



Configuration Guide for Cisco Optical Site Manager, IOS XR Release 24.3.x

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CONTENTS

CHAPTER 1

Cisco Optical Site Manager Overview 1

Cisco Optical Site Manager Overview 1

Log into Cisco Optical Site Manager 2

CHAPTER 2

Node Functional View 3

Understanding Node Functional View 4

Action Icons in NFV 7

View Details of Node 8

View Details of OLS Node 9

View Optical Channel Monitoring Data 10

Optical Time Domain Reflectometer 10

OTDR Graph Navigation and Controls 10

Enable Automatic OTDR Scan 12

Run a Manual OTDR Scan 13

View Details of Side 14

View Details of Side for OLS Node 15

View Details of Card 16

View Details of Port 17

View Details of Patch Cord 17

View Details of Circuit 18

Connection Verification 19

Verify Connections 20

Set User Preferences 21

View Active Circuit List 22

CHAPTER 3

Cisco Optical Site Manager Topology 23

- Cisco Optical Site Manager Topology 23
- Create a Rack 24
- Open the Card View 25
- View Passive Device Details 25
- View Voltage, Temperature and Current Information 26
- View Power Monitoring Parameters 26

CHAPTER 4

Fault Monitoring 29

- Fault Monitoring 29
- View Rack, Chassis, or Card Alarms 30
- View All Alarms and Conditions 30
- View Rack, Chassis, or Card Transient Conditions 31
- View Alarms History 31
- Alarm Profiles 32
 - Create and Load Alarm Profiles 32
 - Associate Alarm Profiles 33

CHAPTER 5

Configure Devices 35

- Manage Authorization Groups 35
- Add NCS 1000 Devices 37
- Add Unmanaged Devices 40
- Delete Devices 41
- Retrieve Device Diagnostics 41

CHAPTER 6

Provision Line Cards 43

- Supported Line Cards 44
- Open the Card View 44
- Change Admin State for Card Ports 45
- Add Card Mode 45
 - How to Add a Card Mode 46
 - Select Card Mode 46
 - Select Trunk and Client Data Rate 48
- Add Internal Patch Cords 49
- Add Trunk Details 51

Verify Configuration Details	52
Edit Card Mode	52
Provision Trail Trace Monitoring	53
Provision ODU Interfaces	54
Provision OTU Interfaces	55
Provision Ethernet Interfaces	57
Provision Optical Channels	59
Change Trunk Port Parameters	61
Provision Optical Threshold Settings	62
Provision G.709 Thresholds	63
Provision FEC Thresholds	64
Provision RMON Thresholds	64
Provision Loopback	65
Provision Optical Safety	66
Enable Attention LED	68

CHAPTER 7
Configure the Node 69

Import the Cisco Optical Network Planner Configuration File	70
Optical Degrees	71
Manage Optical Degrees	71
Internal Patch Cords	72
Manage Internal Patch Cords	72
Automatic Power Control	73
APC at the Shelf Controller Layer	74
APC at the Amplifier Card Level	76
Forcing Power Correction	76
Enable APC	76
Disable APC	77
Span Loss Measurement	78
View or Modify Span Loss Parameters	78
Configure Amplifier Parameters	79
Provision Interface Parameters	82
Provision Raman Amplifier Parameters	84
Manage Raman Interface Parameters	86

Optical Cross-connect Management	88
View Optical Cross-connect Circuits	88

CHAPTER 8

Cisco Optical Site Manager Setup	91
Configure Timezone	91
View Cisco Optical Site Manager Diagnostics	92
View Audit Logs	93
Cisco Optical Site Manager Smart Licensing	94
Description	94
Create a Token	96
Configure Smart Transport	96
Configure CSLU	98
Configure Offline	100

CHAPTER 9

Backup and Restore Database	103
Database Backup and Restore	105
Backup and Download Database	105
Restore Database	105
Upload Database	106

CHAPTER 10

Upgrade Software	109
Cisco Optical Site Manager Software Package	109
Workflow for Software Upgrade	109
Download Software Package on Cisco Optical Site Manager Card	110
Download Software Package on Device	111
Activate Device Software	112
Delete Software Package	113

