



CHAPTER 1

Overview of Cisco Prime Optical GateWay/CORBA

This chapter provides an overview of Cisco Prime Optical GateWay/CORBA (formerly Cisco Transport Manager GateWay/CORBA). It includes the following information:

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Cisco Prime Optical is a carrier-class, multitechnology management system that integrates the end-to-end management of traditional transport networks and new carrier packet transport networks. It can help maintain the integrity of existing services, plus deliver interactive, content-based services and high-bandwidth applications.

Cisco Prime Optical manages the entire Cisco optical portfolio, including:

- Metro core
- Metro dense wavelength-division multiplexing (DWDM)
- Metro edge and access products
- New Carrier Packet Transport (CPT) System products

Prime Optical also serves as a foundation for integration into a larger overall Operations Support System (OSS) environment by providing northbound gateway interfaces to higher-layer management systems.

The GateWay/CORBA product is a CORBA northbound interface that complies with the TMF CORBA specification for network management layer-element management layer (NML-EML) interfaces.

A programming technology for distributed computing, CORBA enables components of various application programs to communicate with one another regardless of their implementation characteristics—programming language, operating system, machine, location, and so on. GateWay/CORBA allows service providers to implement a programmatic interface between Prime Optical and various OSS tools in the back office. Such interfaces enable next-generation flow-through equipment and circuit management, including inventory, provisioning, and assurance functions.

For each NE that Prime Optical manages, the GateWay/CORBA option provides higher-layer management systems with fault, inventory, and performance information, plus configuration and circuit provisioning capabilities. GateWay/CORBA supports up to eight simultaneous sessions with higher-layer management systems.

GateWay/CORBA supports the following NEs in Prime Optical 9.3.1:

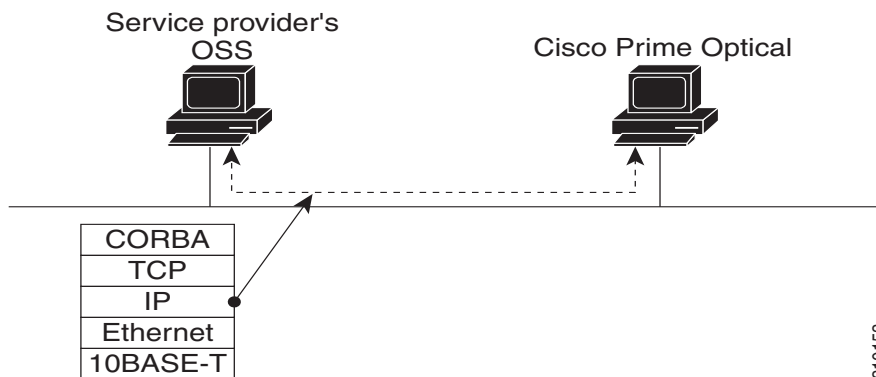
- ONS 15200
- ONS 15216
- ONS 15305
- ONS 15310 CL
- ONS 15310 MA SDH
- ONS 15310 MA SONET
- ONS 15327
- ONS 15454 SDH
- ONS 15454 SONET
- ONS 15530
- ONS 15540
- ONS 15600 SDH
- ONS 15600 SONET
- CPT-200
- CPT-600



Note In Prime Optical 9.3.1, the CPT-200 and CPT-600 platforms are managed as ONS 15454 SONET/ONS 15454 SDH NEs.

The following figure illustrates the GateWay/CORBA communications architecture within a service provider's OSS environment.

Figure 1-1 GateWay/CORBA Communications Architecture



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The telemanagement community has adopted CORBA as the preferred distribution technology with which to integrate the various components of an OSS. The Multi Technology Network Management Working Group of the TMF has been working to create a specification for an NML-EML interface. GateWay/CORBA is based on the following TMF standards:

- TMF.513 v2.0 (August 2001): Multi Technology Network Management Business Agreement
- TMF.608 v2.0 (August 2001): Multi Technology Network Management Information Agreement
- TMF.814 v3.0 (August 2001): Multi Technology Network Management Solution Set

The TMF.608 document is a protocol-independent information model for the network resources being managed. The TMF.814 document is the CORBA Interface Data Language (IDL) component of the specification; it consists of a set of definitions for specific objects and methods that are available for use at the NML-EML interface for passing information or accomplishing specific actions. However, TMF.814 is a specific interface implementation based on a TMF high-level business agreement described by the TMF.513 document. To complete the document set, TMF.814A recognizes that different parties may provide varying degrees of compliance in their implementations. The TMF.814A document is called the Implementation Agreement, and is simply a form to be filled out by those parties implementing TMF.814 to further describe their specific implementations to those who might use them.

