Table 1 MEP**

Object Name	MEP
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145787" 3.name="MaintenanceDomain"; value="3" 4.name="MaintenanceAssociation"; value="2" 5.name="MEP"; value="234"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.24 MIP

---

This topic describes the naming rule for a maintenance intermediate point (MIP).

**Table 1 MIP**

Object Name	MIP
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145787" 3.name="MaintenanceDomain"; value="4" 4.name="MIP"; value="322"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.25 ProtectionGroup

---

This topic describes the naming rule for a protection group.

**Table 1 ProtectionGroup**

Object name	ProtectionGroup
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="PGP"; value="ProtectionGroupName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="PGP"; value="1/5/2"
Remarks	The OSS cannot directly parse the name example in the object name but can only read it as an entire character string.

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.26 ProtectionSubnetwork

---

This topic describes the naming rule for a protection subnet.

**Table 1 ProtectionSubnetwork**

Object name	ProtectionSubnetwork
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ProtectionSubnetwork"; value="ProtectionSubnetworkName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ProtectionSubnetwork "; value="48"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.27 PTP

---

This topic describes the naming rule for a physical termination point (PTP). A PTP is a physical port.

**Table 1 PTP**

Object Name	PTP	
Naming rule in TMF		1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="PTP"; value="PTPName"
Name example in theU2000 CORBA NBI	SDH	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="PTP"; value="/rack=1/shelf=1/slot=5/domain=sdh/port=2"
	WDM	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="33554433" 3. name="PTP"; value="/rack=1/shelf=590225/slot=8/domain=wdm/port=3"
	MSTP	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="PTP"; value="/rack=1/shelf=1/slot=5/domain=eth/type=mp/port=1"
	RTN	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3554433" 3. name="PTP"; value="/rack=1/shelf=1/slot=8/domain=rtn/port=1"
	PTN	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145433" 3. name="PTP"; value="/rack=1/shelf=1/slot=5/domain=ptn/type=physical/port=1" PTN6900 Ethernet: 1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145728" 3. name="PTP"; value="/rack=1/shelf=1/slot=1/sub_slot=0/type=eth/port=0/cli_name=GigabitEthernet1/0/0" PTN6900 E1: 1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145728" 3. name="PTP"; value="/rack=1/shelf=1/slot=12/sub_slot=0/type=pdh/port=0/cli_name=E1 12/0/0" PTN6900 Cpos: 1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145728"

**Table 1 PTP**

Object Name	PTP	
		3. name="PTP"; value="/rack=1/shelf=1/slot=1/sub_slot=3/type=pos/port=0/cli_name=Cpos1/3/0"
ROUTE		Main logical interface: 1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145728" 3.name="FTP"; value="/rack=1/shelf=1/type=ethtrunk/port=1/cli_name=port" Logical subinterface: 1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145728" 3.name="FTP"; value="/rack=1/shelf=1/type=ethtrunk/port=1/cli_name=port" 4.name="CTP"; value="/sub_port=1" Physical ports: 1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145728" 3.name="PTP"; value="/rack=1/shelf=1/slot=3/sub_slot=0/type=eth/port=1/cli_name=GigabitEthernet3/0/1"
DDN		1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145733" 3.name="PTP"; value="/rack=1/shelf=1/slot=3/domain=ddn/port=10"
Remarks	For the rules of naming the rack or shelf in a PTP name, see <a href="#">EquipmentHolder</a> .	
MSTP	In the case of the PTP in the MSTP domain, the port type can be: 1. Ethernet domain (in this case, domain=eth) <b>mac</b> : external Ethernet port. <b>mp</b> : internal Ethernet port (VCTRUNK port). <b>rpr</b> : resilient packet ring (RPR) Ethernet port. <b>lp</b> : VB logical port. For example, value="/rack=1/shelf=1/slot=5/domain=eth/type=lp/vb=1/port=1" for a PTP. 2. ATM domain (in this case, domain=atm) <b>atm</b> : external ATM port. <b>atmtrunk</b> : internal ATM port.	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.28 QoSRule

---

This topic describes the naming rule for a QoS rule.

**Table 1 QoSRule**

Object name	QoS
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="QoSRule"; value="QoSName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="QoSRule"; value="/rack=1/shelf=1/slot=1/qostype=car/qos=1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.29 RMEP

---

This topic describes the naming rule for a remote maintenance end point (REMP).

**Table 1 RMEP**

Object Name	RMEP
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145787" 3.name="MaintenanceDomain"; value="4" 4.name="MaintenanceAssociation"; value="1" 5.name="RMEP"; value="3"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.30 Routing Area

---

This topic describes the naming rule for a routing area.

**Table 1 Routing Area**

Object name	RoutingArea
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="RoutingArea"; value="RoutingAreaName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="RoutingArea"; value="1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.31 RPRNode

---

This topic describes the naming rule for an resilient racket ring RPR node.

**Table 1 RPRNode**

Object name	RPRNode
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="RPRNode"; value="RPRNodeName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="590174" 3. name="RPRNode"; value="/rack=1/shelf=1/slot=5/node=1"

**Table 1 RPRNode**

Object name	RPRNode
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.32 SNPPLink

---

This topic describes the naming rule for an Subnetwork Point Pool (SNPP) link.

**Table 1 SNPPLink**

Object name	SNPPLink
Naming rule in TMF	<ol style="list-style-type: none"><li>1. name="EMS"; value="CompanyName/EMSname"</li><li>2. name="RoutingArea"; value="RoutingAreaName"</li><li>3. name="SnppLink"; value="SnppLinkName "</li></ol>
Naming example of parameters in U2000 CORBA interface	<ol style="list-style-type: none"><li>1. name="EMS"; value="Huawei/U2000"</li><li>2. name="RoutingArea"; value="1"</li><li>3. name="SnppLink"; value="3145745-1811939330-3145747-1811939329"</li></ol>
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.33 Subnetwork

---

This topic describes the naming rule for a subnet. A subnet is a topology managed by the EMS.

**Table 1 Subnetwork**

Object name	Subnetwork
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="MultiLayerSubnetwork"; value="SubnetworkName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="MultiLayerSubnetwork"; value="1"
Remarks	Currently the <b>MultiLayerSubnetwork</b> value is always 1.

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.34 SubnetworkConnection

---

This topic describes the naming rule of a subnet connection (SNC). An SNC can be a connection between two ports within a subnet, or between subnets.

**Table 1 SubnetworkConnection**

Object name	SubnetworkConnection
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="MultiLayerSubnetwork"; value="SubnetworkName" 3. name="SubnetworkConnection"; value="SubnetworkConnectionName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="MultiLayerSubnetwork"; value="1" 3. name="SubnetworkConnection"; value="2008-10-12 02:17:58 - 286 -wdm"
Remarks	Currently the <b>MultiLayerSubnetwork</b> value is always 1.

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.35 TCProfile

---

This topic describes the naming rule for a traffic control policy.

**Table 1 TCProfile**

Object Name	TCProfile
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="TCP PROFILE"; value="/type=ATM/devtype=0/name=10"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.36 TopologicalLink

---

This topic describes the naming rule for a topological link. A topological link can be a physical connection between two ports or a logical link between two logical ports.

**Table 1 TopologicalLink**

Object name	TopologicalLink
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="TopologicalLink"; value="TopologicalLinkName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="TopologicalLink"; value="2008-10-17 19:02:47 - 9"
Remarks	More description for the value of TopologicalLinkName: If a topological link is created on the U2000 earlier than V200R014C50, the value of TopologicalLinkName adopts a format similar to "2008-10-17 19:02:47 - 9". Otherwise, the value of TopologicalLinkName adopts a format similar to "1399864452-2-3145734-3145737".

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.37 TopoSubnetwork

---

This topic describes the naming rule for a topology object in a subnet.

**Table 1 TopoSubnetwork**

Object name	TopoSubnetwork
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="TopoSubnetwork"; value=" TopoSubnetwork Name"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="TopoSubnetwork"; value="1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.38 TrafficDescriptor

---

This topic describes the naming rule for a traffic descriptor. A traffic descriptor is used to describe a series of features, such as bandwidth or QoS features.

**Table 1 TrafficDescriptor**

Object name	TrafficDescriptor
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="TrafficDescriptor"; value="TrafficDescriptorName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei /U2000" 2. name="ManagedElement"; value="589825" 3. name="TrafficDescriptor"; value="101"

**Table 1 TrafficDescriptor**

Object name	TrafficDescriptor
Remarks	According to the name of a TrafficDescriptor, you can locate the next traffic descriptor in an NE.

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.39 TrafficTrunk

---

This topic provides an example for naming a traffic trunk. A traffic trunk can be a dynamic MPLS tunnel, an IP tunnel, or a PW.

**Table 1 TrafficTrunk**

Object Name	TrafficTrunk
Naming rule in TMF	N/A
Naming example of parameters in U2000 CORBA interface	<ol style="list-style-type: none"><li>1. name="EMS"; value="Huawei/U2000"</li><li>2. name="ManagedElement"; value="3145763"</li><li>3. name="TrafficTrunk"; value="TUNNEL=1 4 1.0.0.1 1.1.4.8 3  1  "</li></ol>
Remarks	N/A

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.40 TunnelPG

---

This topic describes the naming rule for an IP protection group.

**Table 1 TunnelPG**

Object name	TunnelPG
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="TunnelPG"; value="TunnelPGName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="3145749" 3. name="TunnelPG"; value="/pgType=PT_MSPAPS/pgID=128"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## **9.4.9.41 VirtualBridge**

---

This topic describes the naming rule for a virtual bridge.

**Table 1 VirtualBridge**

Object name	VirtualBridge
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="vb"; value="VBName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="vb"; value="/rack=1/shelf=1/slot=2/vb=1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.42 VLAN

---

This topic describes the naming rule for a virtual local area network (VLAN).

**Table 1 VLAN**

Object name	VLAN
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="vlan"; value="VlanName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="589825" 3. name="vlan"; value="/rack=1/shelf=1/slot=2/vb=1/vlan=1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.43 WDMPG

---

This topic describes the naming rule for a WDM protection group.

**Table 1 WDMPG**

Object name	WDM ProtectionGroup
Naming rule in TMF	1. name="EMS"; value="CompanyName/EMSname" 2. name="ManagedElement"; value="ManagedElementName" 3. name="WDMPG"; value="WDMPGName"
Naming example of parameters in U2000 CORBA interface	1. name="EMS"; value="Huawei/U2000" 2. name="ManagedElement"; value="33554433" 3. name="WDMPG"; value="/pgtype=1/shelf=590004/pgID=1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.44 XPICGroup

---

This topic describes the naming rule for a cross polarization interference cancellation (XPIC) group.

**Table 1 XPICGroup**

Object Name	XPICGroup
Naming rule in TMF	None.
Naming example of parameters in U2000 CORBA interface	1.name="EMS"; value="Huawei/U2000" 2.name="ManagedElement"; value="3145729" 4.name="XPICGroup"; value="1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.9.45 TrailNtwProtection

---

This topic describes the naming rule for a tunnel APS protection group.

**Table 1 TrailNtwProtection**

Object	TrailNtwProtection
Naming rule in TMF	N/A
U2000Naming example	1.name="EMS"; value="Huawei/U2000" 2.name="TUNNELPGTRAIL"; value="1"
Remarks	

**Parent topic:** [Object Naming Rules](#)

## 9.4.10 AdditionalInfo Description

---

This chapter describes the usage of additional fields in each functional module of the CORBA NBI. The additional fields, consisting of additionalInfo and additionalCreationInfo.

- [CrossConnect\\_T](#)

This topic provides information about the additional fields for the cross-connection data type.

- [CurrentMaintenanceOperation\\_T](#)

This topic describes the additional information about maintenance operations.

- [ELLLinkCreateData\\_T](#)

This topic provides information about the additional fields for the ELL creation data type.

- [EMS\\_T](#)

This topic provides information about the additional fields for the EMS object data type.

- [Equipment\\_T](#)

This topic provides information about the additional parameters for the board data type.

- [EquipmentHolder\\_T](#)

This topic provides information about the additional fields for the equipment holder data type.

- [EthernetOAMOperation\\_T](#)

This topic provides information about the additional fields for the Ethernet OAM data type.

- [FDFrCreateData\\_T](#)

This topic provides information about the additional fields for the flow domain fragment and VPN creation data type.

- [HW\\_EthService\\_T](#)

This topic provides information about the additional fields for the Ethernet service data type.

- [HW\\_SnppLink\\_T](#)

This topic describes the additional field for SNPP links of data type.

- [HW\\_VirtualBridge\\_T](#)

This topic describes additional fields of the data structure of a virtual bridge.

- [ManagedElement\\_T](#)

This topic provides information about the additional fields for the NE data type.

- [NT\\_EPROTECTION\\_SWITCH](#)

This topic provides information about the additional fields for a notification about equipment protection switchover event.

- [NT\\_PROTECTION\\_SWITCH](#)

This topic provides information about the additional fields for a notification about a protection switchover event.

- [NT\\_WDMPROTECTION\\_SWITCH](#)

This topic provides information about the additional fields for a notification about a WDM protection switchover event.

- [ProtectionSubnetwork\\_T](#)

This topic provides information about the additional field for the protection subnet data type.

- [SNCCreateData\\_T](#)

This topic provides information about the additional fields for the SNC creation data type.

- [SNCModifyData\\_T](#)

This topic provides information about the additional fields for the SNC modification data type.

- [SplitHorizonGroup\\_T](#)

This topic provides information about the additional fields for the horizontal splitter group data type.

- [StaticMacAddress\\_T](#)

This topic provides information about the additional field for the static MAC address data type.

- [SubnetworkConnection\\_T](#)

This topic provides the information about the additional fields for the SNC data type.

- [TerminationPoint\\_T](#)

This topic provides information about the additional field for the termination point data type.

- [TopologicalLink\\_T](#)

This topic describes additional fields of the data structure of a topological link.

- [MultipointServiceAttr\\_T](#)

This topic provides information about the additional field for VPLS service attributes data type.

- [TrafficDescriptor\\_T](#)

This topic provides information about the additional field for the traffic descriptor data type.

- [TrafficTrunk\\_T](#)

This topic describes additional fields of the data structure of traffic trunks, E2E static tunnels.

- [HW\\_STCurrentPort\\_T](#)

This topic provides information about the additional field for the HW\_STCurrentPort\_T data type.

- [FlowDomainFragment\\_T](#)

This topic describes the additional information of an E2E service (PWE3 or VPLS).

- [TrafficConditioningProfileAssign\\_T](#)

This topic describes additional fields for the data structure of traffic policy profile assignment, including DS policy, ATM policy and PW policy.

- [STInfo\\_T](#)

This topic describes the additional information of the VB data types.

- [STCurrentBridge\\_T](#)  
This topic describes the additional information of the bridge data types.
- [HW\\_ConjunctionSNC\\_T](#)  
This topic provides information about the additional fields for the OTN associated ASON trail data type.
- [IPProtectionGroup\\_T](#)  
This topic provides information about the additional fields for the tunnel APS protection group data type.

**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)

## 9.4.10.1 CrossConnect\_T

---

This topic provides information about the additional fields for the cross-connection data type.

Field Name	Value	Meaning	Remarks
Direction	FIXED STRING Value range: Reverse: used for the negative SDH trail Obverse: used for the positive SDH trail	Indicates the direction of a cross-connection in routing information.	Used to query routing information about trails.
ProtectionRole	FIXED STRING Value range: Work: working cross-connection Protection: protecting cross-connection	Indicates the role of the cross-connection.	Mainly used to distinguish the working route and protection route when creating an all route trail.
Fixed	FIXED STRING Value range: True: static cross-connection False: dynamic cross-connection	Indicates the cross-connection type.	N/A
ClientType	FIXED STRING Value range: SDH SONET GBE(GFP-T)	Indicates the service type of WDM electrical cross-connection.	Used in WDM electrical cross-connection.

Field Name	Value	Meaning	Remarks
	GBE 10GBE(LAN) 10GBE(WAN) 10GBE FC FC(Slice) ESCON FICON FICON(Slice) ODU OTU OTU(5G) FE HDTV DVB DVB-SDI FDDI HYBRID ISC INFINIBAND CPRI ETR Value range for ODUflex cross-connection types: FC_400 FC_800 InfiniBand 2_5G 3GSDI CPRI4 PACKET Custom		
ClientRate	FIXED STRING Value range (Integer values outside brackets are the returned values and character strings inside brackets are used to identify cross-connection types.) (STM1)155 (STM2)311 (STM4)622	Indicates the service rate of WDM electrical cross-connection.	Used in WDM electrical cross-connection. The integer entered represents the service rate.

Field Name	Value	Meaning	Remarks
	(STM8)1250 (STM16)2500 (STM64)10000 (STM256)40000 (OC3)155 (OC12)622 (OC48)2500 (OC192)10000 (OC768)40000 (GEGFPT)1250 (GE)1250 (10GE_LAN)10000 (10GE_WAN)10000 (10GE)10000 (FC_25)266 (FC_50)531 (FC_100)1062 (FC_200)2124 (FC_400)4248 (FC_800)8500 (FC_1000)10000 (FC_1200)10625 (FC_100_SLICE)1062 (FC_200_SLICE)2124 (ESCON)200 (FICON)1062 (FICON_Express)2124 (FICON4G)4000 (FICON8G)8500 (FICONEXPRESS_SLICE)2124 The service rate for ODUflex cross-connections is an integer.		
Frequency	FIXED STRING For example, 196.000.	Indicates the frequency of WDM optical cross-connection.	Used in WDM optical cross-connection.
ODUk_TimeSlot	FIXED STRING The value is an integer.	The timeslot of ODUFlex cross-connections.	Used only when ClientType is ODUflex service.