CHAPTER 11

View Inventory	115
View Inventory of All Racks and Chassis	115
View Inventory of Single Rack and Chassis	116

CHAPTER 12

Users Access and Authentication	119
--	------------

Users Configuration	119
Create Users	120
Change User Password	120
Delete Users	121
Single sign-on (SSO)	122
Create and Enable SSO with SAMLv2	122
Create SSO with CAS	122
Enable SSO with CAS	123
Manage External Authentication	123
Manage External Authentication	123
Limitations for RADIUS or TACACS Authentication	124
RADIUS Authentication	125
Create RADIUS Server Entry	125
Enable RADIUS Authentication	126
Modify RADIUS Server Parameters	126
Disable the RADIUS Authentication	127
Delete the RADIUS Server from Cisco Optical Site Manager	128
TACACS+ Authentication	128
Create TACACS+ Server Entry on Cisco Optical Site Manager	128
Enable TACACS+ Authentication	129
Modify TACACS+ Server Parameters	130
Disable the TACACS+ Authentication	130
Delete the TACACS+ Server from Cisco Optical Site Manager	131
Manage x509 Certificates	131
Generate and Upload x509 Certificates	132
View Active Login User Details	132
View Active Login Sessions	133
View User Login History	133
Manage Web Configurations	133
Configure Netconf and Nodal Craft Session Timeout	133



CHAPTER 1

Cisco Optical Site Manager Overview

This chapter gives us an overview of the Cisco Optical Site Manager.

- [Cisco Optical Site Manager Overview, on page 1](#)
- [Log into Cisco Optical Site Manager, on page 2](#)

Cisco Optical Site Manager Overview

Cisco Optical Site Manager is an application that allows you to view and access the topology of all the optical devices located in the same optical site. It represents a ROADM functionality by aggregating any transponder or muxponder (or optical transceiver in general) present in the same location.

Cisco Optical Site Manager enables software-defined networks to automate site operations. Its site aggregation feature for Optical Sites includes any NCS 1000 devices connected to the network.

Cisco Optical Site Manager provides the following features:

1. **Site Aggregation for Optical Sites:** Cisco Optical Site Manager allows site aggregation for Optical Sites with NCS 1010, NCS 1014, NCS 1004, and NCS 1001 devices. This feature provides a clear view of the topology of the optical site the devices connected to it. Cisco Optical Site Manager also allows abstraction of OLS site (Optical Line System), OT site (Optical Terminal), or and OLS+OT site.
2. **Site-Level Management:** Cisco Optical Site Manager collects and manages site-level information, including inventory details, site topology, performance monitoring, and correlated alarms.
3. **Web-Based User Interface:** Cisco Optical Site Manager offers a web-based user interface (Web UI) that provides improved management control for NCS 1000 devices and their configurations. This interface allows you to easily view the layout of chassis, cards, and passive devices. Additionally, you can check the active and acknowledged alarms for the NCS 1000 devices.
4. **Performance Monitoring:** Cisco Optical Site Manager enables you to keep track of the performance of different cards and chassis that are hosted on the device. You can access both current and historical performance monitoring counters at various intervals. Additionally, you can verify connections and perform loopbacks.

For more information about Cisco Optical Site Manager, see the [data sheet](#).

Log into Cisco Optical Site Manager

To log into Cisco Optical Site Manager web interface, follow these steps:

Procedure

- Step 1** In the browser URL field, enter the IP address of the Cisco Optical Site Manager instance. The Cisco Optical Site Manager login page appears.
- Step 2** Enter the username and password.
- Note** Use the credentials (configured in the [Standalone Cisco Optical Site Manager Configuration](#)) to log into a Cisco Optical Site Manager.
- Step 3** Click **Login**.
-



CHAPTER 2

Node Functional View

This chapter describes the Node Functional View (NFV) used in Cisco Optical Site Manager and its related tasks.