1.1 Features of GateWay/CORBA

GateWay/CORBA supports the following TM.814 modules:

- Inventory
 - Element management system (EMS)
 - Multilayer subnetwork
 - Managed element
 - Physical termination point (PTP)
 - Connection termination point (CTP)
 - Floating termination point (FTP)
 - Subnetwork connection (SNC)
 - Protection group
 - Equipment
 - Equipment holder
 - Topological link
- Alarm notification
- Retrieval of active alarms on objects where inventory is available
- SNC provisioning
- Equipment provisioning
- Protection operations
- Performance operations
- Maintenance operations

**Note**

Performance and inventory application programming interfaces (APIs) do not retrieve any information for out-of-service NEs.

The gateway authenticates the northbound OSS. Once authenticated, the OSS can perform operations and receive alarm notifications.

GateWay/CORBA uses jacORB 2.1.3.7. The corresponding standard is Object Management Group (OMG) CORBA 2.3.

1.2 GateWay/CORBA Fault Management

GateWay/CORBA forwards all the fault notifications received from managed NEs and all Prime Optical alarms to the network management system (NMS) through the notification service. Information about the notification service is available on the OMG website at www.omg.org.

**Note**

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The NMS retrieves all active alarms on the EMS and on managed element objects. The NMS filters alarms based on probable cause, perceived severity, and managed element name.

1.3 Overview of CORBA Services

GateWay/CORBA uses two CORBA services—naming service and notification service. The naming service is required for GateWay/CORBA to function. If the notification service is not available, alarm and event notifications are not forwarded to the OSS. By default, the naming and notification services are installed on the Prime Optical server during the GateWay/CORBA installation. However, the CORBA services can be located anywhere as long as they are accessible from the Prime Optical server on which GateWay/CORBA is installed. The OSS application(s) must also use the same instances of the naming service and the notification service.

1.3.1 Naming Service

GateWay/CORBA and the other Prime Optical server processes must use a naming service in order to operate. GateWay/CORBA includes the OpenFusion naming service product. By default, GateWay/CORBA is configured to use OpenFusion. However, you can configure GateWay/CORBA and the Prime Optical server to use a different centralized naming service. For more information, see [B.7 Using Multiple Naming Servers, page B-4](#).

1.3.2 Notification Service

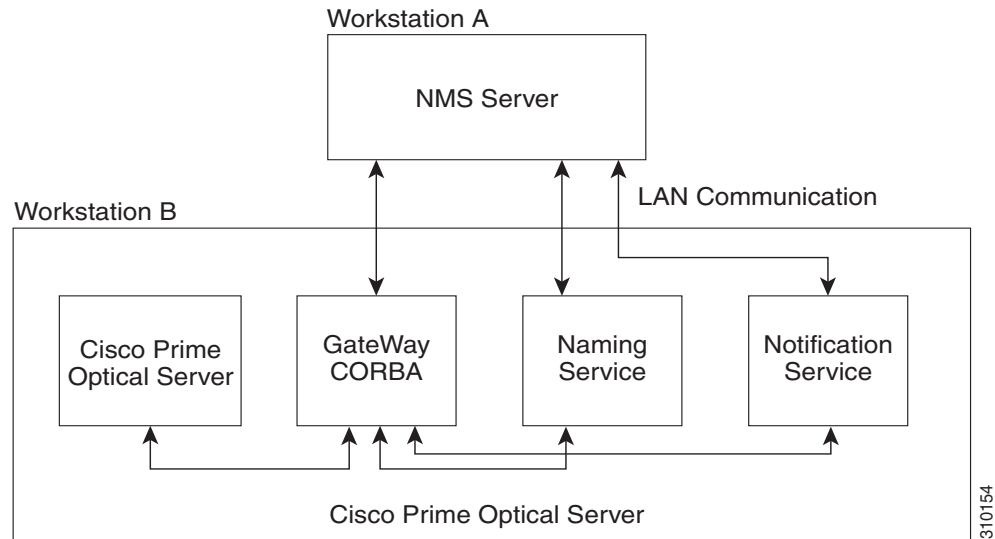
GateWay/CORBA must use a CORBA notification service to report faults and events. GateWay/CORBA includes the PrismTech OpenFusion notification service product, and is configured by default to use it. As with the naming service, you can configure GateWay/CORBA to use a different notification service. For more information, see [A.1 Overview of Notifications, page A-1](#).

The following scenarios describe possible configurations of the naming and notification services.

Scenario 1: Naming and Notification Services Installed on the Prime Optical Server

The naming and notification services are installed on the Prime Optical server workstation as shown in the following figure.