Field Name	Value	Meaning	Remarks
Label	FREE STRING	Indicates the label of the cross-connection.	Used to query or modify the label of the SDH cross-connection.
SwitchingCondition	FIXED STRING Value range: TIM EXC SD UNEQ SLM BIPOVER	Indicates the switching condition.	Used to create the switching condition of the SDH cross-connection. Only SDH cross-connections of the add_drop_A or add_drop_z type are supported. Multiple values can be entered and are separated by commas (,).
ErrorReason	FREE STRING	Indicates the failure cause.	Used to return the failure cause when SDH cross-connections fail to be created or activated.
RevertiveMode	Non-Revertive Revertive, default: Non-Revertive	Revertive mode of the ODUk SNCP CC.	Only use for ODUk SNCP CC
WTRTime	Second, 300-720, Caretdefault: 600	Wait to Revertive time of the ODUk SNCP CC.	Only use for ODUk SNCP CC, valid only RevertiveMode = Revertive
holdofftime	100Ms, 0-100, default: 0	Hold off time of the ODUk SNCP CC.	Only use for ODUk SNCP CC
switchDetectionTime	10 Ms, 0-1000	switchDetectionTime of the ODUk SNCP CC.	Only use for ODUk SNCP CC
SNCPType	SNC/I,SNC/N(PM),SNC/N(TCM1), SNC/N(TCM2), SNC/N(TCM3), SNC/N(TCM4), SNC/N(TCM5),	SNCP type of ODUk SNCP CC.	Only use for ODUk SNCP CC

Field Name	Value	Meaning	Remarks
	SNC/N(TCM6), SNC/S(TCM1), SNC/S(TCM2), SNC/S(TCM3), SNC/S(TCM4), SNC/S(TCM5), SNC/S(TCM6)		

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.2 CurrentMaintenanceOperation\_T

---

This topic describes the additional information about maintenance operations.

Field Name	Value	Meaning	Remarks
<b>OAM_PW_CC</b>			
Interval	1000, 3.3, 10, 20, 50, 100, 200, 500	Indicates the packet detection interval.	N/A
<b>OAM_PW_LT</b>			
FrameSize	Number[84, 1400]	Indicates the packet length.	N/A
TTL	Number[1, 255]	Indicates the time to live (TTL).	N/A
ReplyTimeout	Number[1, 60000]	Indicates the response timeout period.	N/A
EXP	Number[0, 7]	Indicates the experimental bits (EXP).	N/A
ReplyMode	IPv4_UDP, No_Responsion, Channels_Control	Indicates the response mode.	Currently only value IPv4_UDP is supported.
<b>OAM_PW_LB</b>			
FrameCount	Number[1, 4294967295]	Indicates the number of packets.	N/A

Field Name	Value	Meaning	Remarks
FrameSize	Number[64, 1400]	Indicates the packet length.	N/A
TTL	Number[1, 255]	Indicates the TTL.	N/A
ReplyTimeout	Number[1, 60000]	Indicates the response timeout period.	N/A
EXP	Number[0, 7]	Indicates the EXP.	N/A
TransmitInterval	Number[100, 10000]	Indicates the packet transmission interval.	N/A
PeerPwID	N/A	The peer end PW ID	This parameter is needed only by PTN NEs.
DestinationIP	N/A	Indicates the peer IP address.	This parameter is needed only by PTN NEs.
ReplyMode	IPv4_UDP, No_Responsion, Channels_Control	Indicates the response mode.	Currently only value IPv4_UDP is supported.
<b>OAM_LSP_CC</b>			
Interval	1000, 3.3, 10, 20, 50, 100, 200, 500	Indicates the packet detection interval.	N/A
OAMState	Enabled, Disabled	Indicates the OAM status.	N/A
DetectionMode	Manual, Adaptive	Indicates the detection mode.	N/A
BackwardTunnel	N/A	Indicates the reverse tunnel.	N/A
<b>OAM_LSP_LT</b>			
FrameSize	Number[84, 1400]	Indicates the packet length.	N/A
TTL	Number[1, 255]	Indicates the TTL.	N/A
ReplyTimeout	Number[1, 60000]	Indicates the response timeout period.	N/A

Field Name	Value	Meaning	Remarks
EXP	Number[0, 7]	Indicates the EXP.	N/A
ReplyMode	IPv4_UDP, No_Responsion, Channels_Control	Indicates the response mode.	Currently only value Channels_Control is not supported.
<b>OAM_LSP_LB</b>			
FrameCount	Number[1, 4294967295]	Indicates the number of packets.	N/A
FrameSize	Number[64, 1400]	Indicates the packet length.	N/A
TTL	Number[1, 255]	Indicates the TTL.	N/A
ReplyTimeout	Number[1, 60000]	Indicates the response timeout period.	N/A
EXP	Number[0, 7]	Indicates the EXP.	N/A
TransmitInterval	Number[100, 10000]	Indicates the packet transmission interval.	N/A
ReplyMode	IPv4_UDP, No_Responsion, Channels_Control	Indicates the response mode.	Currently only value Channels_Control is not supported.
<b>OAM_ETHSVR_CC</b>			
CCInterval	3.33, 10, 100, 1000, 10000, 60000, 600000	Indicates the CC test packet transmission interval.	N/A
<b>OAM_ETHSVR_LT</b>			
MAC	N/A	Indicates the MAC address.	N/A
RMEPID	Number[1, 8191]	Indicates the RMEP ID.	N/A
<b>OAM_ETHSVR_LB</b>			
MAC	N/A	Indicates the MAC address.	N/A
FrameCount	Number[1, 255]	Indicates the number of packets.	N/A

Field Name	Value	Meaning	Remarks
FrameSize	Number[64, 65535]	Indicates the packet length.	N/A
EXP	Number[0, 7]	Indicates the EXP.	N/A
RMEPID	Number[1, 8191]	Indicates the RMEP ID.	N/A

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.3 ELLinkCreateData\_T

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This topic provides information about the additional fields for the ELL creation data type.

Field Name	Value	Meaning	Remarks
ActivateStatus	FIXED STRING Value range: ACTIVE: ELL activated DEACTIVE: ELL inactivated	Indicates the activate status of an ELL.	Used to specify the activate status of an ELL when it is being created.
Direction	FIXED STRING Value range: CD_UNI: unidirectional ELL CD_BI: bidirectional ELL	Indicates the direction of an ELL.	Used to specify the direction of an ELL when it is being created.
ReuseSnc	FIXED STRING Value range: Yes: ELL reuse SNC No: ELL does not reuse SNC	Indicates the reuse flag.	Specifies whether the ELL can reuse an SNC when the ELL is created.
SncUniqueID	FREE STRING	Indicates the SNC ID.	Specifies the ID of the SNC that can be reused by the ELL when the ELL is created.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.4 EMS\_T

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This topic provides information about the additional fields for the EMS object data type.

Field Name	Value	Meaning	Remarks
AlarmSeverity	Null by default.	Indicates the alarm of the currently highest severity on the U2000.	
Location	FREE STRING Default value: local	Indicates the location of the U2000.	
CommuAddress	FIXED STRING, For example, 127.0.0.1:12003 127.0.0.1 is the communication IP address of CORBA Agent, 12003 is the communication port of CORBA Agent.	Indicates the information of communication IP address and communication port of CORBA Agent.	
EmsTime	FIXED STRING For example, 20071102110027.0Z Indicates UTC 2007-11-02 11:00:27.	Indicates the current time (UTC) of the network management system.	
InterfaceVersion	FIXED STRING For example, 2.0	Indicates the interface version.	
EmsState	FIXED STRING For example, normal	Indicates the current status of the U2000.	
AdministrativeState	FIXED STRING Unlocked	Indicates the administrative state of the U2000.	
HardwareVersion	FREE STRING	Indicates the hardware version.	

Field Name	Value	Meaning	Remarks
SoftWareInfo	FREE STRING	Indicates the software information.	
CurrentMENumber	Number	Indicates the current number of physical NEs	
CreateDate	FIXED STRING For example, 20071102110027.0Z Indicates UTC 2007-11-02 11:00:27.	Indicates the create date of the network management system.	
Creator	FREE STRING	Indicates the creator.	
MaxSupportNE	Default value: 60000	Indicates the maximum number of physical NEs that can be managed by the U2000.	This parameter is customized and is controlled by a configuration item.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.5 Equipment\_T

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This topic provides information about the additional parameters for the board data type.

Field Name	Value	Meaning	
AlarmSeverity	Fixed string Value range: PS_CRITICAL PS_MAJOR PS_MINOR PS_WARNING PS_INDETERMINATE PS_CLEARED	Indicates the alarm of the currently highest severity on the equipment.	This field is left blank configuration item in By default, the path On the Windows OS %IMAP_ROOT%\etc\ On the Solaris or Linux \$IMAP_ROOT/etc/
HardwareVersion	Fixed string	Indicates the information about the version of the hardware.	This parameter is available

Field Name	Value	Meaning	
Port_XX_SFP	Free string	Indicates the SFP information of a port. XX indicates the port ID, for example, Port2_SFP.	This parameter is on
Port_X_SFP_BarCode	Free string	Indicates the SFP information of a port on a board. X indicates the port ID, for example, port2_SFP_BarCode.	N/A
Manufactured	Free string	Indicates the board manufacture date.	
CLEI	Free string	The board CLEI code.	
Port_X_SFP_CLEI	Free string	Indicates the SFP CLEI code of a board. X indicates the port ID, for example, Port2_SFP_CLEI.	N/A
Port_X_SFP_Item	Free string	Indicates the SFP item information. X indicates the port ID, for example, Port2_SFP_Item.	N/A
Port_X_SFP_Manufactured	Free string	Indicates the SFP manufacturer date of a board. X indicates the port ID, for example, Port2_SFP_Manufactured.	N/A
WorkState	Fixed string Value range: master standby	Indicates the working state. This parameter is optional for non-key boards.	This parameter is on
freqLockMode	Fixed string Value range: track hold lock fast-catch free	Indicates the frequency lockout status of BITS NEs.	This parameter is on only for clock cards.

Field Name	Value	Meaning	
spType	Fixed string Value range: GPS BEIDOU GLONASS	Indicates the type of the positioning system.	This parameter is on
ssrStSsrCardType	Fixed string Value range: NONE GPS GPS/GLONASS	Indicates the type of the satellite card.	This parameter is on
ssrStBuiltIn	Fixed string Value range: true false	Specifies whether the BITS satellite card is built in.	This parameter is on
ssrStSN	Free string	Indicates the satellite SNR.	This parameter is on 0 0 0 0 0 0 0 0 0 0
ssrStSatNumDetail	Fixed string Value range: track, hold, lock, fast-catch, free	Indicates the number of observed or traced satellites.	This parameter is on returned for non-sat
ssrStSatTime	Free string	Indicates the satellite time.	This parameter is on UTC format (zero time invalid value).
ssrStPositionInfo	Free string/Free string/Free string	Indicates the positioning information (longitude/latitude/altitude).	This parameter is on returned for non-sat
WorkModel	FIXED STRING Value Range: SDH SONET NonODU0 ODU0 AP8 2LQM SupportELOMOfACrossConnection NotSupportELOMOfACrossConnection OpticalElectricalSeparate	Indicates the work mode of the board.	This parameter is on

Field Name	Value	Meaning	
	Common OADM Bandpass OTN 10GE 1AP8ODU1 1AP4ODU1 EXPAND 1AP1ODU2 1AP1ODUflex 1AP2ODU2 1AP8ODU0ODU1 1AP2ODU0 2AP2ODU0 2AP3ODU1 2AP1ODU2 2AP2ODU1 1AP2Relay 2AP4ODU1 1AP8General OTNExtended 1AP1ODU1 Service HUB Cascading NonCascading NS1 LQM VOA ITL Line ElectricalRelay OpticalRelay MPO		

**Parent topic:** [AdditionalInfo Description](#)

## **9.4.10.6 EquipmentHolder\_T**

This topic provides information about the additional fields for the equipment holder data type.

Field Name	Value	Meaning	Remarks
AlarmSeverity	FIXED STRING Value range: PS_CRITICAL PS_MAJOR PS_MINOR PS_WARNING PS_INDETERMINATE PS_CLEARED	Indicates the alarm of the currently highest severity on the WDM subrack.	Only supported by the WDM subrack.
PhyInfo	FREE STRING	Indicates the telecommunications room that the WDM subrack resides.	Only supported by the WDM subrack.
GateWay	FIXED STRING For example, 590175/127.0.0.1 590175 means the NE-related GNE ID and 127.0.0.1 means the NE-related gateway IP address.	Indicates the WDM subrack-related gateway IP address.	Only supported by the WDM subrack.
Version	FIXED STRING For example, 5.8.3.10	Indicates the version of WDM subrack.	Only supported by the WDM subrack.
ProductName	FREE STRING	Indicates the type of WDM subrack.	Only supported by the WDM subrack; For BITS NE, ProductName is BITS.
ShelfType	FIXED STRING For example, ST_TYPE1	Indicates the type of the shelf.	
PreConfig	FIXED STRING Value range: 0: not pre-configured 1: pre-configured	Indicates the pre-config information of NE.	Only supported by the WDM subrack.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.7 EthernetOAMOperation\_T

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This topic provides information about the additional fields for the Ethernet OAM data type.

Field Name	Value	Meaning	Remarks
srcCCActive	FIXED STRING Value range: on: the detection enabled off: the detection disabled	Indicates the enable flag of the source CC detection.	Only supported by the CC detection.
snkCCActive	FIXED STRING Value range: on: the detection enabled off: the detection disabled	Indicates the enable flag of the sink CC detection.	Only supported by the CC detection.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.8 FDFrCreateData\_T

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This topic provides information about the additional fields for the flow domain fragment and VPN creation data type.

Field Name	Value	Meaning	Remarks
ActivateStatus	FIXED STRING Value range: ACTIVE: FDFr activated DEACTIVE: FDFr inactivated	Indicates the activate status of FDFr.	This field applies only to the flow domain fragmen creation.Used to specify the activate status of an FDFr when it is being created.

Field Name	Value	Meaning	Remarks
Direction	FIXED STRING Value range: CD_UNI: unidirectional FDFr CD_BI: bidirectional FDFr	Indicates the direction of FDFr.	This field applies only to the flow domain fragmen creation.Used to specify the direction of an FDFr when it is being created.
EPLan	FIXED STRING Value range: 0: Not to create an EPLan 1: To create an EPLan	Specifies whether to create an EPLan.	This field applies only to the flow domain fragmen creation.Only applied when two MAC ports are specified.
autopickSapID	FIXED STRING Value range: Enabled: Automatically assign a subinterface ID. Disabled: Specify the VLAN ID as a subinterface ID preferentially.	Specifies whether to automatically assign a subinterface ID.	This field applies only to VPN creation. Specify the VLAN ID as a subinterface ID preferentially. If the ID has been occupied, another ID is automatically assigned.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.9 HW\_EthService\_T

---

This topic provides information about the additional fields for the Ethernet service data type.

Field Name	Value	Meaning	Remarks
snkNodeNo	FREE STRING	Indicates the number of sink node.	Only required when the RPR-related EVPL service, which cannot be created successfully without this field specified
svlan	FIXED STRING The value is an integer.	Indicates the QinQ service label.	Used by the QinQ service to flag the labels of multiple levels

Field Name	Value	Meaning	Remarks
userLabel	FREE STRING	Indicates the name of the service.	This field takes effect only when services are created.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.10 HW\_SnppLink\_T

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This topic describes the additional field for SNPP links of data type.

Field Name	Value	Meaning	Remarks
customCost	Fixed string Value range: [0,100]	Indicates the customization cost.	N/A
maintenanceStatus	Fixed string Value: normal, maintenance	Indicates the maintenance status of ASON TE links.	A user can query and configure this parameter only for WDM ASON TE links.  No value is returned for TE links that do not support this parameter.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.11 HW\_VirtualBridge\_T

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This topic describes additional fields of the data structure of a virtual bridge.

Field Name	Value	Meaning	Remarks
LearnMode	FIXED STRING Value Range: SHARE INDEPENDENCE	Indicates the learning mode.	N/A

Field Name	Value	Meaning	Remarks
FilterEnable	FIXED STRING Value Range: Disable Enable	Specifies whether to enable the function of filter.	N/A
MacLearnEnable	FIXED STRING Value Range: Disable Enable	Specifies whether the MAC address learning function is enabled or not.	N/A

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.12 ManagedElement\_T

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This topic provides information about the additional fields for the NE data type.

Field Name	Value	Meaning	Remarks
PreConfig	FIXED STRING Value: 0: not pre-configured 1: pre-configured	Indicates the pre-configure information of an NE.	An ONE does not have this field, and the corresponding information will be reported to the additional field of equipment holder.
ShelfType	FIXED STRING For example, ST_TYPE1	Indicates the type of the shelf.	An ONE does not have this field, and the corresponding information will be reported to the additional field of equipment holder.
MaxTransferRate	FIXED STRING Value: 155M 622M 2.5G 10G	Indicates the maximum transmission rate.	An ONE does not have this field, and the corresponding information will be reported to the additional field of equipment holder.

Field Name	Value	Meaning	Remarks
	40G 160G		PTN NEs are not supported.
Subnetwork	FIXED STRING The value is SubnetWork_1	Indicates the identifier of the affiliated subnet.	An ONE does not have this field, and the corresponding information will be reported to the additional field of equipment holder.
IPAddress	FREE STRING	Indicates the IP address of the NE	
CommunicationIPAddress	FREE STRING	Indicates the communication IP address of the NE	Communication IP address of the transport NE.
GateWay	FIXED STRING For example: 590175/127.0.0.1 The first field is the NE-related GNE ID and the second field is the NE-related gateway IP address	Indicates the NE-related gateway IP address.	An ONE does not have this field, and the corresponding information will be reported to the additional field of equipment holder.
PSNName	FREE STRING	Indicates the protection subnet that an NE belongs to.	This field is unavailable for an optical NE. This field is not returned if an NE does not belong to any protection subnet.
PhyInfo	FREE STRING	Indicates the equipment room where the NE resides.	An optical NE (ONE) does not have this field, and the corresponding information will be reported to the additional field of equipment holder.
AlarmSeverity	FIXED STRING Value range	Indicates the alarm of the current	

Field Name	Value	Meaning	Remarks
	PS_CRITICAL PS_MAJOR PS_MINOR PS_WARNING PS_INDETERMINATE PS_CLEARED	highest severity on the NE.	
LSRID	FREE STRING	Indicates the ID of a label switched router (LSR).	This field is applicable only to PTN, Hybrid MSTP and RTN900 series NEs.
WaveNumber	FIXED STRING Value: 32 40 80 96 160 176 192 272	Indicates the number of wavelengths of an ONE.	This field applies only to ONEs.
OperationalState	FIXED STRING Value: track (default) hold lock fast-catch free	Indicates the NE running status.	This field is applicable only to BITS NEs.
ManagementIpAdress	FREE STRING	Indicates the NE IP address.	This field is applicable only to BITS NEs.
role	FIXED STRING Value: PRC LPR BITS (default)	Indicates the role of the BITS NE.	This field is applicable only to BITS NEs.