Table 1: Feature History

Feature Name	Release Information	Description
Detailed View in NFV for Transponder and Muxponder Card on Third-party OLS Networks	Cisco IOS XR Release 24.2.1	<p>The Node Functional View (NFV) has been enhanced to provide a detailed view of transponder and muxponder cards on NCS1014 deployed within networks utilizing third-party Optical Line Systems (OLS).</p> <p>This detailed view provides a graphical representation of the connections between the trunk and client ports on the transponder and muxponder cards, thereby simplifying the visualization of the network's connection layout.</p>
Detailed View in NFV for Transponder and Muxponder Cards on OLS Networks	Cisco IOS XR Release 24.1.1	<p>You can now access a detailed graphical representation of the connections between the trunk and client ports of the transponder and muxponder cards on Optical Line System (OLS) NCS 1010 networks. This is available in the Map View of Node Functional View (NFV).</p> <p>This view is based on the card mode configured on the cards. When you access the detailed view, the right-panel of the Node Functional View displays the card mode details and a list of ports and their settings.</p>

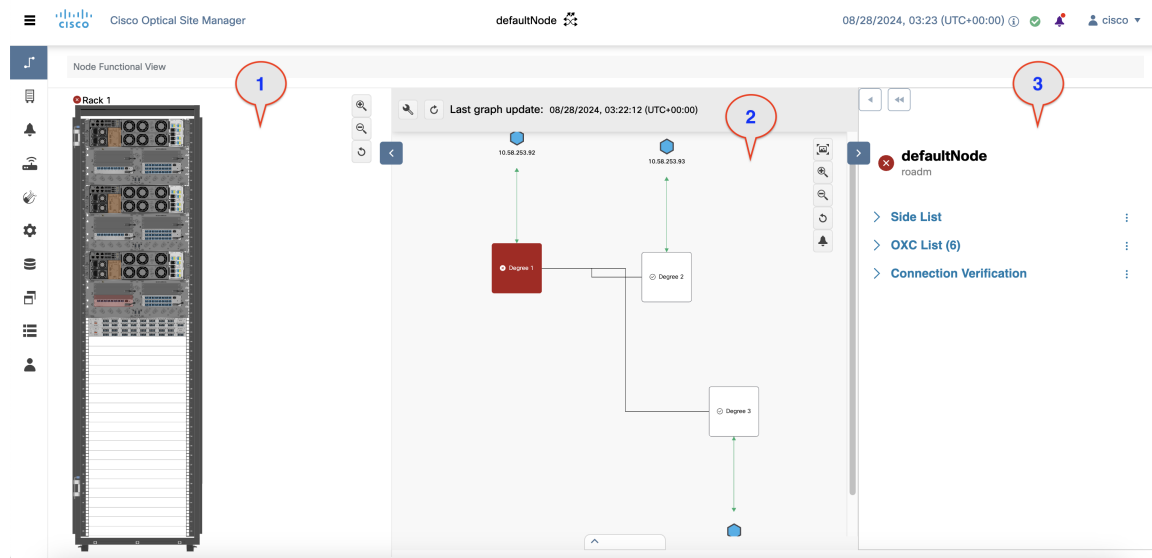
- [Understanding Node Functional View, on page 4](#)
- [Action Icons in NFV, on page 7](#)
- [View Details of Node, on page 8](#)
- [View Details of OLS Node, on page 9](#)
- [View Optical Channel Monitoring Data, on page 10](#)
- [Optical Time Domain Reflectometer, on page 10](#)
- [View Details of Side, on page 14](#)
- [View Details of Side for OLS Node, on page 15](#)
- [View Details of Card, on page 16](#)
- [View Details of Port, on page 17](#)
- [View Details of Patch Cord, on page 17](#)
- [View Details of Circuit, on page 18](#)
- [Connection Verification, on page 19](#)
- [Set User Preferences, on page 21](#)
- [View Active Circuit List, on page 22](#)

Understanding Node Functional View

The Node Functional View (NFV) provides a visual representation of a network rack, including the node and its associated components, such as cards and chassis. You can also add or manage chassis and passive units, switch between different views, and explore detailed maps of physical connections.

Additionally, NFV enables interaction between the Map and Rack views, allowing you to highlight and zoom in on specific components and their connections, such as optical cross-connections and port details.