Figure 1-2 Naming and Notification Services on the Prime Optical Server Workstation

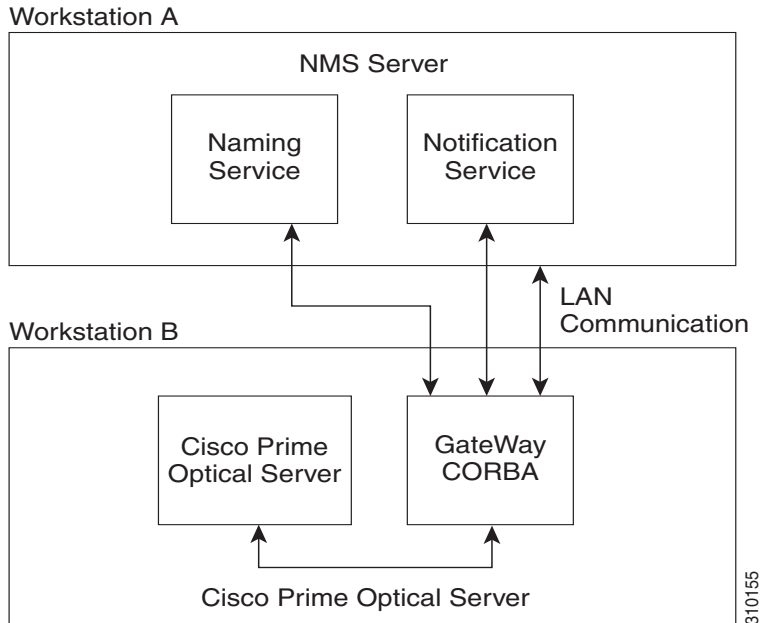


The notification service must be installed on the Prime Optical server workstation with the Prime Optical server processes. GateWay/CORBA is configured to use this notification service. The NMS processes must be configured to use the notification and naming services on the Prime Optical server workstation.

Scenario 2: Naming and Notification Services Installed on the NMS Workstation

The naming and notification services are installed on the NMS workstation as shown in the following figure.

Figure 1-3 Naming and Notification Services on the NMS Workstation

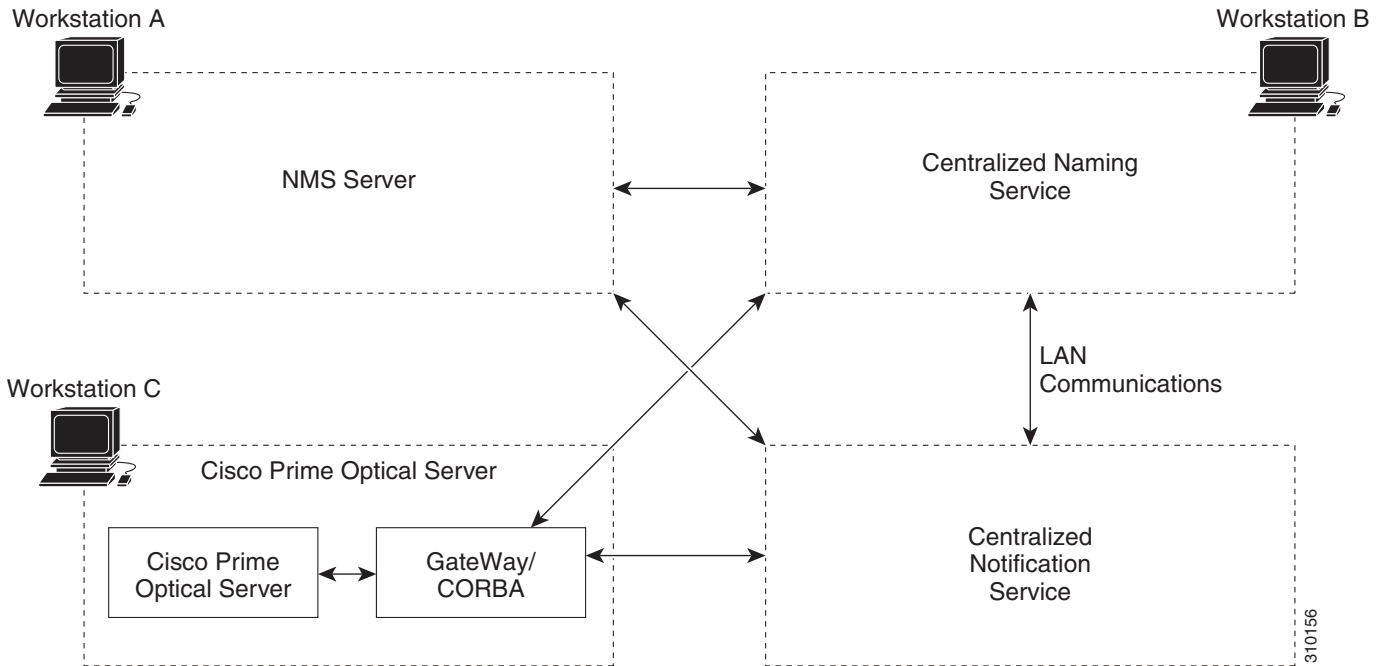


The Prime Optical server processes and GateWay/CORBA must be configured to use the naming and notification services on the NMS workstation.