Field Name	Value	Meaning	Remarks
containsSatellitePositioningName	FREE STRING	Indicates the name of the satellite positioning module.	This field is applicable only to BITS NEs.
sysCfgMasterSrc	FREE STRING	Indicates the master source of system configuration.	This field is applicable only to BITS NEs.
sysRealMasterSrc	FREE STRING	Indicates the master reference source used in practice.	This field is applicable only to BITS NEs.
sysCfgSsmCtrl	FIXED STRING Value: true false (default)	Specifies whether SSM control is enabled.	This field is applicable only to BITS NEs.
sysCfgSsmb	FREE STRING	Indicates the SSM bit that the system E1 outputs.	This field is applicable only to BITS NEs.
sysCfgFrmType	FIXED STRING Value: CCS CAS	Indicates the frame format that the system E1 outputs.	This field is applicable only to BITS NEs.
sysCfgRef	FIXED STRING Value: 1M 2M (default) 5M 10M E1	Indicates the system phase discrimination signal.	This field is applicable only to BITS NEs.
leapSecMode	FIXED STRING Value: NoLeapSec (default) PosLeapSec NegLeapSec	Indicates the leap second mode.	This field is applicable only to BITS NEs. This field is not required in automatic adjustment mode.

Field Name	Value	Meaning	Remarks
leapSecDate	FREE STRING	Indicates the leap second time.	This field is applicable only to BITS NEs. This field is not required in automatic adjustment mode.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.13 NT\_EPROTECTION\_SWITCH

---

This topic provides information about the additional fields for a notification about equipment protection switchover event.

Field Name	Value	Meaning	Remarks
ProductName	FREE STRING For example, OptiX OSN 3500	Indicates the type of switched equipment.	N/A
protectedEquipmentName	FREE STRING For example, LWF	Indicates the name of the protection board.	N/A
switchAwayFromEquipmentName	FREE STRING For example, LWF	Indicates the name of the source board where switching occurs.	N/A
switchToEquipmentName	FREE STRING For example, LWF	Indicates the name of the sink board where switching occurs.	N/A

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.14 NT\_PROTECTION\_SWITCH

---

This topic provides information about the additional fields for a notification about a protection switchover event.

Field Name	Value	Meaning	Remarks
ProductName	FREE STRING For example, OptiX Metro 1000V3	Indicates the type of switched equipment.	N/A
protectedEquipmentName	FREE STRING For example, N1SL16	Indicates the name of the protection board.	N/A
switchAwayFromEquipmentName	FREE STRING For example, N1SL16	Indicates the name of the source board where switching occurs.	N/A
switchToEquipmentName	FREE STRING For example, N1SL16	Indicates the name of the sink board where switching occurs.	N/A

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.15 NT\_WDMPROTECTION\_SWITCH

---

This topic provides information about the additional fields for a notification about a WDM protection switchover event.

Field Name	Value	Meaning	Remarks
ProductName	FREE STRING For example, OptiX BWS1600G	Indicates the type of switched equipment.	N/A
protectedEquipmentName	FREE STRING For example, LWF	Indicates the name of the protection board.	N/A
switchAwayFromEquipmentName	FREE STRING For example, LWF	Indicates the name of the source board where switching occurs.	N/A

Field Name	Value	Meaning	Remarks
switchToEquipmentName	FREE STRING For example, LWF	Indicates the name of the sink board where switching occurs.	N/A

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.16 ProtectionSubnetwork\_T

---

This topic provides information about the additional field for the protection subnet data type.

Field Name	Value	Meaning	Remarks
VC4Number	FREE STRING	Indicates the VC4 path number.	Used to describe the VC4 paths occupied by the protection subnet.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.17 SNCCreateData\_T

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This topic provides information about the additional fields for the SNC creation data type.

Field Name	Value	Meaning	Remarks
BundledSNC	FREE STRING When a preconfigured trail is being created, this field is to flag the active trail.	Indicates the Flag of the active trail.	Required when creating preconfigured trails
Prefab	FIXED STRING Value range: true: preconfigured trail false: non-preconfigured trail	Specifies whether the trail is preconfigured.	

Field Name	Value	Meaning	Remarks
LSPType	FIXED STRING Value range: LSP: normal LSP FA_LSP: server LSP	Indicates the LSP type.	
A1_Timeslot	FREE STRING The value is the specified timeslot number [1-63] when creating trails.	Indicates the source timeslot.	Only applied when creating an SNC that is not all-route converged and the lower order timeslots are not specified in the CTP information.
Z1_Timeslot	FREE STRING The value is the specified timeslot number [1-63] when creating trails.	Indicates the sink timeslot.	Only applied when creating an SNC that is not all-route converged and the lower order timeslots are not specified in the CTP information.
Region	FIXED STRING The value is fixed as SONET. That is, the trail to be created is of the OC type.	Indicates the specified type of the trail to be created.	This field is required when trails of the OC3, OC-12, OC-48, OC-192, and OC-768 types are created. The rate of a Client WDM trail of the OC type is the same as the rate of a trail of the STM type. Therefore, this field is used to identify that the trail to be created is of the OC type.
ODU2Rate	FIXED STRING Value range: ODU2E: speedup mode ODU2: standard mode	Specifies the rate level of the ODU2 trail to be created.	This field is required only when the ODU2 trail is created, because there are ODU2 trails of two rate levels in Huawei. Default value: ODU2
ClientType	FIXED STRING Value range: FC_400 FC_800 InfiniBand 2_5G 3GSDI	Specifies the service type of the ODU trail to be created.	This field is required only when ODUflex trails are created.

Field Name	Value	Meaning	Remarks
	CPRI4 PACKET		
ODUk_TimeSlot	FREE STRING Value range: [1,32]	Indicates the timeslots bound to the port.	This field is required only when ClientType is set to PACKET.
ServiceMappingMode	FIXED STRING Value range: SDH Ethernet	Indicates the service type carried by the WDM trail.	This field is required only when a user creates WDM trails for hybrid line boards.
SNCPType	FIXED STRING Value range: SNC/N(PM) SNC/S(TCM1) SNC/S(TCM2) SNC/S(TCM3) SNC/S(TCM4) SNC/S(TCM5) SNC/S(TCM6)	Indicates the SNC type of the ASON trail.	This field takes effect only when a user creates a diamond OTN ASON trail.  Default value: SNC/N(PM)
TriggerPolicy	FIXED STRING Value range: Never Reroute RerouteWithOneTrailsFail RerouteWithTwoTrailsFail Flex P&R	Indicates the initiation condition of ASON trail rerouting.	This field takes effect only when a user creates a diamond OTN ASON trail.  Default value: RerouteWithOneTrailsFail
RevertiveMode	FIXED STRING Value range: Revertive: revertive service Non-Revertive: non-revertive service ScheduledRevertive: scheduled revertive service	Indicates the revertive mode of the ASON trail.	This field takes effect only for the ASON SNC when the SNC is not a non-protective service or additional service.  Default value: Revertive
Priority	FIXED STRING Value range: High Low	Indicates the priority of the ASON trail.	

Field Name	Value	Meaning	Remarks
WTRTime	FREE STRING	Indicates the WTR time of the ASON trail.	This field is available only when the reversion mode of the ASON trail is Revertive. The value is in seconds, and the default value is 600.
Policy	FIXED STRING Fixed string. The options are as follows: Overlapping: tries to use the existing trail resources Separating: tries not to use the existing trail resources BestRoute: not consider cost factors SimulatedSpanRestoration: implements simulated span restoration PresetRestoration: implements preset restoration	Indicates the route selection policy when the specified ASON trail reroutes.	This field is available only for OTN ASON trail creation. Default value: Separating
ProtectionSwithovers	FIXED STRING Value range: an integer ranging from 1 to 10	Indicates the protection times of the ASON trail.	This field takes effect only when the initiation conditionsCaret of ASON trail rerouting is set to Flex P&R. Default value: 2
RestorationTimes	FIXED STRING Value range: an integer ranging from 0 to 100 or 255	Indicates the restoration times of the ASON trail.	This field takes effect only when the initiation condition of rerouting is set to Flex P&R. The default value of this field is 255 for a diamond trail.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.18 SNCModifyData\_T

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This topic provides information about the additional fields for the SNC modification data type.

Field Name	Value	Meaning	Remarks
RevertiveMode	FIXED STRING Value range: Revertive: revertive reroute Non-Revertive: non-revertive reroute ScheduledRevertive: scheduled revertive service	Indicates the revertive mode.	Only supported by the intelligent SNC which is not unprotected or additional service.
ReroutePriority	FIXED STRING Value range: Low: low priority of reroute High: high priority of reroute	Indicates the priority of rerouting LSP.	Only supported by intelligent SNCs.
WTRTime	FREE STRING	Indicates the wait-to-revert (WTR) time.Caret	This field takes effect only for ASON SNCs when the RevertiveMode is set to Revertive. The unit is s. The default value is 600.
Policy	FIXED STRING Value range: Overlapping: tries to use the existing trail resources Separating: tries not to use the existing trail resources BestRoute: not considered SimulatedSpanRestoration: implements simulated span restoration PresetRestoration: implements preset restoration	Indicates the routing policy when the ASON trail reroutes.	This field takes effect only for ASON SNCs.
TriggerPolicy	FIXED STRING Value range: Never Reroute RerouteWithOneTrailsFail	Indicates the initiation condition of ASON trail rerouting.	This field takes effect only for diamond OTN ASON SNCs.

Field Name	Value	Meaning	Remarks
	RerouteWithTwoTrailsFail Flex P&R		
ScheduledTime	FIXED STRING Value range: Time in UTC format. Example: 20140821065608.0Z	Indicates the scheduled revertive time.	This field takes effect only for ASON SNCs when the RevertiveMode is set to ScheduledRevertive.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.19 SplitHorizonGroup\_T

---

This topic provides information about the additional fields for the horizontal splitter group data type.

Field Name	Value	Meaning	Remarks
OperationMode	FIXED STRING Value range: Add: Indicates add the split horizon group. Remove: Indicates delete the split horizon group.	Adds or deletes the split horizon group.	This parameter is used only when a split horizon group is modified through the modifyMFDFr interface.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.20 StaticMacAddress\_T

---

This topic provides information about the additional field for the static MAC address data type.

Field Name	Value	Meaning	Remarks
OperationMode	FIXED STRING Value range: Add: indicates add the MAC address. Remove: indicates delete the MAC address.	Adds or deletes the MAC address.	This parameter is used only when a static MAC address is changed through the modifyMFDFr interface.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.21 SubnetworkConnection\_T

---

This topic provides the information about the additional fields for the SNC data type.

Field Name	Value	Meaning	Remarks
LSPType	FIXED STRING Value range: LSP: normal LSP Caret FA_LSP: server LSP	Indicates the LSP type.	This field is only for ASON trails.
RelatedLsp	FIXED STRING	Indicates the associated LSP.	This field is only for ASON trails.
RevertiveMode	FIXED STRING Value range: Revertive: revertive rerouting Non-Revertive: non-revertive rerouting ScheduledRevertive: scheduled revertive service	Indicates the revertive mode.	This field is only for ASON trails with protection or without extra services.
OVPNCustomer	FREE STRING	Indicates customer information of the ASON trail.	This field is only for ASON trails.
Customer	FIXED STRING	Indicates customer information of the trail.	This field is only for SDH and WDM trails.

Field Name	Value	Meaning	Remarks
Remark1	FIXED STRING	Indicates information about the customized attribute 1 of the trail.	This field is only for SDH and WDM trails.
Remark2	FIXED STRING	Indicates information about the customized attribute 2 of the trail.	This field is only for SDH and WDM trails.
ClientType	FIXED STRING Value range: FICON(Slice) FICON FC(Slice) FC GBE(GFP-T) GBE(Slice) GBE 10GBE(LAN) 10GBE(WAN) 10GBE FC_400 FC_800 InfiniBand 2_5G 3GSDI CPRI4 STM-64	Indicates the service type.	This field is only for WDM trails.
ClientRate	FIXED STRING Value range: 2124 1062 10625 4248 4000 1250 10000	Indicates the service rate.	This field is only for WDM trails.
priority	FIXED STRING The value range is 1-8.	Indicates the priority for rerouting.	This field is only for ASON trails in OTN.
ODUk_TimeSlot	FIXED STRING The value range is 3-7.	Indicates the number of ODUk timeslots.	This field is only for ODUflex trails in OTN.

Field Name	Value	Meaning	Remarks
OPCIState	FIXED STRING Value range: True False Blank: This field is not supported.	Indicates the function of enabling and disabling optical parameter constraints.	This field is only for ASON trails in OTN.
Route<n>	FIXED STRING Value range: Positive Working: working in the positive direction Negative Working: working in the negative direction Positive Protection: protected in the positive direction Negative Protection: protected in the negative direction	Indicates route parameters (n=1-4).	This field is only for ASON trails in OTN.
OSNR<n>	This field is blank if the value is invalid.	Indicates ONSR parameters (n=1-4)	This field is only for ASON trails in OTN.
CDPara<n>	This field is blank if the value is invalid.	Indicates dispersion parameters (n=1-4)	This field is only for ASON trails in OTN.
PMD<n>	This field is blank if the value is invalid.	Indicates PMD parameters (n=1-4)	This field is only for ASON trails in OTN.
SNCID	FREE STRING	Indicates the unique SNC index ID.	
ServerType	FIXED STRING LinkServer	Indicates the server trail type.	This field is only for server trails of SDH links.
A1_Timeslot	FREE STRING	Indicates the channels of source TP.	This field is only for ASON trails in OTN.
Z1_Timeslot	FREE STRING	Indicates the channels of sink TP.	This field is only for ASON trails in OTN.
ServiceMappingMode	FIXED STRING Value range:	Indicates the service type carried by the WDM trail.	This field takes effect only for WDM SNCs of hybrid line boards.

Field Name	Value	Meaning	Remarks
	SDH Ethernet		
WTRTime	FREE STRING	Indicates the wait-to-revert (WTR) time.	This field takes effect only for ASON SNCs when the RevertiveMode is set to Revertive. The unit is s.
Policy	FIXED STRING Value range: Overlapping: tries to use the existing trail resources Separating: tries not to use the existing trail resources BestRoute: not considered SimulatedSpanRestoration: implements simulated span restoration PresetRestoration: implements preset restoration	Indicates the routing policy when the ASON trail reroutes.	This field takes effect only for ASON SNCs.
OptimizationStatus	FIXED STRING Value range: Optimized Unoptimized	Indicates the optimization status of the ASON trail.	This field takes effect only for OTN ASON SNCs.
ODU2Rate	FIXED STRING Value range: ODU2: standard mode ODU2E: speed-up mode	Indicates the rate level of the ODU2 trail.	This field takes effect only for ODU2 OTN ASON SNCs.
SNCPType	FIXED STRING Value range: SNC/N(PM) SNC/S(TCM1) SNC/S(TCM2) SNC/S(TCM3) SNC/S(TCM4) SNC/S(TCM5) SNC/S(TCM6)	Indicates the SNCP type.	This field takes effect only for diamond OTN ASON SNCs.

Field Name	Value	Meaning	Remarks
TriggerPolicy	FIXED STRING Value range: Never Reroute RerouteWithOneTrailsFail RerouteWithTwoTrailsFail Flex P&R	Indicates the initiation condition of ASON trail rerouting.	This field takes effect only for diamond OTN ASON SNCs.
ScheduledTime	FIXED STRING Value range: Time in UTC format. Example: 20140821065608.0Z	Indicates the scheduled revertive time.	This field takes effect only for ASON SNCs when the RevertiveMode is set to ScheduledRevertive.
ProtectionSwithovers	FREE STRING Value range: an integer ranging from 1 to 10	Indicates the protection times of the ASON trail.	This field takes effect only when the initiation condition of ASON trail rerouting is set to Flex P&R.
RestorationTimes	FREE STRING Value range: an integer ranging from 0 to 100 or 255	Indicates the restoration times of the ASON trail.	This field takes effect only when the initiation condition of ASON trail rerouting is set to Flex P&R.
WorkPath	FIXED STRING Value range: Work Protection	Specifies whether the ASON trail is a working route or a protection route.	This field takes effect only for diamond OTN ASON SNCs.
ServiceID	FREE STRING	Indicates the service ID.	This parameter is available only for SDH and WDM trails.
Activated Time	FREE STRING	Indicates the service activation time.	This parameter is available only for SDH and WDM trails.
Creator	FREE STRING	Indicates the creator.	This parameter is available only for SDH and WDM trails.
Remarks	FREE STRING	Indicates the remarks.	This parameter is available only for SDH and WDM trails.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.22 TerminationPoint\_T

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This topic provides information about the additional field for the termination point data type.

Field Name	Value	Meaning	Remarks
ServiceLoadFlag	FIXED STRING Value Range: 0: unloaded 1: loaded	Indicates the service loading flag.	This field is applicable to tributary ports.
SupportFEC	FIXED STRING Value Range: TRUE: supports FEC. FALSE: not support FEC.	Specifies whether a port supports forward error correction (FEC).	This field is applicable only to WDM ports.
AdministrativeState	FIXED STRING Value Range: Locked Unlocked ShuttingDown	Indicates the administrative status.	This field is applicable only to BITS NEs.
OperationalState	FIXED STRING Value Range: Enabled Disabled	Indicates the running status.	This field is applicable only to BITS NEs.
ChanType	FIXED STRING Value Range: E1 1M 2M 5M 10M PPS PTP TOD SYNC	Indicates the channel type.	This field is applicable only to BITS NEs.