Figure 1: Node Functional View








This table describes the three views available in the NFV:







Number	View	Description
1	Rack view	<p>Displays a visual representation of a rack, including the node and its cards.</p> <p>How to Access: Click the Collapse Shoulder button to expand and collapse this view.</p> <p>In this view, you can:</p> <ul style="list-style-type: none">• Add Chassis or Passive Unit• Open, Delete or View Chassis Details• Open, Delete or View Card Details

Number	View	Description
2	Map view	<p>Displays a visual map of the components of the node (sides, cards, and so on), connected by patch cords according to physical connections.</p> <p>In this view, you can:</p> <ul style="list-style-type: none"> • Switch Between Contexts and Views You can switch between node view, side view, card view, circuit view, port view, and patch cord view. Based on the chosen context, the relevant details are displayed in the Detailed view of the screen. • Map View Interaction with Rack View: Open a node or a branch in the map view, the cards associated with them are highlighted in the Rack view. Similarly, when you open a card in the map view, the card is zoomed in and the corresponding rack is highlighted and zoomed in the Rack view. • View Connections: You can view the connection between the trunk and client ports on a card as well as the Internal Patch Cords (IPC) connecting the devices and line cards. The connections are based on the card modes configured on a card.

Number	View	Description
3	Detail view	<p>Displays all relevant information about nodes, sides, cards, circuits, ports, or patch cords.</p> <p>In this view, you can view:</p> <ul style="list-style-type: none"> • Optical Degrees • Optical Cross Connections • Verify connections • Card mode details • Ports list • Port settings and details <p>How to Access: Click the Collapse Shoulder button to expand and collapse this view.</p>

Action Icons in NFV

Icon	Description
	Resets the zoomed view to normal view.
Refresh 	Refreshes the Map view with current information.
	Expands or collapses the Rack or Detailed view.
	<p>Displays or hides the alarms icon in the Map and Detailed view.</p> <ol style="list-style-type: none"> 1. Click this button. 2. Select or deselect the alarm icons in the drop-down list to display or hide the alarms icon in the Map and Detailed view.
User Settings 	<p>Sets the user preferences.</p> <p>For more details, see Set User Preferences, on page 21.</p>

Icon	Description
Zoom In 	Zooms in the Rack or Map view.
Zoom Out 	Zooms out the Rack or Map view.
Zoom Out 	Navigates to the default view in the Map view.
Zoom Out 	Navigates to the previous page in the Map View.
Zoom Out 	Expands or collapses the Alarms section.
Zoom Out 	Magnifies the selected area of the Map view, providing a closer and more detailed view of that specific section.

View Details of Node

Use this task to view the details of a node in the Node Functional View. This includes a list of the nodes, active circuits, and the connections between the line cards and passive modules.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

-
- Step 1** Click **Node Functional View** in the left panel.
The Node Functional View page appears.
- Step 2** Click **Collapse Shoulder** to expand the right-panel.
The right-panel displays the details of the node.

Table 2: Node Details

Field	Description
Side List	Displays a list of the nodes along with its details, such as span loss value, the IP address of the device it is connected to, and its degree.
OXC List	Displays a list of active circuits passing through a particular card. For more details, see View Active Circuit List, on page 22 .
Connection Verification	Displays a list of the connections between the line cards and all passive modules. For more details, see Connection Verification, on page 19 .

View Details of OLS Node

Use this task to view the details of a node in NFV.



Note In OLA database, all the cards must be placed in the same degree and only one degree must be present in the node.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Node Functional View** in the left panel.
The Node Functional View page appears.
- Step 2** Click **Show/Hide Shoulder** to open the right shoulder.
- Step 3** View the **Name**, **Topology**, and **Status** fields in the right shoulder.
The **Status** field shows the most severe problem on the node.
- Step 4** View the **Side List** pane that has two tabs - **Info on side** and **Display Neighbors**.
The **Info on side** tab displays the following information:
- Current status
 - Span loss for both the sides
 - (Optional) OTDR, OSC, and PPC information is displayed when available

The **Display Neighbors** tab displays the list of optional neighbors of the components of the node. The following information is displayed for each side:

- Name of the side
- Neighbor node
- At Degree

Step 5 View the **Circuit List** tab that displays the list of all the circuits present in the side.