Scenario 3: Naming and Notification Services Installed on Independent Servers

The naming and notification services are installed on independent servers as shown in the following figure.

Figure 1-4 Naming and Notification Services on Independent Servers



The Prime Optical server processes, GateWay/CORBA, and the NMS processes must be configured to use the naming and notification services on independent workstations.

1.4 Information Model

The information model used by the GateWay/CORBA northbound interface is based on the TMF NML-EML CORBA interface—TMF.814 v3.0. This standard is available to TMF members from the TMF website. The information model allows the EMS to provide an abstraction layer between the EMS and the NMS. This standard is generic and is, therefore, applicable to many different EMS and NE implementations. Customers implementing a TMF-compliant CORBA interface between a specific NMS and Prime Optical must use the GateWay/CORBA product, and will require specific information on what API features are implemented and how those features should be used.

1.5 IDL-Related Changes

The following table lists the IDL-related changes that occurred between two given releases.

Table 1-1 Summary of IDL-Related Changes

Release Details	Change
Cisco Prime Optical 9.3 to Cisco Prime Optical 9.3.1	No change
From R9.2 to Cisco Prime Optical 9.3	<ul style="list-style-type: none"> • globaldefs.idl (added definition): <pre>typedef sequence<NamingAttributesList_T> NamingAttributesMultipleList_T;</pre> • multiLayerSubnetwork.idl (added API): <pre>void getRouteAndTopologicalLinks(in globaldefs::NamingAttributes_T sncName, out subnetworkConnection::Route_T route, out topologicalLink::TopologicalLinkList_T topologicalLinkList) raises(globaldefs::ProcessingFailureException);</pre> • The following new standard IDLs have been added: <ul style="list-style-type: none"> - flowDomain.idl - flowDomainFragment.idl - trafficConditioningProfile.idl - trailNtwProtection.idl
From R9.1 to R9.2	No change

Table 1-1 Summary of IDL-Related Changes (continued)

Release Details	Change
From R9.0 to R9.1	<ul style="list-style-type: none"> • managedElementManager.idl extended with new API <pre>void getAllCtmMEInternalPatchord(in globaldefs::NamingAttributes_T managedElementName, out globaldefs::NVSLList_T patches) raises (globaldefs::ProcessingFailureException);</pre> • performance.idl extended with new API <pre>void getCTMValidHistoryPMDData(in nmsSession::NmsSession_I client, in PMTPSelectList_T pmTPSelectList, in PMPParameterNameList_T pmParameters, in globaldefs::Time_T startTime, in globaldefs::Time_T endTime) raises(globaldefs::ProcessingFailureException);</pre>
From R8.5 to R9.0	<ul style="list-style-type: none"> • New enumerated PC_LOCKON, PGT_SPLITTER, PGT_L2_1_PLUS_1 added to protection.idl • New enumerated OT_NETWORK_PARTITION added to notifications.idl. • New interface type added to multiLayerSubnetwork.idl: <pre>enum L2InterfaceType_T { L2IT_UNKNOWN, L2IT_FASTETHER, L2IT_GIGAETHER, L2IT_PORTCHANNEL }; L2InterfaceType_T interfaceType;</pre>

1.6 Functionalities Not Supported in Prime Optical 9.3.1

The following table lists the functionalities which are not supported in release 9.3.1. The cards or equipment in which the functionalities are not supported are also listed.

Table 1-2 **Functionalities Not Supported**

Functionalities	Card/Equipment
Provisioning Optical Transmission Section (OTS) links	Passive units
Historical PM retrieval	<ul style="list-style-type: none"> • 80-WXC-C • MSNE 30 Shelf • XP_10GE (gz) for LACP, REP
Realtime PM retrieval	<ul style="list-style-type: none"> • 80-WXC-C • MSNE 30 Shelf • ADM_10G for RMON, IPPMHDLC/LEX • XP_10GE (gz) for E-OAM, LACP, REP • TNC/TNCE • 40G_MXP_C
Get and set thresholds	80-WXC-C
PPC links	80-WXC-C
Alarm management	XP_10GE (gz) for CFM, REP, E-OAM, LACP

1.7 Summary

As a state-of-the-art EMS, Prime Optical can provide a CORBA-based interface between itself and an NMS. This functionality is provided by a separately purchasable option—GateWay/CORBA. GateWay/CORBA provides a TMF-compliant CORBA interface in accordance with the TMF NML-EML specification composed of TMF.513, TMF.608, and TMF.814. GateWay/CORBA includes naming and notification services. Customers can use the bundled naming and notification services or their own services in various configurations. GateWay/CORBA brings the service provider one step closer to full OSS automation.