Field Name	Value	Meaning	Remarks
	T1 J1 DCLS RS232 CC 64K 1M5 NOSIGNAL		
ChanTimePri	FREE STRING	Indicates the input channel time priority. This parameter is valid for time synchronization NEs.	This field is applicable only to BITS NEs.
ChanFreqPri	FREE STRING	Indicates the input channel frequency priority. This parameter is valid for frequency synchronization NEs.	This field is applicable only to BITS NEs.
DelayReqFreq	FREE STRING	Indicates the input channel DelayReq packet frequency. This parameter is valid for PTP input channels.	This field is applicable only to BITS NEs.
ChanName	FREE STRING	Indicates the channel name.	This field is applicable only to BITS NEs.
ais	FIXED STRING Value Range: True False	Indicates the system alarm indication signal. This parameter is valid for E1 input channels.	This field is applicable only to BITS NEs.
crc	FIXED STRING Value Range: True False	Indicates the CRC check. This parameter is valid for E1 input channels.	This field is applicable only to BITS NEs.
SyncFreq	FREE STRING	Indicates the SYNC packet frequency. This parameter is valid for PTP input channels.	This field is applicable only to BITS NEs.

Field Name	Value	Meaning	Remarks
AnnounceFreq	FREE STRING	Indicates the ANNOUNCE packet frequency. This parameter is valid for PTP output channels.	This field is applicable only to BITS NEs.
TCProfileName	FREE STRING	Indicates the name of the QoS profile bound to the port.	This attribute belongs to RTN 900 series NEs only.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.23 TopologicalLink\_T

---

This topic describes additional fields of the data structure of a topological link.

Field Name	Value	Meaning	Remarks
Memo	FREE STRING	Indicates the remarks of links.	
LinkType	FREE STRING Value range: VirtualFiber: virtual fiber Fiber: fiber Cable: cable Microwave: microwave link	Indicates the link type.	

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.24 MultipointServiceAttr\_T

---

This topic provides information about the additional field for VPLS service attributes data type.

Field Name	Value	Meaning	Remarks
isolate	FIXED STRING Value range: Enable: enables the isolation between AC interfaces and spoke PWs. Disable: disables the isolation between AC interfaces and spoke PWs.	Specifies whether to enable the split horizon function.	Currently, only the PTN 6900 supports this field.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.25 TrafficDescriptor\_T

---

This topic provides information about the additional field for the traffic descriptor data type.

Field Name	Value	Meaning	Remarks
SvcType	FREE STRING The value is fixed as SC_UBR+.	Indicates the TD type flag.	The serviceCategory field of the TD type flag of the UBR+ type is SC_NA. Therefore, this parameter is added for further explanation of the detailed type.

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.26 TrafficTrunk\_T

---

This topic describes additional fields of the data structure of traffic trunks, E2E static tunnels.

Field Name	Value	Meaning	Remarks
CreatedTime	FREE STRING	Indicates the creation time.	N/A

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.27 HW\_STCurrentPort\_T

---

This topic provides information about the additional field for the HW\_STCurrentPort\_T data type.

Field Name	Value	Meaning	Remarks
PortID	FREE STRING	Port No.	
PortStatus	FREE STRING Value range: Blocking Listening Learning Forwarding Disable Discarding NA	Status of HW_STCurrentPort_T	
PortPathCost	FREE STRING	Cost of Port Path	
DesignatedPortID	FREE STRING	ID of Designated Port	
DesignatedRootBridgePriority	FREE STRING	Priority of Designated Root Bridge	
DesignatedPathCost	FREE STRING	Cost of Designated Path	
DesignatedBridgePriority	FREE STRING	Priority of Designated Bridge	
TopologyDetection	FREE STRING Value range: Disabled Enabled NA	Topology Detection	
EdgePortStatus	FREE STRING Value range: Disabled	Admin Edge Attribute	

Field Name	Value	Meaning	Remarks
	Enabled NA		

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.28 FlowDomainFragment\_T

---

This topic describes the additional information of an E2E service (PWE3 or VPLS).

Field Name	Value	Meaning	Remarks
NoVB	FREE STRING	Indicates a non-VB node involved in an EOW/EOO private network service.	Multiple non-VB nodes are separated by using semicolons (;).

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.29 TrafficConditioningProfileAssign\_T

---

This topic describes additional fields for the data structure of traffic policy profile assignment, including DS policy, ATM policy and PW policy.

Field Name	Value	Meaning	Remarks
DS			
PackageType	CVLAN, SVLAN, IP_DSCP, MPLS_EXP	Indicates the packet type.	N/A
ATM			
ConnectionID	Number	Indicates the connection ID.	N/A
PW			

Field Name	Value	Meaning	Remarks
PWDirection	CD_BI, CD_UNI	Indicates the PW direction.	N/A
SignalType	Static, Dynamic	Indicates the PW signaling type.	N/A

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.30 STInfo\_T

---

This topic describes the additional information of the VB data types.

Field Name	Value	Meaning	Remarks
EquipmentName	FREE STRING	Indicates the equipment name.	
VBName	FREE STRING	Indicates the VB name.	
VBID	FREE STRING	Indicates the VB ID.	
ProtocolEnabled	FREE STRING Value range: Disable Enable NA	Specifies whether to enable the protocol.	
ProtocolType	FREE STRING Value range: STP RSTP NA	Indicates the protocol type.	

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.10.31 STCurrentBridge\_T

---

This topic describes the additional information of the bridge data types.

Field Name	Value	Meaning	Remarks
Priority	FREE STRING	Indicates the priority of the bridge.	
MACAddress	FREE STRING	Indicates the MAC address of the bridge.	
RootPort	FREE STRING	Indicates the root port.	
DesignatedRootBridgePriority	FREE STRING	Indicates the priority of the designated root bridge.	
DesignatedRootBridgeMACAddress	FREE STRING	Indicates the MAC address of the designated root bridge.	
RootPathCost	FREE STRING	Indicates the cost of the root path.	
MaxAge	FREE STRING Value range: [6, 40]	Indicates the maximum life cycle of configuration messages.	
HelloTime	FREE STRING Value range: [1, 10]	Indicates the send cycle of configuration messages.	
ForwardDelay	FREE STRING Value range: [4, 30]	Indicates the transition delay of port state configuration.	
HoldCount	FREE STRING Value range: [1, 10]	Indicates the number of BPDUs that the VB port can send per second.	

**Parent topic:** [AdditionalInfo Description](#)

## **9.4.10.32 HW\_ConjunctionSNC\_T**

---

This topic provides information about the additional fields for the OTN associated ASON trail data type.

Field Name	Value	Meaning	Remarks
ConjunctionPolicy	FIXED STRING Value range: RerouteWithOneTrailFails: When one trail fails, the rerouting is initiated. RerouteWithTwoTrailFails: When both trails fail, the rerouting is initiated. RerouteWithFlexP&RProtectionConfigured: Flex P&R protection	Indicates the initiation condition of associated rerouting.	
SharedRoutePolicy	FIXED STRING Value range: Shared NotShared	Indicates the shared policy of associated services.	
ProtectionSwithovers	FIXED STRING Value range: 1-10	Indicates the protection times.	This value is returned only when ConjunctionPolicy is set to RerouteWithFlexP&RProtectionConfigured.
RestorationTimes	FIXED STRING Value range: 0-100,255	Indicates the restoration times.	The value 255Caretnotes indicates that the restoration is permanent. This value is returned only when ConjunctionPolicy is set to RerouteWithFlexP&RProtectionConfigured.

**Parent topic:** [AdditionalInfo Description](#)

## **9.4.10.33 IPProtectionGroup\_T**

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This topic provides information about the additional fields for the tunnel APS protection group data type.

Field Name	Value	Meaning	Remarks
DelayJitterSwitch	FIXED STRING Value range: Enable Disable	Specifies whether to enable delay or jitter switching.	Default value: Disable
SwitchDirection	FIXED STRING Value range: BidirectionalSwitch UnidirectionalSwitch	Indicates the direction of delay switching.	Default value: BidirectionalSwitch
SwitchfirstCondition	FIXED STRING Value range: Jitter Delay	Indicates the condition of delay or jitter switching.	Default value: Jitter
DelayThreshold	FREE STRING Value range: an integer ranging from 100 to 65535 or DelayNotTriggerSwitch	Indicates the delay difference.	Default value: 10000
JitterThreshold	FREE STRING Value range: an integer ranging from 100 to 65535 or JitterNotTriggerSwitch	Indicates the jitter difference.	Default value: 2000

**Parent topic:** [AdditionalInfo Description](#)

## 9.4.11 UniqueName Naming Rules

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This topic describes the functions, object naming rules, and important notes of the UniqueName.

- **[Meaning of UniqueName](#)**

This topic describes the meaning and application scenarios of the UniqueName.

- **[Enabling the UniqueName Naming Rules](#)**

This topic describes how to enable or disable the UniqueName naming rules on the MSuite.

- **[Objects and Examples Supported by UniqueName](#)**

This topic describes the objects supported by the UniqueName and provides some examples.

- [Restrictions and Precautions](#)

This topic describes the restrictions on and precautions for using the UniqueName naming rules.

**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)

## **9.4.11.1 Meaning of UniqueName**

---

This topic describes the meaning and application scenarios of the UniqueName.

### **Application Scenario**

In general, the NBI uses an internal ID assigned by the U2000 to uniquely identify an object. However, for the OSS, names with specific meanings are much more meaningful and easy-to-understand than numeral symbols. Therefore, some OSSs require that the NBI use a specific name to uniquely identify an object. This helps OSSs parse objects and associate objects with inventory systems for easier management and maintenance.

To meet the OSS requirements, the NBI PDT develops a naming mode, UniqueName, to identify objects. After the UniqueName naming mode is enabled, the NBI directly uses object names (entity object names displayed in the U2000 GUI) to uniquely identify objects. In UniqueName mode, the NBI and U2000 client use the same object identifier.

### **Meaning**

UniqueName indicates the local name of an entity object and corresponds to the object name on a U2000 client.

In UniqueName mode, the object name must be unique on a U2000 client.

The same entity object name displayed in the U2000 GUI may indicate different physical entity objects. Therefore, the OSS must ensure that the entity object name indicates a specific entity object on the U2000 through proper network resource planning if the NBI uses the UniqueName naming rules to identify objects. Otherwise, object data reported by the NBI may conflict or become disordered.

**Parent topic:** [UniqueName Naming Rules](#)

## **9.4.11.2 Enabling the UniqueName Naming Rules**

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This topic describes how to enable or disable the UniqueName naming rules on the MSuite.

## Prerequisites

The CORBA NBI is running properly.

## Procedure

1. On the NBI Config Tools client, choose **NBI > Configure CORBA NBI Instance**.
2. Click the **General Config** tab and choose **Object Identification**
3. Choose **Internal ID** from the **Object Name** drop-down list.

General		
Naming service host address	10.145.131.176	Naming service port(1-1024)
Notify service host address	10.145.131.176	Notify service port(1-1024)
CORBA Agent host address	10.145.131.176	CORBA Agent port(1-1024)
Use SSL	Yes	Naming service SSL port(1-1024)
		Notify service SSL port(1-1024)
		CORBA Agent SSL port(1-1024)
Advanced		
Character Set	UTF-8	Set Encoding
Log output mode	Log immediately	Maximum capacity of log file
Enable the NE ID	Logical ID	Object Identifier
Alarm Correlation	All	Filter Out Engineering Alarms
Virtual NE Reporting	Enable	Alarm-Affected Object Reporting
Enable log level	<input checked="" type="checkbox"/> Assertion/Internal Error Log	<input checked="" type="checkbox"/> External Error Log
	<input checked="" type="checkbox"/> I/O Error Log	

4. A confirmation dialog box is displayed indicating that After changing this configuration, inventory data on the OSS will be inconsistent with that on the U2000. Are you sure you want to continue. Confirm the modification and click **Yes**.
5. Click **Save**. The object naming rules of the CORBA NBI is changed to the UniqueName mode.

**Parent topic:** [UniqueName Naming Rules](#)

### 9.4.11.3 Objects and Examples Supported by UniqueName

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This topic describes the objects supported by the UniqueName and provides some examples.

#### Objects Supported

Object	Example
ManagedElement	<a href="#">Table 1</a>
SubnetworkConnection	<a href="#">Table 2</a>
EncapsulationLayerLink	<a href="#">Table 3</a>
FlowDomainFragment	<a href="#">Table 4</a>
TopologicalLink	<a href="#">Table 5</a>
EquipmentHolder	<a href="#">Table 6</a>
IPCrossConnection	<a href="#">Table 7</a>
TrafficTrunk	<a href="#">Table 8</a>
FlowDomainFragment (VPN module)	<a href="#">Table 9</a>
MatrixFlowDomainFragment (VPN module)	<a href="#">Table 10</a>
TNP	<a href="#">Table 11</a>

#### Object Example

Table 1 ManagedElement			
Status	Description	Example	Remarks
Disabled	The NBI reporting or query function uses managed	<b>Optical NEs:</b> {name EMS value Huawei/U2000}	<ul style="list-style-type: none"><li>According to the hierarchy model of object identifiers, the change of the ManagedElement naming</li></ul>

**Table 1 ManagedElement**

Status	Description	Example	Remarks
	elements (MEs) to uniquely identify objects.	{name ManagedElement value 585432}  <b>Non-optical NEs:</b> {name EMS value Huawei/U2000} {name ManagedElement value 3145765}	rules has impact on the following sub-objects: EquipmentHolder(rack/shelf/slot), Equipment, PTP, CTP, VB, VLAN, CAR, COS, Flow, TrafficDescriptor, and so on. That is, the naming rules of entity objects contained in the ManagedElement object are affected.
Enabled	The NBI reporting or query function uses the UniqueName naming rules. In UniqueName mode, the ME names are the same as those displayed on the U2000 client.	<b>Optical NEs:</b> {name EMS value Huawei/U2000} {name ManagedElement value otm1}  <b>Non-optical NEs:</b> {name EMS value Huawei/U2000} {name ManagedElement value NE350}	

**NOTE:**

Enabled: use the UniqueName naming rules.

Disabled: do not use the UniqueName naming rules.

**Table 2 SubnetworkConnection**

Status	Description	Example	Remarks
Disabled	The NBI reporting or query function uses subnetwork connections (SNCs) to uniquely identify objects.	{name EMS value Huawei/U2000} {name MultiLayerSubnetwork value 1}	

**Table 2 SubnetworkConnection**

Status	Description	Example	Remarks
		{name SubnetworkConnection value {2010-10-30 10:55:18 - 4-sdh} }	
Enabled	The NBI reporting or query function uses the UniqueName naming rules. In UniqueName mode, the SNC names are the same as those displayed on the U2000 client.	{name EMS value Huawei/U2000} {name MultiLayerSubnetwork value 1} {name SubnetworkConnection value NE350-NE351- VC12-0001}	

**Table 3 EncapsulationLayerLink**

Status	Description	Example	Remarks
Disabled	The NBI reporting or query function uses encapsulation layer links (ELLs) to uniquely identify objects.	{name EMS value Huawei/U2000} {name EncapsulationLayerLink value {2010-10-30 03:32:23 - 422 -eth} }	
Enabled	The NBI reporting or query function uses the UniqueName naming rules. In UniqueName mode, the ELL names are the same as those displayed on the U2000 client.	{name EMS value Huawei/U2000} {name EncapsulationLayerLink value Trunk_Link- 0001}	

**Table 4 FlowDomainFragment**

Status	Description	Example	Remarks
Disabled	The NBI reporting or query function uses flow	{name EMS value Huawei/U2000}	

**Table 4 FlowDomainFragment**

Status	Description	Example	Remarks
	domain fragments (FDFrs) to uniquely identify objects.	{name Flowdomain value 1} {name FlowdomainFragment value {2010-10-30 03:34:26 - 425 -eth}}}	
Enabled	The NBI reporting or query function uses the UniqueName naming rules. In UniqueName mode, the FDFr names are the same as those displayed on the U2000 client.	{name EMS value Huawei/U2000} {name Flowdomain value 1} {name FlowdomainFragment value EVPL-0001}}	

**Table 5 TopologicalLink**

Status	Description	Example	Remarks
Disabled	The NBI reporting or query function uses topology links to uniquely identify objects.	{name EMS value Huawei/U2000} {name TopologicalLink value {2006-03-21 15:37:56 - 723}}}	
Enabled	The NBI reporting or query function uses the UniqueName naming rules. In UniqueName mode, the topology link names are the same as those displayed on the U2000 client.	{name EMS value Huawei/U2000} {name TopologicalLink value f-7}}	

**Table 6 EquipmentHolder**

Status	Description	Example	Remarks
Disabled	The NBI reporting or query function uses equipment holders to	<b>Optical NEs:</b> {name EMS value Huawei/U2000}	According to the hierarchy model of object identifiers, the

**Table 6 EquipmentHolder**

Status	Description	Example	Remarks
	uniquely identify objects.	<pre>{name ManagedElement value 33554433} {name EquipmentHolder value /rack=1/shelf=590004/slot=1}</pre> <b>Non-optical NEs:</b> <pre>{name EMS value Huawei/U2000}</pre> <pre>{name ManagedElement value 590174} {name EquipmentHolder value /rack=1/shelf=1/slot=1}</pre>	change of the EquipmentHolder naming rules has impact on the naming rules of the Equipment connected to the EquipmentHolder.
Enabled	The NBI reporting or query function uses the UniqueName naming rules. In UniqueName mode, the equipment holder names are the same as those displayed on the U2000 client.	<b>Optical NEs:</b> <pre>{name EMS value Huawei/U2000}</pre> <pre>{name ManagedElement value otm1}</pre> <pre>{name EquipmentHolder value /rack=1/shelf=NE180/slot=1}</pre> <b>Non-optical NEs:</b> <pre>{name EMS value Huawei/U2000}</pre> <pre>{name ManagedElement value NE350} {name EquipmentHolder value /rack=1/shelf=1/slot=1}</pre>	

**Table 7 IPCrossConnection**

Status	Description	Example	Remarks
Disabled	The NBI reporting or query function uses IP cross-connections to uniquely identify objects.	<b>Tunnels on an NE:</b> <pre>{name EMS value Huawei/U2000}</pre> <pre>{name ManagedElement value 3145733}</pre> <pre>{name IPCrossConnection value TUNNEL=1 1 1.1.1.1 5.2.3.6 2001  1}</pre>	

**Table 7 IPCrossConnection**

Status	Description	Example	Remarks
		<p><b>PWSwitch:</b></p> <pre>{name EMS value Huawei/U2000} {name ManagedElement value 3145733} {name IPCrossConnection value PWSW=1232      }</pre>	
Enabled	The NBI reporting or query function uses the UniqueName naming rules. In UniqueName mode, the tunnel or PWSwitch names are the same as those displayed on the U2000 client.	<p><b>Tunnels on an NE:</b></p> <pre>{name EMS value Huawei/U2000} {name ManagedElement value NE129} {name IPCrossConnection value TUNNEL=NE(211-189)-NE(211- 120)-2}</pre> <p><b>PWSwitch:</b></p> <pre>{name EMS value Huawei/U2000} {name ManagedElement value NE129} {name IPCrossConnection value PWSW=pwsch-111}</pre>	

**Table 8 TrafficTrunk**

Status	Description	Example	Remarks
Disabled	The NBI reporting or query function uses traffic trunks to uniquely identify objects.	<p><b>Tunnels:</b></p> <pre>{name EMS value Huawei/U2000} {name Flowdomain value 1} {name TrafficTrunk value TUNNELTRAIL=496}</pre> <p><b>Dynamic tunnels on an NE:</b></p> <pre>{name EMS value Huawei/U2000} {name ManagedElement value 3145733}</pre>	

**Table 8 TrafficTrunk**

Status	Description	Example	Remarks
		<pre>{name TrafficTrunk value TUNNEL= 3   100   }</pre> <b>PWs:</b> <pre>{name EMS value Huawei/U2000} {name Flowdomain value 1} {name TrafficTrunk value PWTRAIL=142}</pre>	
Enabled	The NBI reporting or query function uses the UniqueName naming rules. In UniqueName mode, the E2E tunnel names are the same as those displayed on the U2000 client.	<b>Tunnels:</b> <pre>{name EMS value Huawei/U2000} {name Flowdomain value 1} {name TrafficTrunk value TUNNELTRAIL= ne3-ne2-tunneltrail}</pre> <b>Dynamic tunnels on an NE:</b> <pre>{name EMS value Huawei/U2000} {name ManagedElement value NE120} {name TrafficTrunk value TUNNEL= 3   100   }</pre> <b>PWs:</b> <pre>{name EMS value Huawei/U2000} {name Flowdomain value 1} {name TrafficTrunk value PWTRAIL=142}</pre>	

**Table 9 FlowDomainFragment (VPN module)**

Status	Description	Example	Remarks
Disabled	The NBI reporting or query function uses flow domain fragments (FDFrs) to uniquely identify objects.	<b>PWE3 trails:</b>  {name EMS value Huawei/U2000} {name Flowdomain value 1} { name FlowDomainFragment value PWE3TRAIL=13}  <b>VPLS trails:</b>  {name EMS value Huawei/U2000} {name Flowdomain value 1} { name TrafficTrunk value VPLS=23}  <b>L3VPN trails:</b> Currently, the CORBA NBI does not support L3VPN trails.	
Enabled	The NBI reporting or query function uses the UniqueName naming rules. In UniqueName mode, the E2E tunnel names are the same as those displayed on the U2000 client.	<b>PWE3 trails:</b>  {name EMS value Huawei/U2000} {name Flowdomain value 1} { name FlowDomainFragment value PWE3TRAIL=mypwe3trail}  <b>VPLS trails:</b>  {name EMS value Huawei/U2000} {name Flowdomain value 1} { name TrafficTrunk value VPLS=vplstrail}	

**Table 10 MatrixFlowDomainFragment (VPN module)**

Status	Description	Example	Remarks
Disabled		<b>PWE3 services on an NE:</b>	

**Table 10 MatrixFlowDomainFragment (VPN module)**

Status	Description	Example	Remarks
	<p>The NBI reporting or query function uses matrix flow domain fragments to uniquely identify objects.</p>	<pre>{name EMS value Huawei/U2000} {name ManagedElement value 3145733} {name MatrixFlowDomainFragmentvalue PWE3=2 1104 }  <b>E-Line services on an NE:</b> {name EMS value Huawei/U2000} {name ManagedElement value 3145733} {name MatrixFlowDomainFragmentvalue NETH=11}  <b>E-LAN services on an NE:</b> {name EMS value Huawei/U2000} {name ManagedElement value 3145733} {name MatrixFlowDomainFragmentvalue VSI=121}  <b>VPLS services on an NE:</b> {name EMS value Huawei/U2000} {name ManagedElement value 3145733} {name MatrixFlowDomainFragmentvalue VSI=1800 }</pre>	
Enabled	<p>The NBI reporting or query function uses the UniqueName naming rules. In UniqueName mode,</p>	<p>PWE3 services on an NE:</p> <pre>{name EMS value Huawei/U2000} {name ManagedElement value NE120}</pre>	

**Table 10 MatrixFlowDomainFragment (VPN module)**

Status	Description	Example	Remarks
	the PWE3 or VPLS service names are the same as those displayed on the U2000 client.	{ name MatrixFlowDomainFragmentvalue PWE3=eth-pwe3}  E-Line services on an NE: {name EMS value Huawei/U2000} {name ManagedElement value NE120} {name MatrixFlowDomainFragmentvalue NETH=nethlineservice}  E-LAN services on an NE: {name EMS value Huawei/U2000} {name ManagedElement value NE120} {name MatrixFlowDomainFragmentvalue VSI=eeslan}  VPLS services on an NE: {name EMS value Huawei/U2000} {name ManagedElement value NE120} { name MatrixFlowDomainFragmentvalue VSI=vsi-1 }	

**Table 11 TNP**

Status	Description	Example	Remarks
Disabled	The NBI reporting or query function uses TNP to uniquely identify objects.	{name EMS value Huawei/U2000} {name TNP value TUNNELPGTRAIL=11}	
Enabled	The NBI reporting or query function uses the	{name EMS value Huawei/U2000}	

**Table 11 TNP**

Status	Description	Example	Remarks
	UniqueName naming rules. In UniqueName mode, the E2E tunnel protection group names are the same as those displayed on the U2000 client.	{name TNP value TUNNELPGTRAIL=NE(38-2)-NE(38-1)-PG-00000076}	

**Table 12 Binding objects**

Status	Description	Example
Disabled	BindingObject attribute in the PW transmission parameters	{name BindingObject value \name=EMS\value=Huawei/U2000\name=ManagedElement\value=3145737\name=IPCrossCo
Disabled	BindingObject attribute in the serial port transmission parameters	{name BindingObject value Huawei/U2000;3145728;/shelf=1/slot=1/domain=ptn/type=physic
Disabled	Specified server trail	<p><b>Creating a trunk link by specifying an SDH trail as the server trail</b>  Enter the unique SNC ID in the additionalCreateInfo.SncUniqueID attribute of the ELLinkC</p> <p><b>Creating a PWE3 trail by specifying a tunnel as the server trail</b>  Enter the tunnel name in FDN format in the ServerTrailListType_T vendorExtensions attribute</p>
Enabled	BindingObject attribute in the PW transmission parameters	{name BindingObject value \name=EMS\value=Huawei/U2000\name=ManagedElement\value=NE129\name=IPCrossCon
Disabled	BindingObject attribute in the serial port transmission parameters	{name BindingObject value Huawei/U2000;NE219;/shelf=1/slot=1/domain=ptn/type=physical
Enabled		<b>Creating a trunk link by specifying an SDH trail as the server trail</b>

**Table 12 Binding objects**

Status	Description	Example
	Specified server trail	Enter the local SNC name in the additionalCreationInfo.SncUniqueID attribute of the ELLinkObject.

**Parent topic:** [UniqueName Naming Rules](#)

## 9.4.11.4 Restrictions and Precautions

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This topic describes the restrictions on and precautions for using the UniqueName naming rules.

### Restrictions

After the UniqueName function is enabled, the NBI has the following restrictions that need to be taken into consideration during OSS design and development:

- You must comply with [Naming Rule](#) when planning object names.
- Compared with the traditional mode, the interface efficiency of the UniqueName naming rules is reduced.
- The names of some alarm objects are blank in the alarm clearance notifications due to the deletion of the corresponding objects, and only object types are listed. Therefore, the OSS needs to use alarm sequence numbers to associate with alarm objects.

### Naming Rule

The OSS must comply with the following rules when planning the names of managed objects (MOs). Otherwise, the NBI may be unavailable.

- Object names must be unique on the NMS.
- The names of entity objects cannot be blank.
- Object names are combinations of uppercase letters, lowercase letters, digits, and underscores.
- Object names do not contain non-English characters like Chinese.
- Length restrictions of object names are the same as those on the NMS client. For example, an NE name must consist of less than 64 characters.

**Parent topic:** [UniqueName Naming Rules](#)

## 9.4.12 IDL Description

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This topic describes the IDL defined in the CORBA NBI.

Refer to the version document *iManager U2000 V200R015C60 CORBA NBI IDL File.zip*.

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 **NOTE:**

The version document *iManager U2000 V200R015C60 CORBA NBI IDL File.zip* is in the package file *NBI Documents* and it is available on the Huawei technical support website. To obtain this document, contact the local technical support engineers.

Access <http://support.huawei.com/> and choose **Support > Software > Fixed Network > SingleOSS-FBB > SingleOSS-FBB > U2000 Common > iManager U2000**. Then select the software version and download the package *NBI Documents*.

Select the corresponding base version if the patch version does not contain the preceding documents.

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**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)

## 9.4.13 Description of Unimplemented and Customized Interfaces

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**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
CircuitCutMgr_I	getAllIdleServiceTrailAndTS	Queries constraints on available server routes.	This interface is customized detailed developer guide is provided with a special doc
	getSNCServiceRoute	Queries server routes of preset or common trails.	This interface is customized detailed developer guide is provided with a special doc

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
	getAllIdlePortAndTS	Queries available ports and timeslots of NEs.	This interface is customized detailed developer guide is provided with a special document.
	getServiceTrailViewBySNCRate	Queries connectivity views of server trails.	This interface is customized detailed developer guide is provided with a special document.
	getTopoSubnetworkViewInfo	Queries physical topology data.	This interface is customized detailed developer guide is provided with a special document.
EMSMgr_I	getObjectRootAlarms	Queries active root alarms on a specified object.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
	getInventory	Queries inventory information.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
	getEMSHearbeatInterval	Queries the interval for sending EMS heartbeat packets.	This interface is customized detailed developer guide is provided with a special document.
	getAllActiveAlarms	Queries all active alarms that meet the filter criteria.	This interface is customized detailed developer guide is provided with a special document.
	getAllHistoryAlarms	Queries all cleared alarms that meet the filter criteria.	This interface is customized detailed developer guide is provided with a special document.
	getEMSTime	Queries the EMS time.	This interface is customized detailed developer guide is provided with a special document.

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
	getTPFaultStatus	Queries the alarm status of a port.	This interface is customized. A detailed developer guide is provided with a special document.
EncapsulationLayerLinkMgr_I	getELLLinkWithTP	Queries encapsulation layer links (Ells) that traverse a termination point (TP) based on a specified port.	This interface does not implement any specific service function. It returns the error message "EXCPT_NOT_IMPLEMENTED".
	getConnectingELL	Queries Ells that are connected to a port.	This interface does not implement any specific service function. It returns the error message "EXCPT_NOT_IMPLEMENTED".
	getELLLinkWithSncOrTl	Queries Ells based on a specified subnetwork connection (SNC).	This interface does not implement any specific service function. It returns the error message "EXCPT_NOT_IMPLEMENTED".
	getAllELLLinksWithMeOrFd	Queries all Ells based on NEs or flow domains.	This interface does not implement any specific service function. It returns the error message "EXCPT_NOT_IMPLEMENTED".
	getServerSNCsAndTLs	Queries Ell server SNCs or topology connections.	This interface does not implement any specific service function. It returns the error message "EXCPT_NOT_IMPLEMENTED".
	getTransmissionParams	Queries Ell transmission parameters.	This interface does not implement any specific service function. It returns the error message "EXCPT_NOT_IMPLEMENTED".
FlowDomainMgr_I	getFlowDomainsByUserLabel	Queries flow domains by user label.	This interface does not implement any specific service function. It returns the error message "EXCPT_NOT_IMPLEMENTED".

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
			returns the error message "EXCPT_NOT_IMPLEMENTED".
	getFDfromMFD	Queries flow domains from matrix flow domains (MFDs).	This interface does not implement any specific service function. returns the error message "EXCPT_NOT_IMPLEMENTED".
	getTransmissionParams	Queries flow domain transmission parameters.	This interface does not implement any specific service function. returns the error message "EXCPT_NOT_IMPLEMENTED".
	getAllMFDs	Queries information about all MFDs.	This interface does not implement any specific service function. returns the error message "EXCPT_NOT_IMPLEMENTED".
	getAllMFDNames	Queries the names of all MFDs.	This interface does not implement any specific service function. returns the error message "EXCPT_NOT_IMPLEMENTED".
	getMFD	Queries information about a specified MFD.	This interface does not implement any specific service function. returns the error message "EXCPT_NOT_IMPLEMENTED".
	getAssigningMFD	Queries information about an MFD to which a connectionless physical termination points (CPTP) is assigned.	This interface does not implement any specific service function. returns the error message "EXCPT_NOT_IMPLEMENTED".
	getAllCPTPs	Queries all CPTPs.	This interface does not implement any specific service function. returns the error message "EXCPT_NOT_IMPLEMENTED".

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
MFD_I	getAssignableCPTPs	Queries all CPTPs in an MFD.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
	getFDFrsWithTP	Queries flow domain fragments (FDFrs) that traverse a TP based on the TP name.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
	getFDFrsByUserLabel	Queries FDFrs by user label.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
GuiCutThroughMgr_I	getAssignableCPTPs	Queries all CPTPs in an MFD.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
HW_MSTPInventoryMgr_I	getFDFrsWithTP	Queries flow domain fragments (FDFrs) that traverse a TP based on the TP name.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
HW_VPNMgr_I	getFDFrsByUserLabel	Queries FDFrs by user label.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
	getGCTProfileInfo	Queries U2000 remote GUI information.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
	getTrafficTrunksByUserLabel	Query the details about traffic trunks.	This interface is customized, detailed developer guide is provided with a special document.

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
TrafficTrunkManager_I		based on the entered UserLabel.	
	getTrafficTrunksWithTP	Query the details about traffic trunks based on the entered TP.	This interface is customized detailed developer guide is provided with a special doc
	getFDFrsByUserLabel	Query the details about FDFrs based on the entered UserLabel.	This interface is customized detailed developer guide is provided with a special doc
	getFDFrsWithME	Query the details about FDFrs based on the entered ME.	This interface is customized detailed developer guide is provided with a special doc
	getFDFrsWithTP	Query the details about FDFrs based on the entered TP.	This interface does not implement any specific service function returns the error message "EXCPT_NOT_IMPLEMENTED"
ManagedElementMgr_I	getADCInfo	Queries dispersion compensation information.	This interface is customized detailed developer guide is provided with a special doc
	getAPRInfo	Queries automatic power reduction (APR) information.	This interface is customized detailed developer guide is provided with a special doc
MultiLayerSubnetworkMgr_I	getAssociatedTP	Queries associated TPs of a specified TP.	This interface does not implement any specific service function returns the error message "EXCPT_NOT_IMPLEMENTED"

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
ProtectionMgr_I	getTPGroupingRelationships	Queries relationships between a CTP and the port pool.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
	getRoutes	Queries routes of multiple specified SNCs.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
	getSNCs	Queries SNCs based on their names.	This interface is customized, detailed developer guide is provided with a special document.
	getSNCsByNativeEmsName	Queries information about a specified SNC based on its name.	This interface is customized, detailed developer guide is provided with a special document.
	getAllTPPools	Queries port pool information.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
	getAllTPPoolNames	Queries port pool names.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
ProtectionMgr_I	getAllNUTTPNames	Queries all CTPs that carry unprotected additional services in non-preempt mode in a specified SDH protection group.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
	getAdjacentTPs	Queries information about adjacent TPs.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
TopoMgr_I	getClockSourceSubnetworkViewInfo	Queries information about NEs or subnets in a specified clock view.	This interface does not implement any specific service function, returns no data.
	getAllClockSourceViewlTopologicalLinks	Queries information about all NEs and subnets in a clock view.	This interface does not implement any specific service function, returns no data.
TCProfileMgr_I	getAllTCPProfiles	Queries information about all traffic policy profiles.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
	getTCPProfile	Queries information about a specified traffic policy profile based on its name.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
	getTCPProfileAssociatedTPs	Queries information about objects that are applied to a traffic policy based on the traffic policy name.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
TrafficDescriptorMgr_I	getAllTrafficDescriptors	Queries characteristics	This interface does not implement any specific service function.

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
TrafficDescriptorManager_I		of all ATM traffic descriptors.	returns the error message "EXCPT_NOT_IMPLEMENTED"
	getAllTrafficDescriptorNames	Queries the names of all ATM traffic descriptors.	This interface does not implement any specific service function returns the error message "EXCPT_NOT_IMPLEMENTED"
	getAssociatedCTPs	Queries all CTPs associated with ATM traffic descriptors.	This interface does not implement any specific service function returns the error message "EXCPT_NOT_IMPLEMENTED"
TrailNtwProtMgr_I	getTrailNtwProtection	Queries information about a specified E2E tunnel APS protection group based on its name.	This interface is customized detailed developer guide is provided with a special document
FlowDomainMgr_cmcc_I	getFDFrsByUserLabel	Query E2E Ethernet services through user labels.	This interface is customized detailed developer guide is provided with a special document
	getFDFr	Query details about E2E Ethernet trails based on the E2E Ethernet trail names.	This interface is customized detailed developer guide is provided with a special document
	getFDFrRoute	Query the routes that E2E Ethernet services traverse.	This interface is customized detailed developer guide is provided with a special document

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
	getFDFrsWithTP	Query E2E Ethernet service information by specifying TPs.	This interface is customized detailed developer guide is provided with a special docu
	getAllFDFrs	Query E2E Ethernet services.	This interface is customized detailed developer guide is provided with a special docu
	getFlowDomainsByUserLabel	Query flow domains by user label.	This interface does not implement any specific service function returns the error message "EXCPT_NOT_IMPLEMENTED"
	getFlowDomain	Query specified flow domains.	This interface does not implement any specific service function returns the error message "EXCPT_NOT_IMPLEMENTED"
	getAssociatingFD	Query related flow domains.	This interface does not implement any specific service function returns the error message "EXCPT_NOT_IMPLEMENTED"
	getTransmissionParams	Query the transmission parameters of a flow domain.	This interface does not implement any specific service function returns the error message "EXCPT_NOT_IMPLEMENTED"
	getAllAssociatedMFDs	Query all related MFDs.	This interface does not implement any specific service function returns the error message "EXCPT_NOT_IMPLEMENTED"
	getAllSupportedMFDs	Query all supported MFDs.	This interface does not implement any specific service function returns the error message "EXCPT_NOT_IMPLEMENTED"

**Table 1 List of unimplemented and customized interfaces**

Module	Interface	Function	Description
	getMFD	Query information about MFDs.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
	getAssigningMFD	Query MFDs with which CPTPs are associated.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
	getAllCPTPs	Query all CPTPs.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
	getAllAssignedCPTPs	Query all CPTPs in an MFD.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
	getAllAssignableCPTPs	Query all associated CPTPs in an MFD.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
	getAllTopologicalLinksOfFD	Query topological links of an FD.	This interface does not implement any specific service function, returns the error message "EXCPT_NOT_IMPLEMENTED".
TransmissionDescriptorMgr_I		Provide a transmission parameter management interface.	This module and its interfaces do not implement any specific functions and currently are unavailable.

**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)

## 9.4.14 Big Data Inventory Query

---

The big data inventory query mechanism enables the OSS to obtain inventory data after the inventory data is saved to XML files and sent to the FTP server.

## Principles

The U2000 CORBA NBI saves the inventory data, such as NE, device, container, port, and service data, to XML files through coarse-grained inventory interfaces, packages or compresses the files in a specified format, and sends the package to the corresponding FTP server. Then a file preparation notification is sent to the OSS to inform the OSS of obtaining big data inventory files in the target directory.

The following table lists the inventory objects that can be queried using the big data inventory query mechanism.

**Table 1 Inventory object description**

Object Name	Object Description	Manager Name
EMS	Indicates the EMS.	EMS
ME	Indicates the NE.	ManagedElement
EQ	Indicates the device.	EquipmentInventory
EH	Indicates the container.	EquipmentInventory
PTP	Indicates the physical terminal point (PTP).	ManagedElement
CTP	Indicates the connection terminal point (CTP).	ManagedElement
FTP	Indicates the floating terminal point (FTP).	ManagedElement
TL	Indicates the topological link.	MultiLayerSubnetwork
SNC	Indicates the subnet connection (SNC).	MultiLayerSubnetwork
TrafficTrunk	Indicates the VPN trail.	MultiLayerSubnetwork
SNCROUTE	Indicates the SNC route.	MultiLayerSubnetwork
PG	Indicates the protection group.	ProtectionGroup
EPG	Indicates the protection group.	ProtectionGroup

**Table 1 Inventory object description**

Object Name	Object Description	Manager Name
TNP	Indicates the protection group.	VPN
CC	Indicates the cross-connection.	ManagedElement

## Example

```
<?xml version="1.0" encoding="GB2312"?>
<dm:Descriptor xmlns:dm="http://www.tmforum.org/mtop/mtnm/Configure/v1"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.tmforum.org/mtop/mtnm/Configure/v1
  ./Inventory.xsd">
  <EMS_T>
    <name>
      <node>
        <name>EMS</name>
        <value>WRI_1</value>
      </node>
    </name>
    <userLabel>EMS</userLabel>
    <nativeEMSName>EMS_1</nativeEMSName>
    <owner>FIBERHOME</owner>
    <emsVersion> FiberHome/04.10.02.A0sp3</emsVersion>
    <type>ANM2000</type>
    <additionalInfo>
      <oneParam>
        <name>location</name>
        <value>CBJ1</value>
      </oneParam>
      <oneParam>
        <name>emsMaxSupportedME</name>
        <value>300</value>
      </oneParam>
      <oneParam>
        <name>objectIP</name>
        <value>10.18.3.91</value>
      </oneParam>
    </additionalInfo>
  </EMS_T>
</dm:Descriptor>
```

## Restriction

After the big data inventory query function is enabled, the NBI has the following restrictions that need to be taken into consideration during OSS design and development:

- The big data inventory query function is only applicable to PTN and OTN NEs.
- The big data inventory query interface transfers files over FTP. Therefore, before enabling this function, configure third-party FTP tools on the OSS and set related FTP parameters including user passwords on the NBI configuration tool.
- If the OSS does not receive notifications due to network connection failures, it is recommended that the OSS determine whether to obtain the notifications by invoking interfaces.
- The big data inventory query function takes many system resources. To ensure CORBA running efficiency, it is recommended to use this function at a low frequency, for example, once a week.

## Configuration

Before using the big data inventory query function, you need to set FTP parameters correctly on the NBI configuration tool.

### Procedure

1. Log in to the NBI configuration tool. Choose **Configure CORBA** > from the navigation tree.
2. Choose *BULK\_EXPORT\_DATA\_FILE\_SWITCH*, set the value to *1*, and click **Save**.

Config Item Name	BULK_EXPORT_DA
Config Item Value	1
Modify parameter by custom do	
<input type="button" value="save"/>	

3. Choose **Configure CORBA** > **General Config** from the navigation tree, and set export parameters in the **Configure Big Data Interface** area.

### Configure Big Data Interface

Maximum Capacity of Exported Single File (MB) (1-100)	50	*
Collection Period (day) (0-7)	3	*
File Packaging Format	tar	*
Total Capacity of Exported File (MB) (1-5120)	5120	*
FTP Server IP Address	127.0.0.1	*
FTP User Name	test	*
FTP Subdirectory	test	*
U2000 User Name	admin	*

The following configuration items are mandatory. Other configuration items are configured based on needs.

- Export Start Time
- U2000 User Name
- U2000 Password
- FTP Mode
- FTP Server IP Address
- FTP Port ID
- FTP User Name
- FTP Password
- FTP Subdirectory

---

 **NOTICE:**

The NBI Config Tools GUI hides the U2000 server installation path. The FTP directory used for big data transmission can only be configured under the U2000 installation path. You can use the NBI Config Tools to configure the subdirectory under the U2000 installation path.

The default subdirectory is as follows:

- Windows: server/nbi/corba/corba\_output
  - Solaris or SUSE Linux: /opt/backup/ftpboot
- 

**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)

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## 9.4.15 Layer Rate Description

---

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
1	LR_Not_Applicable	Irrelevant layer
2	LR_T1_and_DS1_1_5M	1.5 Mbit/s async/PDH signal
3	LR_T2_and_DS2_6M	6 Mbit/s async/PDH signal

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
4	LR_T3_and_DS3_45M	45 Mbit/s async/PDH signal
5	LR_E1_2M	2 Mbit/s PDH signal
6	LR_E2_8M	8 Mbit/s PDH signal
7	LR_E3_34M	34 Mbit/s PDH signal
8	LR_E4_140M	140 Mbit/s PDH signal
9	LR_E5_565M	565 Mbit/s PDH signal
10	LR_VT1_5_and_TU11_VC11	VC11 SONET/SDH path signal
11	LR_VT2_and_TU12_VC12	VC12 SONET/SDH path signal
12	LR_VT6_and_TU2_VC2	VC2 SONET/SDH path signal
13	LR_Low_Order_TU3_VC3	VC3 SONET/SDH path signal
14	LR_STS1_and_AU3_High_Order_VC3	AU3 SONET/SDH path signal
15	LR_STS3c_and_AU4_VC4	VC4 SONET/SDH path signal
16	LR_STS12c_and_VC4_4c	12xSTS-1/4xVC4 contiguous concatenation
17	LR_STS48c_and_VC4_16c	48xSTS-1/16xVC4 contiguous concatenation
18	LR_STS192c_and_VC4_64c	192xSTS-1/64xVC4 contiguous concatenation
19	LR_Section_OC1_STS1_and_RS_STM0	STM-0 regenerator section
20	LR_Section_OC3_STS3_and_RS_STM1	STM-1 regenerator section

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
21	LR_Section_OC12_STS12_and_RS_STM4	STM-4 regenerator section
22	LR_Section_OC48_STS48_and_RS_STM16	STM-16 regenerator section
23	LR_Section_OC192_STS192_and_RS_STM64	STM-64 regenerator section
24	LR_Line_OC1_STS1_and_MS_STM0	STM-0 multiplex section
25	LR_Line_OC3_STS3_and_MS_STM1	STM-1 multiplex section
26	LR_Line_OC12_STS12_and_MS_STM4	STM-4 multiplex section
27	LR_Line_OC48_STS48_and_MS_STM16	STM-16 multiplex section
28	LR_Line_OC192_STS192_and_MS_STM64	STM-64 multiplex section
40	LR_Optical_Channel	For WDM wavelength
41	LR_Optical_Multiplex_Section	For WDM wavelength bands
42	LR_Optical_Transmission_Section	For WDM entire optical signal, that is, used for OTS and OMS layers of OTM-n.m (n>=1)
43	LR_ATM_NI	For ATM network interfaces (UNI and NNI)
44	LR_ATM_VP	For ATM virtual paths
45	LR_ATM_VC	For ATM virtual channels
46	LR_PHYSICAL_ELECTRICAL	Analog signal on electrical physical media
47	LR_PHYSICAL_OPTICAL	Analog signal on optical physical media

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
48	LR_PHYSICAL_MEDIALESS	Physical media for technologies, such as radio
49	LR_OPTICAL_SECTION	Wavelength termination for a non DWDM system, that is, used for all kinds of single-lambda ports
50	LR_DIGITAL_SIGNAL_RATE	Raw binary electrical signal of unspecified rate
58	LR_D1_Video	Video capable port
59	LR_ESCON	IBM protocol for mainframes
61	LR_Fast_Ethernet	Not supported by the TMF
62	LR_FC_12_133M	133 Mbit/s Fibre Channel protocol
63	LR_FC_25_266M	266 Mbit/s Fibre Channel protocol
64	LR_FC_50_531M	531 Mbit/s Fibre Channel protocol
65	LR_FC_100_1063M	1063 Mbit/s Fibre Channel protocol
66	LR_FDDI	N/A
67	LR_FICON	IBM protocol for mainframes
68	LR_Gigabit_Ethernet	Not supported by the TMF
72	LR_DSR_OC1_STM0	STM-0 digital signal rate
73	LR_DSR_OC3_STM1	STM-1 digital signal rate
74	LR_DSR_OC12_STM4	STM-4 digital signal rate

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
75	LR_DSR_OC24_STM8	STM-8 digital signal rate
76	LR_DSR_OC48_and_STM16	STM-16 digital signal rate
77	LR_DSR_OC192_and_STM64	STM-64 digital signal rate
78	LR_DSR_OC768_and_STM256	STM-256 digital signal rate
110	LR_DSR_OTU1	DSR of optical channel transport unit 1
111	LR_DSR_OTU2	DSR of optical channel transport unit 2
79	LR_DSR_1_5M	1.5 Mbit/s digital signal rate
80	LR_DSR_2M	2 Mbit/s digital signal rate
81	LR_DSR_6M	4 Mbit/s digital signal rate
82	LR_DSR_8M	8 Mbit/s digital signal rate
83	LR_DSR_34M	34 Mbit/s digital signal rate
84	LR_DSR_45M	45 Mbit/s digital signal rate
85	LR_DSR_140M	140 Mbit/s digital signal rate
86	LR_DSR_565M	565 Mbit/s digital signal rate
87	LR_DSR_Gigabit_Ethernet	Gigabit_Ethernet digital signal rate

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
88	LR_Section_OC24_STS24_and_RS_STM8	STM-8 regenerator section
89	LR_Line_OC24_STS24_and_MS_STM8	STM-8 multiplex section
90	LR_Section_OC768_STS768_and_RS_STM256	STM-256 regenerator section
91	LR_Line_OC768_STS768_and_MS_STM256	STM-256 multiplex section
93	LR_DSR_2xSTM1	2 x STM-1 radio multiplexing
96	LR_Ethernet	All Ethernet rates
97	LR_DSR_Fast_Ethernet	10/100 Mbit/s Ethernet
98	LR_Encapsulation	For Ethernet, the following encapsulation protocols can be applied: HDLC/PPP, HDLC/LAPS, ML/PPP, and GFP Transparent or Frame Mapped types
99	LR_Fragment	Used for inverse multiplexing modeling (virtual concatenation for SONET/SDH and IMA)
100	LR_STS6c_and_VC4_2c	6xSTS-1/2xVC4 contiguous concatenation
101	LR_STS9c_and_VC4_3c	9xSTS-1/3xVC4 contiguous concatenation
103	LR_STS24c_and_VC4_8c	24xSTS-1/8xVC4 Contiguous concatenation
113	LR_DSR_10Gigabit_Ethernet	10 Gbit/s Ethernet
115	LR_DSR_40Gigabit_Ethernet	Extended by HUAWEI

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
8001	LR_Section_and_RS	Extended by HUAWEI
8002	LR_Line_and_MS	Extended by HUAWEI
8003	LR_ATM	ATM layer rate (extended by HUAWEI)
8004	LR_Optical_Supervision_Channel	Rate of optical monitor layer (extended by HUAWEI)
8005	LR_FC_200_2125M	2125 Mbit/s Fibre Channel protocol (extended by HUAWEI)
104	LR_OCH_Data_Unit_1	Trail and tandem connection monitoring/termination
105	LR_OCH_Data_Unit_2	Trail and tandem connection monitoring/termination
106	LR_OCH_Data_Unit_3	Trail and tandem connection monitoring/termination
8041	LR_OCH_Data_Unit_4	Trail and tandem connection monitoring/termination
107	LR_OCH_Transport_Unit_1	Optical channel transport unit 1 (trail termination)
108	LR_OCH_Transport_Unit_2	Optical channel transport unit 2 (trail termination)
109	LR_OCH_Transport_Unit_3	Optical channel transport unit 3 (trail termination)

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
8042	LR_OCH_Transport_Unit_4	Optical channel transport unit 4 (trail termination)
8006	LR_OCH_Data_Unit_5G	Trail and tandem connection monitoring/termination
8007	LR_OCH_Transport_Unit_5G	Trail termination
8010	LR_MPLS_Channel	Extended by HUAWEI
303	LR_DVB_ASI	Digital video broadcast (ASI)
8023	LR_DVB_SDI	Digital video broadcast (SDI)
8024	LR_FICON_Express	Extended by HUAWEI
8021	LR_SAN_FC_400	Extended by HUAWEI
8038	LR_SAN_FC_800	Extended by HUAWEI
8022	LR_SAN_FC_1000	Extended by HUAWEI
8037	LR_SAN_FC_1200	Extended by HUAWEI
8025	LR_HDTV	Extended by HUAWEI
8031	LR_OCH_Data_Unit_0	Extended by HUAWEI
69	LR_DS0_64K	DS0 CTP layer rate
305	LR_LAG_Fragment	Link aggregation
8008	LR_DSR_10Gigabit_Ethernet_LAN	Extended by HUAWEI
8009	LR_DSR_10Gigabit_Ethernet_WAN	Extended by HUAWEI
8011	LR_MPLS_Path	Extended by HUAWEI
8020	LR_DSR_GFP_T	Extended by HUAWEI

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
8026	LR_ETR	Extended by HUAWEI
8027	LR_CLO	Extended by HUAWEI
8028	LR_1G_ISC	Extended by HUAWEI
8029	LR_2G_ISC	Extended by HUAWEI
8030	LR_4G_FICON	Extended by HUAWEI
8032	LR_CPRI	Extended by HUAWEI
8033	LR_CPRI_CUT	Extended by HUAWEI
8034	LR_PHY_MEDIA	Extended by HUAWEI
8035	LR_INFINIBAND_2DOT5G	Extended by HUAWEI
8036	LR_INFINIBAND_5G	Extended by HUAWEI
8039	LR_8G_FICON	
8043	LR_DSR_100Gigabit_Ethernet	Extended by HUAWEI
8044	LR_EPON_OLT	
8045	LR_EPON_ONU	
8046	LR_3GSDI	Extended by HUAWEI
8047	LR_3GSDIRBR	Extended by HUAWEI
8051	LR_10G_FICON	
8060	LR_IP_Path	Extended by HUAWEI
8069	LR_DS0_64K_NC	
8070	LR_GRE_Path	Extended by HUAWEI
8071	LR_DSR_32xSTM1	Extended by HUAWEI
8072	LR_RS_32xSTM1	Extended by HUAWEI
8073	LR_MS_32xSTM1	Extended by HUAWEI

**Table 1 Layer rates supported by CORBA interface**

No.	Layer rate	Description
299	LR_DSL	Digital Subscriber Line
335	LR_OCH_Data_Unit_Flexible	Extended by HUAWEI
8012	LR_MPLS_IP_VPN	Extended by HUAWEI
8081	LR_OCH_Data_Unit_Cn	Extended by HUAWEI
8082	LR_OCH_Transport_Unit_Cn	Extended by HUAWEI
319	LR_DSR_2.5Gigabit_Ethernet	2.5 Gbit/s Ethernet

**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)

## 9.4.16 Glossary

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This appendix lists the glossary used in the guide.

### 1

At the place where the signals are input, the same channel of optical signals are input to two boards or ports of the WDM equipment through two fibers. The two boards or ports are backed up mutually. When a fault occurs in the working path, the input end of the WDM equipment switches to the protection path. If the working path recovers, the input end of the WDM equipment switch back to the working path.

#### 1+1 optical path protection

### A

#### Access Control List (ACL)

Access Control List (ACL) is a list of IP address. The addresses listed in the ACL are used for authentication. If the ACL for the user is not null, it indicates that the address where the user logged in is contained in the list.

#### Adjacent Concatenation

For SDH, the virtual containers (VC) to carry concatenated services are consecutive in terms of their service in the frame structures, so that they use the same path overhead (POH).

#### Alarm

A visible or an audible indication to notify the person concerned that a failure or an emergency has occurred. See also Event.

## **AIS**

Alarm Indication Signal. A signal sent downstream in a digital network if an upstream failure has been detected and persists for a certain time.

## **Alarm acknowledgement**

The process during which when an alarm is generated, the operator needs to acknowledge the alarm and take the right step to clear the alarm.

## **AIS insertion**

If there are excessive errors in a channel, AIS can be inserted in this channel to indicate it is unavailable. For a line board, you can set whether to insert AIS when there are excessive errors in the B1, B2 and B3 bytes. For a tributary board at the E1 or T1 level, you can set whether to insert AIS when there are excessive errors in BIP-2. For a tributary board at the E3 level or higher, you can set whether to insert AIS when there are excessive errors in the B3 byte.

## **Alarm delay time**

Alarm delay includes start delay and end delay. An alarm is not regarded as being generated until the NE has been detecting it for a period of time, and this period of time is the alarm start delay time. An alarm is not regarded as being cleared until the NE has been detecting the ending of it for a period of time, and this period of time is the alarm end delay time. Setting the delay time can avoid the generation of unnecessary alarms due to misreport or jitter.

## **Alarm reversion**

For the port that has already been configured but has no service, this function can be used to avoid generating relevant alarm information, preventing alarm interference.

## **Alarm suppression**

The suppressed alarm of a specific object is not reported. The object here may be the network-wide equipment, a specific NE, a specific board and even a specific function module of a specific board.

## **ALC**

Automatic Level Control. A technique (procedure) to automatically reduce the output power of optical amplifiers to avoid exposure to hazardous levels.

## **All-ONES**

The entire capacity of the adapted or characteristic information is set to logic "1".

## **ALS**

The ALS function of an optical line system automatically switches off the transmitter of a regenerator section in case of cable break in this section.

## **APS**

**Automatic Protection Switching.** Autonomous switching of a signal between and including two MS\_TT, Sn\_TT, or Sm\_TT functions, from a failed working trail/SNC to a protection trail/SNC and subsequent restoration using control signals carried by the K-bytes in the MSOH, HO POH, or LO POH.

### **Auto-negotiation**

The rate/work mode of the communication party set as self-negotiation is specified through negotiation according to the transmission rate of the opposite party.

### **Attribute**

Property of an object.

## **B**

### **Bidirectional (protection) switching**

For a unidirectional fault, both directions (of the trail, subnetwork connection, and so on), including the affected and unaffected direction, are switched.

### **Bit error**

An inconsistency between bits embedded within a signal and bits extracted at the receiver.

### **Bit error alarm threshold**

When the bit error reaches a specific limit, the equipment will report an alarm. This limit is the bit error alarm threshold. The threshold can be divided into crossing threshold and defect threshold.

### **Broadcast service**

The unidirectional services from one service source to multiple service sinks are called the broadcast service.

## **C**

### **CI**

**Characteristic Information.** The information passing across a CP or TCP. It is a signal with a specific format, which is transferred on "network connections". The specific formats will be defined in the technology-specific recommendations.

### **Client**

A terminal (PC or workstation) connected to a network that can send instructions to a server and get results through a user interface. See also server.

### **Client trail**

There is an inclusion relationship between the trails of different levels. For example, a trail of a certain level contains multiple trails of lower levels. In such a structure, the lower-level trail is called the client trail.

### **Collision trails**

The data of a trail at the NE layer is changed. After the trail is re-searched, the original trail becomes a collision trail.

## **Concatenation**

When the standard virtual containers (including VC4/VC3/VC12/VC11) are incapable of carrying the volume of an SDH signal, the containers can be concatenated to function as a larger container.

## **CoS**

Class of Service. CoS keeps the priority mapping rules. It works in internal ports, especially when there is congestion, CoS is even more important. The services at different levels are processed according to the corresponding priorities. The service with higher priority is processed first and the service with lower priority is discarded when the bandwidth is insufficient.

## **Cross-Connection**

Network services are realized through the cross-connections of NEs. The cross-connection is the connection of channels between the tributary board and the line board, or between line boards inside the NE.

## **Current alarms**

Alarms that do not clear, or has cleared but is not acknowledged.

## **Current performance data**

The performance data stored in the current register is called current performance data. The current 15-minute or 24-hour register (only one for each) is applied to collect the performance data in the current monitoring period. It changed within the monitor period.

## **Custom view**

The user-defined view is a subset on the Main Topology. Included network entities can be NE, network management system, link and subnetwork. Generally, the network management personnel need to customize some views and select the network entity under their management from the Main Topology.

## **Clock View**

The Clock View provides a visible platform to implement the clock management function.

## **D**

### **Data interface service**

The service that uses the F1 byte in an SDH frame or some undefined bytes to transmit information such as call charge, network management system information and power supply monitoring.

## **DCC**

Data Communications Channel. The data channel that uses the D1-D12 bytes in the overhead of an STM-N signal to transmit information on operation, management, maintenance and provision (OAM&P) between NEs. The DCC channels that are composed of bytes D1-D3 is referred to as the 192 kbit/s DCC-R channel. The other DCC

channel that are composed of bytes D4-D12 is referred to as the 576 kbit/s DCC-M channel.

### **Discrete service**

The cross-connection that exists on an NE but cannot form trails on the network management system.

### **DNI**

Dual node interconnection is an architecture between two rings where two nodes in each ring are interconnected. The two interconnections between the two rings can be arranged to provide protection of the traffic crossing from one ring to the other.

### **E**

#### **Extra traffic**

During fault-free conditions, it is possible to use the protection channels to carry additional traffic. This additional traffic, which is referred to as extra traffic, has lower priority than the normal traffic on the working channels and has no means for protection.

#### **Equipment set**

An aggregate of multiple managed equipment. Equipment set facilitates the user authority management on equipment in the management domain of the network management system. If some operation authorities over one equipment set are assigned to a user (user group), these operation authorities over all equipment of the equipment set are assigned to the user (user group).

### **ECC**

Embedded Control Channel. An ECC provides a logical operations channel between SDH NEs, utilizing a data communications channel (DCC) as its physical layer.

### **EMU**

Environment Monitoring Unit. A type of power and environment monitoring unit that is used to monitor the environment variables, such as the power supply and temperature. With external signal input through the relay, fire alarm, smoke alarm, burglary alarm, and so on can be monitored as well.

#### **Exercise switching**

This command tests whether a switching protocol can work normally without completing the actual switching operation.

#### **Exerciser - Ring**

This command exercises ring protection switching of the requested channel without completing the actual bridge and switch. The command is issued and the responses are checked, but no working traffic is affected.

#### **Exerciser - Span**

This command exercises span protection of the requested channel without completing the actual bridge and switch. The command is issued and the responses are checked, but no working traffic is affected.

## **Extended ID of NE**

The serial number of a subnetwork where an NE resides, which is usually used to distinguish different network segments. An extended ID and an ID form the physical ID of an NE.

## **Extended protection subnet**

An unprotected chain like ADM-ADM-TM or ADM-ADM-ADM. The end-point NEs of a link are of the ADM type. As this type of protection subnetwork can be extended, we name it extended protection subnetwork.

## **F**

### **Failure**

The fault cause persisted long enough to consider the ability of an item to perform a required function to be terminated. The item may be considered as failed; a fault has now been detected.

### **Fault**

A fault is the inability of a function to perform a required action. This does not include an inability due to preventive maintenance, lack of external resources, or planned actions.

### **F1 byte**

The user path byte, which is reserved for the user but usually it is special for network providers. The F1 byte is mainly used to provide the temporary data or voice path for special maintenance objectives. It belongs to the regenerator section overhead byte.

### **F2, F3 bytes**

The user channel bytes. These two bytes provide the user with the communication between path units related to payload. They belong to the higher order path overhead byte.

### **fiber/cable**

The general name of optical fiber and cable. The physical entity that connects transport equipment in a transport network, bears the transmitted object (user information, network management information) and implements the transport function.

### **Flow**

A collection of packets that have the same characteristics. On the NMS or NE software, a flow is a group of classification rules. On boards, it is a group of packets that have the same quality of service (QoS). At present, two flows are supported: port flow and port+VLAN flow. A port flow is based on port ID, while a port+VLAN flow is based on port ID and VLAN ID. The two flows cannot coexist on the same port.

### **Forced switching**

This command performs the ring switch from working channels or boards to the protection channels or boards. This switch occurs regardless of the state of the protection channels or boards, unless the protection channels or boards are satisfying a higher priority bridge request.

## **Full duplex**

The system that can transmit information in both directions on a communication link.

## **Full filtering trail**

In this search mode, the network management system first deletes all the trail data on the network management system and reserves the service configuration data of respective NEs, and then re-searches for the service configuration data of respective NEs on the network management system to form the new trail information.

## **Full search**

In the full search mode, all the trail information on the network management system will be deleted first (Only the trail information at the network layer on the network management system is deleted, while the service configuration information of NE in NE layer on the network management system and on the NE remain). Then the service configuration information of respective NEs in the NE layer on the network management system is re-searched to form the trail information in the network layer on the network management system.

## **G**

### **Gateway**

The equipment that is used to connect two independent networks that use different communication protocols.

### **Gateway IP**

IP address is used for TCP/IP communication between an NE and the network management system, which is effective only when it is used for TCP/IP communication. That is, only the gateway NE needs the IP address. IP address cannot be used to identify an NE uniquely. NEs in different TCP/IP networks may have the same IP address. And one NE may have several IP addresses (for example: an IP address of a dial-up network, an IP address of the Ethernet port and so on).

### **Gateway NE**

The NE that communicates with the NMS and other NEs through a data communication network.

## **H**

### **Host name**

Name of the computer that functions as a main controlling point in a network and provides special service to the users.

### **High Availability**

The ability of a system to continuously perform its functions during a long period, which may exceed the suggested working time of the independent components. You can obtain the high availability (HA) by using the error tolerance method. Based on learning cases one by one, you must also clearly understand the limitations of the system that requires an HA ability and the degree to which the ability can reach.

### **History alarms**

Alarms that have cleared and been acknowledged.

## **History performance data**

The performance data stored in the history register and the auto-report performance data stored on the network management system are called history performance data in a unified way.

## **I**

### **In-Service Trail Modifying**

A way of trail modification that allows you to configure new routes for a trail and enables the system to automatically delete the original trail after you apply the settings to the NE.

### **Incremental filtering trail**

In this search mode, the network management system first reserves the trail data of the current client and then re-searches the service configuration data of respective NEs on the network management system according to the newly given search condition to form the new trail data and combine it with the original trail data to get the result.

### **Incremental search**

The increment search mode compares the trail information in network layer on the network management system with the service configuration information of respective NEs on the network management system. If they are inconsistent, the trail information will be fed back into the list as an "Inconsistent Trail". When the user has deleted the inconsistent trail information, the system will re-search for the service configuration information that has not formed the trail in the NE layer on the network management system.

### **Inloop**

An output signal is returned back to the corresponding input port.

### **Inter-board wavelength protection**

This function is implemented by the wavelength conversion boards that are capable of dual fed and selective receiving. The dual fed is implemented by adding a passive optical splitter to the tributary. The signal selection is implemented by the SCC turning off the laser at the tributary side with poorer signal quality according to the signal quality of the lines of two wavelength conversion boards, and letting the channel of light with higher quality pass through the coupler. The coupler is also a passive device and only one channel of light can pass through it. If there are two channels of light passing through the coupler, they interfere each other that would cause bit error to the service. Hence, it is necessary to ensure that only the channel of light with higher quality passes through the coupler at the same time.

### **Intermediate office**

A concept in the telecommunications area. A site that manages fiber/cable or grooms services.

### **Intra-Board wavelength protection**

The intra-board wavelength protection is mainly implemented by the wavelength conversion board with dual fed and signal selection function. The dual fed is implemented by the optical divider inside the board, while the signal selection is implemented by the board turning off the laser of one of the receiving optical interfaces. Hence, this protection mode is also called optical wavelength intra-board path protection. The switching in this protection mode can be completed within a short time, but the services must be interrupted during the maintenance of the damaged board or equipment. Hence, this protection mode has a relatively lower reliability.

## **IP address**

Internet Protocol Address. A 32-bit address that uniquely identifies a node in an IP Internet network. An IP address consists of a network ID and a unique host ID. An IP address consists of the decimal values of its eight bytes, separated with periods; for example, 192.168.7.27.

## **Isolated node**

A type of special NE or an optical port on an NE. Logically, an isolated node does not comprise an SDH NE of any types, which are TM, ADM, REG and DXC

## **L**

### **Layer**

A concept used to allow the transport network functionality to be described hierarchically as successive levels; each layer being solely concerned with the generation and transfer of its characteristic information.

## **License**

A permission provided by a vendor to authorize the use of specific functions of a product. Usually the license consists of encrypted codes, and the operation authority varies with different level of license.

## **Lock status**

Services are not switched to the protection board or channel when a fault occurs, if currently no switching takes place. If currently the switching takes place, after the working board or channel recovers to normal, the services are not switched back to the working board or channel.

## **Lockout of Switching**

When the switching condition is satisfied, this function disables the service from being switched from the working channel to the protection channel. When the service has been switched, the function enables the service to be restored from the protection channel to the working channel.

## **Login mode**

The client login mode includes single-user and multi-users login modes. The multi-users mode is the default mode.

## **M**

### **Management flag**

A check box helps you to determine whether the trail is a managed object of the trail management function at the network layer. By default, trails are managed objects. If choosing not to manage it through the trail management function, you can manage the cross-connections of an individual NE through the service configuration function performed at a node.

### **Management information**

The information that is used for network management in a transport network.

### **Manual switching**

When the protection channel is efficient and there is no higher-level switching request, services are manually switched from the working channel to the protection channel, testing whether the network still has the protection capability.

### **MS node**

The WDM network node that has the spectrum analysis unit in the link for which the ALC function is configured.

### **Multi-trail protection service**

It is a protection mode in which multiple services with different trails but with the same sink protect an important service with the same sink. This protection mode supports protecting important services through non-optical network trails, such as microwave. It presently supports that three protection trails protect one service trail. At the trail sink, it monitors the quality of protection trail signals and protects important services according to the priority and the signal quality.

### **Main Topology**

The default network management system client interface, and all topology management functions are accessed here.

## **N**

### **NE**

Network Element. NE includes the hardware unit and the software running on it. Usually, one NE has at least an SCC (system control and communication) board which responsible for the management and monitoring of the NE. The NE software runs on the SCC board.

### **NE side**

The NE configuration data saved on the SCC board of the equipment, which can be uploaded to the network management system and then stored in databases on the network management system NE side.

### **Network layer**

The logical layer of the network management system that saves the network data. The configuration data related to a network is saved in databases.

## **NNI**

Network Node Interface. The interface at a network node which is used to interconnect with another network node. See also SDH NNI.

## **Non-revertive**

In non-revertive switching, there is a working and protection line, board and so on. Services remain on the protection line or board if the switch requests are terminated; that is, when the fault that caused them to switch to the protection line or board is cleared.

## **NE database**

The databases that are saved in an NE. Usually, the databases are saved in the SCC board of an NE.

## **NE ID**

In a network, each NE corresponds to a unique identifier, that is, the NE ID. In the OptiX transmission equipment, it is specified that the NE ID is a 24-bit binary digit, that is, three bytes. The DIP switch on the SCC board of the NE constitutes the lower 16 bits of the NE ID. The higher eight bits of the NE ID are the extended ID (default value: 9), which is also called the subnetwork number. The extended ID is usually used to identify different subnetworks.

## **NM**

Network Management.

## **Non-protection subnet**

A subnet that has no protection.

## **Network segment**

The range of IP addresses in which the gateway NE functions.

## **NE Explorer**

The main operation interface, of the NETWORK MANAGEMENT SYSTEM, which is used to manage the OptiX equipment. In the NE Explorer, the user can configure, manage and maintain the NE, boards, and ports on a per-NE basis.

## **NE Panel**

A graphical user interface, of the network management system, which displays subracks, boards, and ports on an NE. In the NE Panel, the user can complete most of the configuration, management and maintenance functions for an NE.

## **O**

## **Outloop**

An input signal is directly returned back to the corresponding output port.

## **OWSP**

Optical Wavelength Shared Protection. OWSP is a bidirectional ring, where each node is equipped with an OWSP. There are two channels ( $\lambda_1$  and  $\lambda_2$ ) in the main optical path on the internal and external rings in each span on a ring. The fiber and the OWSP on the main optical path are connected to the optical ports inputting  $\lambda_1$  and  $\lambda_2$  on the mux/demux board (unnecessary to be connected to the OTU), and  $\lambda_1$  and  $\lambda_2$  can be added and dropped at every node.

## P

### **Path**

A trail in a path layer.

### **Path protection**

The working principle of path protection: When the system works in path protection mode, the PDH path uses the dual fed and signal selection mode. Through the tributary unit and cross-connect unit, the tributary signal is sent simultaneously to the east and west lines. Meanwhile, the cross-connect unit sends the dual fed signals from the opposite end to the tributary unit, and the tributary unit selectively receive the signal from the two signals.

### **Performance register**

The memory space that is used to store performance events.

### **Performance threshold**

A threshold mechanism can be used to generate an autonomous event report when the performance of a transport entity falls below a predetermined level.

### **PMU**

The unit that is used to monitor power supply in the equipment.

### **Protection policy**

In case the service route provides multiple service protections, different protection strategies can be selected as required. Protection strategy refers to the protection mode given the priority in use for the trail: protection, no protection, and extra traffic. Of the above, the protection preference is divided into trail protection and subnetwork connection protection.

### **Protection subnet**

A network concept in the network management system. A protection subnet is not an MSP ring or a path protection ring. A protection subnet consists of NEs and fiber connections.

### **Protocol controller status**

The status of the protocol controller of the protection subnet of the MSP or SNCP type. The statuses are not started, started, starting, partially started.

## R

### **Remote Network Monitoring (RMON)**

A manage information base (MIB) defined by the Internet Engineering Task Force (IETF). RMON is mainly used to monitor the data flow of one network segment or the entire network.

## **Revertive switching**

In revertive operation, the traffic signal (service) always returns to (or remains on) the working SNC/trail if the switch requests are terminated; that is, when the working SNC/trail has recovered from the defect or the external request is cleared.

## **Resource sharing**

Resource sharing means that a physical link resource may belong to multiple protection subnetworks.

## **Route**

The path that a trail passes through.

## **Route constraint**

The constraint conditions for calculating a route. When creating a trail, the user can specify the explicit route and the NEs that the trail cannot pass. The explicit route and the NEs are the constraints for calculating the route.

## **ROADM**

Reconfiguration Optical Add/Drop Multiplexing. ROADM helps you to terminate or pass through any one wavelength at every node without affecting the existing services. At the same time, ROADM can change wavelengths through the network management system remotely, to adjust wavelengths added or dropped in a quick and convenient manner. In addition, ROADM enables power equalization at path level through a built-in power equalization function, and adjusts power for pass-through paths in a better way than a band-based dynamic gain equalizer (DGE) does.

## **S**

### **Section**

A trail in a section layer.

## **S1 byte**

To implement protection switching of clocks in the whole network, the NE must learn about the clock quality information of the clock reference source it traces. Therefore, ITU-T defines S1 byte to transmit the network synchronization status information.

## **Safe control switch**

The IPA safe switch is set in consideration of the long-span networking requirement, which cannot allow too low output optical power. If the safe control switch is turned off, IPA restarting optical power is the specified output power of the OAU. Otherwise, the IPA restarting optical power is restricted to less than 10 dBm.

## **Script file**

It is the text file describing the physical information and configuration information of the entire network, including the network-wide configuration file, NE port naming file, NE configuration file, NE list file, NM computer information file, service actualization script, network layer information file, network modeling and design information file and ASON information file.

## **SD trigger condition**

SD refers to signal degradation. The multiplex section protocol defaults to start switching in case of signal loss. In practice, signal degradation severely affects some services, so protection switching is needed. Or, you can turn off this trigger condition through the switch to avoid MS switching when the signal degrades.

## **SD**

Signal Degrade. A signal indicating the associated data has degraded in the sense that a degraded defect (dDEG) condition is active.

## **SDH-ASON Trail**

A trail that spans both the SDH and ASON domains.

## **SF**

Signal Fail. A signal indicating the associated data has failed in the sense that a near-end defect condition (not being the degraded defect) is active.

## **SDH NNI**

SDH Network Node Interface. It is applied to build communications connection with the equipment beyond the management area of the network management system. Usually, the NM creates an SDH NNI by creating a logical system on the port of an idle line board, and the NE must be a TM without protection and fiber connection.

## **Search domain**

The range of searching for NEs.

## **Server trail**

There is an inclusion relationship between the trails of different levels. For example, a trail of a certain level contains multiple trails of lower levels. In such a structure, the bearer trail that bears another trail of lower level is called the server trail.

## **Secondary filter trail**

In this search mode, the NM re-searches the trail data displayed by the current client according to the given search conditions, helping the customer find the trail data which interests him the most.

## **Shortcut menu**

A menu that is displayed when right-clicking an object's name or icon. Also called a context menu.

## **Serial port extended ECC**

The ECC channel realized by means of serial port.

## **Service clock working route**

The route of a service clock from the source to the sink in a WDM system. The working route can be in the form of point-to-point or broadcast (That is, an input clock source corresponds to multiple output clock sources).

## **Service configuration policy**

When pass-through services are configured on the newly added nodes, the high-order mode or low-order mode can be selected to pass through. When the VC12 service over a VC4 exceeds a preset threshold, higher order cross-connect is selected, otherwise lower order cross-connect is selected. When the services are not VC12 ones, they are converted into VC12 equivalents. For example: if there are two VC3 and four VC12 services on a VC4, there should be  $21 \times 2 + 4 = 46$  VC12 services.

## **Service loading indication**

To indicate the status of loading services in an SDH frame by using the C2 or V5 byte in the SDH path overhead.

## **SLA (Service Level Agreement)**

An agreement signed between the network carrier and the client, concerning the treatments that the client can receive when services are transferred in the network. The agreement contains the information on technology and commerce. Usually, SLA refers to a specific QoS.

## **SLIP**

Serial Line Interface Protocol, defines the framing mode over the serial line to implement transmission of messages over the serial line and provide the remote host interconnection function with a known IP address.

## **Subnet**

The network that consists of a group of interconnected or correlated NEs, according to different functions. For example, protection subnet, clock subnet and so on.

## **Subnet connection protection**

Subnetwork connection protection uses the 1+1 mode. SNCP is of 1+1 protection mode. Payloads are transmitted simultaneously on both the working and the protection sub-network connections. When the working sub-network connection fails, or when its performance deteriorates to a certain level, at the receiving end of the sub-network connection, the signal from the protection sub-network connection is selected according to the preference rule. Switching usually takes the single-end switching mode, no protocol is needed.

## **Subnet mask**

Also referred to as the network mask off code, it is used to define network segments, so that only the computers in the same network segment can communicate with one another, suppressing broadcast storm between different network segments.

## **Subnet number**

Subnetwork number is used to differentiate the different network sections in the sub-network conference. Actually it is the first several digits (one or two) of the user phone number. An orderwire phone number is composed of the sub-network number and the user number.

## **SNCP node**

The SNCP node of a ring subnet that can support the ability to dually feed and selectively receive trails. In this way, subnet connection protection is realized. Usually, the node of the path protection type is set as an SNCP node.

### **Spread type**

The spread type of ATM service includes point-to-point (p2p) and point-to-multipoint (including p2mpRoot and p2mpLeaf).

### **Switching priority**

There may be the case that several protected boards need to be switched; the tributary board switching priority should be set. If the switching priority of each board is set the same, the tributary board that fails later cannot be switched. The board with higher priority can preempt the switching of that with lower priority.

### **Synchronize Alarm**

When synchronizing the alarms, the network management system checks the alarms in the network management system database and the alarms in the NE. If they are inconsistent, the alarms in the NE are uploaded to the network management system database and overwrite the old ones.

### **Synchronize Fiber Service**

To re-upload all services carried on the physical fiber links.

### **Synchronize NE time**

To apply the system time of the network management system server to NEs to keep the time of all NEs consistent.

## **T**

### **Tag/Untag**

The Ethernet port that can identify and transmit the packets with an 802.1q tag header is referred to as a Tag port; otherwise it is referred to as an Untag port.

### **Terminal NE**

A source NE or a sink trail.

### **Topology**

The network management system topology is a basic component of the man-machine interactive interface. The topology clearly shows the structure of the network, the alarms of different NEs, subnetworks in the network, the communication status, and the basic network operating status.

### **Traffic frame discard flag**

It is the traffic frame discard control. Two options are provided: enable and disable. It indicates the means by which the NE discards cells when the network is congested. When the frame discard mark is closed, the cells will be discarded at the cell level; when it is opened, they will be discarded at the frame level. Here, "frame" refers to the AAL protocol data unit.

## **Trail**

A "transport entity" which consists of an associated pair of "unidirectional trails" capable of simultaneously transferring information in opposite directions between their respective inputs and outputs.

### **Trail consistency check**

Check whether the circuit route and the activation status of the NM side and NE side are the same, clear the superfluous MOs and combine some of the circuits. During network expansion, such an operation as adding fibers to the SDH NNI or configuring/deleting services through the configuration layer will result in circuit inconsistency.

### **Trail management function**

A network level management function of the network management system. Through trail management, you can configure end-to-end services, view graphic interface and visual routes of a trail, query detailed information of a trail, filter, search and locate a trail quickly, manage and maintain trails in a centralized manner, manage alarms and performance data by trail, and print a trail report.

### **Trail View**

The user interface of the network management system, that is used to manage trails based on topologies. The Trail View helps the user to quickly configure and maintain trails. See also Protection View, Clock View.

### **Transmission media layer route**

The route that consists of the physical media (such as fibers and NEs) that a trail passes through.

### **Trunk link**

A route that bears Ethernet services in the network management system.

### **TPS protection**

The equipment level protection that uses one standby tributary board to protect N tributary boards. When a fault occurs on the working board, the SCC issues the switching command, and the payload of the working board can be automatically switched over to the specified protection board and the protection board takes over the job of the working board. After the fault is cleared, the service is automatically switched to the original board.

## **U**

### **Upper threshold**

The value that can generate a performance threshold crossing if exceeded.

### **UAT**

Unavailable Time. A UAT event is reported when the monitored object generates 10 consecutive severely errored seconds (SES) and the SESs begin to be included in the unavailable time. The event will end when the bit error ratio per second is better than 10<sup>-3</sup> within 10 consecutive seconds.

## **Unidirectional (protection) switching**

Unidirectional (protection) switching. For a unidirectional fault (that is, a fault affecting only one direction of transmission), only the affected direction (of the trail, subnetwork connection) is switched.

## **UNI**

User Network Interface. The interface between the user and a network node.

## **Unprotected**

Services transmitted through an ordinary way. Once a failure or interruption occurs, the data cannot be restored for lack of protection mechanism.

## **Unterminated Service**

The service that is not terminated within the management domain of the network management system.

## **UPC/NPC**

Usage Parameter Control/Network Parameter Control. During the communication, the UPC is implemented to monitor the actual traffic on each virtual circuit that is input to the network. Once the specified parameter is exceeded, measures will be taken to control. NPC is similar to the UPC in function. The difference is that the incoming traffic monitoring function is divided into UPC and NPC according to their positions. The UPC locates at the user/network interface, while the NPC at the network interface.

## **Upload**

To query all or some of the configuration data of the NE to the network management system and overwrite the configuration data saved at the NE layer of the network management system.

## **User**

The user of the network management system client or NE user. The user and password define the corresponding authority of operation and management.

## **User group**

User set refers to the set of NMS users with the same management authorities. The default user group includes: system administrator, system maintenance engineer, system operator and system supervisor. The attributes of user set include name and detailed description.

## **V**

## **Virtual fiber**

The fiber that is created between different equipment. A virtual fiber is used to represent the optical path that bears SDH services in a WDM system.

## **VC12, VC3 trail**

The channels (that is trail group) provided for trail-layer network nodes (such as a switch) in a path-layer network, and act as the basic unit of transport capacity of paths between trail-layer network nodes.

#### **VC4 server trail**

The path rate of the VC4 server trail is 150.336 Mbit/s. The VC4 server trail provides transparent channels (that is, circuit group) for circuit-layer network nodes (for example, a switch) in a path-layer network, and acts as the basic unit of inter-office communication path. When the VC4 server trail is configured, only the higher order cross-connection of VC4 is generated in the intermediate NE, but no cross-connection is generated at the two ends; that is, no service is added/dropped. Therefore, the VC4 server trail is not a traditional service. It is only the basis for VC3 and VC12 trail creation.

#### **VCC**

Virtual Channel Connection. The VC logical trail that carries data between two end points in an ATM network.

#### **VCI**

Virtual Channel Identifier. The identifier in the ATM (Asynchronous Transfer Mode) cell header that identifies to which virtual channel the cell belongs.

#### **VPI**

The field in the ATM (Asynchronous Transfer Mode) cell header that identifies to which VP (Virtual Path) the cell belongs.

#### **Virtual concatenation**

For SDH, the virtual containers (VC) to carry concatenated services are independent in terms of their location in the frame structures, so that they can be located flexibly.

#### **Virtual NE**

Like a normal NE, a virtual NE is also displayed with an icon on a window, but it is only an NE simulated according to the practical situation, which does not represent an actual NE. Therefore, the actual status of this NE cannot be queried and its alarm status cannot be displayed with colors. A virtual NE is used to represent an NE or subnet that is not managed by Huawei's NMS for end-to-end service configuration and trail management.

#### **W**

#### **Wave band**

A board like the MB2 divides the wavelength resources into such fixed wavelength groups as 1-4, 5-8 and 9-12, and so on. A wavelength group is called a wave band, and a wave band carrying services to be added or dropped is called add/drop wave band.

#### **WTR**

Wait to Restore. This command is issued when working channels meet the restore threshold after an SD or SF condition. It is used to maintain the state during the WTR period unless it is preempted by a higher priority bridge request.

#### **WTR time**

A period of time that must elapse before a trail/connection that is recovered from a fault can be used again to transport the normal traffic signal and to select the normal traffic signal.

### **Wavelength path protection ring**

The wavelength path protection ring comprises the working ring and the protection ring. Service signals are transmitted in the two rings in opposite directions. In the wavelength path protection ring, service signals from one node (such as node A) to another node (such as node C) are transmitted via the working ring and the protection ring at one time. Node C receives the signals from the two rings at the same time and selects the signal with higher quality.

### **Wavelength protection group**

The important data that is used to describe the wavelength protection structure. The wavelength path protection can only work with the correct configuration of the wavelength protection group.

### **Wavelength protection subnet**

The ring-chain structure that is used to describe wavelength protection. The wavelength protection subnet is the basic network-level information and the basic network-level data oriented to user. The user can create or delete a protection subnet, set parameters for the protection subnet as required. In this way, the management at the network layer is realized.

### **Working path**

A specific path that is part of a protection group and is labeled working.

### **WXCP service**

Wavelength Cross-Connection Protection. The services that have path protection on a ring network. Services are dually fed and selectively received. The working service and the protection services are switched by using the cross-connection function.

**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)

## **9.4.17 Acronyms and Abbreviations**

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This topic lists acronyms and abbreviations that are used in this guide.

**A**

**ACE**

Adaptive Communication Environment

**AIS**

**AMI** Alarm Indication Signal

**APS**

Automatic Protection Switching

**ASON**

Automatically Switched Optical Network

**ASN.1**

Abstract Syntax Notation One

**ATM**

Asynchronous Transfer Mode

**B**

**XML**

Business Management Layer

**BMS**

Business Management System

**C**

**CAR**

Committed Access Rate

**CC**

Cross Connection

**CORBA**

Common Object Request Broker Architecture

**COS**

Class Of Service

**CTP**

Connection Termination Point

**CPU**

Central Processing Unit

**D**

**DCC**

Data Communication Channels

**DCN**

**Data Communication Network**

**DNI**

Dual Node Interconnection

**DWDM**

Dense Wavelength Division Multiplexing

**E**

**ECC**

Embedded Control Channel

**ELL**

Encapsulation Layer Link

**EML**

Element Management Level

**EMS**

Element Management System

**EPG**

Equipment Protection Group

**EPL**

Ethernet Private Line

**EPLan**

Ethernet Private LAN

**EVPL**

Ethernet Virtual Private Line

**EVPLan**

Ethernet Virtual Private LAN

**F**

**FD**

Flow Domain

**FDFr**

Flow Domain Fragment

**FEC**

Forward Error Correction

**FIFO**

First In First Out

**FTP**

File Transfer Protocol

**FTP**

Floating Termination Point

**G****GCT**

GUI Cut-Through

**GE**

Gigabit Ethernet

**GNE**

Gate Network Element

**GUI**

Graphic User Interface

**H****HA**

High-Availability

**I****ID**

Identity

**IDL**

Interface Definition Language

**IGMP**

Internet Group Management Protocol

**IIOP**

Internet Inter-ORB Protocol

**IMAP**

Integrated Management Application Platform

**ITU-T**

International Telecommunication Union- Telecommunication Standardization Sector

**IP**

Internet Protocol

**L****LAG**

Link Aggregation Group

**LAN**

Local Area Network

**LCAS**

Link Capacity Adjustment Scheme

**LCT**

Local Craft Terminal

**M****MAC**

Media Access Control

**MDP**

Message Dispatch Process

**ME**

Managed Element

**MFDFr**

Matrix Flow Domain Fragment

**MIB**

Management Information Base

**MIP**

Maintenance Association Intermediate Point

**MIT**

Managed Object Instance Tree

**MO**

Managed Object

**MODEM**

Modulator-Demodulator

**MPLS**

Multi-Protocol Label Switching

**MS**

Multiplex Section

**MSP**

Multiplex Section Protection

**MSTP**

Multi-Service Transmission Platform

**MTNM**

Multi-Technology Network Management

**N****NBI**

Northbound Interface

**NE**

Network Element

**NEL**

Network Element Level

**NML**

Network Management Level

**NMS**

Network Management System

**NNI**

Network-to-Network Interface

**NPC**

Network Parameter Control

**O****OADM**

Optical Add/Drop Multiplexer

**OAM**

Operation Administration Maintenance

**OCh**

Optical Channel

**OMG**

Object Management Group

**ORB**

Object Request Broker

**OSF**

Operation System Function

**OSS**

Operation Support System

**OSN**

**Optical Switch Node**

**OSI**

Open Systems Interconnection

**OTS**

Optical Transmission Section

**OTM**

Optical Terminal Multiplexer

**OTU**

Optical Transponder Unit

**P**

**PC**

Personal Computer

**PDH**

Plesiochronous Digital Hierarchy

**PE**

Provider Edge

**PG**

Protection Group

**PM**

Performance Monitor

**PP**

Path Protection

**PRBS**

Pseudo Random Binary Sequence

**PSTN**

Public Switched Telephone Network

**PTP**

Physical Termination Point

**PVP**

Permanent Virtual Path

**Q**

**QoS**

Quality of Service

**R**  
**RDI**

Remote Defect Indication

**RMEP**

Remote Maintenance Association End Point

**RMON**

Remote Monitoring

**RPR**

Resilient Packet Ring

**S**

**SCSI**

Small Computer Systems Interface

**SD**

Signal Degradation

**SDH**

Synchronous Digital Hierarchy

**SML**

Service Management Layer

**SMS**

Service Management System

**SNML**

Sub-Network Management Layer

**SNMS**

Subnetwork Management System

**SMTP**

Simple Mail Transfer Protocol

**SNC**

Subnetwork Connection

**SNCP**

Sub-Network Connection Protection

**SONET**

Synchronous Optical Network

**SSL**

**S**ecurity Socket Layer

**SSM**

Synchronization Status Message

**T**

**TAO**

The ACE ORB

**TCA**

Threshold Crossing Alarm

**TCM**

Tandem Connection Monitoring

**TCP**

Transmission Control Protocol

**TD**

Traffic Descriptor

**TMF**

Telecommunication Management Forum

**TMN**

Telecommunication Management Network

**TP**

Termination Point

**U**

**UNI**

User-to-Network Interface

**UPC**

Usage Parameter Control

**UTC**

Universal Time Coordinated

**V**

**VB**

Virtual Bridge

**VC**

Virtual Connection

**VC**

**VC** Virtual Circuit

**VC** Virtual Container

**VC**

Virtual Channel

**VCI**

Virtual Channel Identifier

**VLAN**

Virtual LAN

**VPI**

Virtual Path Identifier

**VP**

Virtual Path

**W**

**WAN**

Wide Area Network

**WDM**

Wavelength Division Multiplexing

**WTR**

Wait-to-Restore

**Parent topic:** [CORBA NBI Developer Guide \(Inventory\)](#)