View Optical Channel Monitoring Data

[Log into Cisco Optical Site Manager, on page 2](#)

Use this task to view the Optical Channel Monitoring (OCM) for the Rx and Tx directions.

Procedure

- Step 1** Click **Node Functional View** in the left panel.
- Step 2** Right-click an optical degree in the Map view and click **Open**.
- Step 3** Expand the panel at the bottom of the page.
- Step 4** Click the **OCM** tab.
- Step 5** Select **RX** or **TX** to view the OCM data in the receiving or transmitting directions, respectively.
- Step 6** Click **Spectrum Occupancy Chart** button to view the spectrum occupancy chart.
-

Optical Time Domain Reflectometer

Cisco Optical Site Manager enables you to assess fiber quality during system installation (prior to activating traffic) using the Optical Time Domain Reflectometer (OTDR) feature.

Using OTDR on the NCS 1010 device has several benefits.

- Real-time loss and back reflection measurements for the fiber pair connected to the TX and RX ports.
- Monitoring of the fiber during live system operation.
- Inspection of the fiber following cable cut and repair events.





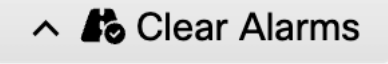

OTDR Graph Navigation and Controls

The table provides an overview of the icons available on the OTDR graph, along with a description of each operation they perform.

Optical Time Domain Reflectometer

Figure 2:

Table 3: OTDR Graph Navigation and Controls

Operation	Icon	Description
Zoom In	—	To zoom into the graph, click the Shift button and drag a rectangle that contains just the region you want to zoom into.
Zoom Out	—	Scroll down to zoom out of the graph.
Reset zoom		Resets the graph to its original zoom and position.
Download Graph Image		Download the graph as an image.
Download SOR File		Download SOR file that contains the fiber trace details such as the distance, reflectance, loss, and fiber attenuation measurements.
Save Scan as Baseline		Save the current OTDR scan results as a baseline.
Clear Alarms		Clear the reflections or losses alarms.
Automatic OTDR Scan		Enable or disable automatic OTDR scan after a fiber cut or Raman Turn Up.

Enable Automatic OTDR Scan

In automatic mode, the OTDR automatically initiates a scan after events such as span faults, span restoration, device power cycles, or line card cold reloads. This automated process swiftly identifies the type of fiber failure and pinpoints the fault location.

Use this task to enable or disable the automatic mode configuration for OTDR.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

-
- Step 1** Click **Node Functional View** in the left panel.
 - Step 2** Right-click an optical degree in the Map view and click **Open**.
 - Step 3** Expand the panel at the bottom of the page.

- Step 4** Click the **OTDR** tab.
- Step 5** Scroll to the bottom of the panel and click the **Global OTDR Settings** icon. **Global OTDR Configurations** dialog box is displayed.
- Step 6** In the **Automatic OTDR Scans Settings** section, perform the following steps:
- a) Select the **System Startup, Fiber Cut & Repair** check box to enable the automatic start of the OTDR scan after a fiber cur or repair.
 - b) Select the **Raman Turn Up** check box to enable the automatic start of the OTDR scan after the Raman turn-up process is completed.
- Step 7** Click **Apply**.

Run a Manual OTDR Scan

You can manually run an OTDR scan during fiber optic installation, troubleshooting, and maintenance to verify link quality, pinpoint faults, and ensure proper network performance after repairs or modifications.

Use this task to manually run OTDR scan.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Node Functional View** in the left panel.
- Step 2** Right-click an optical degree in the Map view and click **Open**.
- Step 3** Expand the panel at the bottom of the page.
- Step 4** Click the **OTDR** tab.
- Step 5** Scroll to the bottom of the panel.
- Step 6** Select RX or TX to run the OTDR scan in the RX or TX directions, respectively.
- Step 7** Click the **Direction** button to set the OTDR scan sensitivity and threshold values.

Table 4: OTDR Scan Sensitivity and Threshold

Use this option	to
Loss Sensitivity	enable the OTDR scan to detect small signal losses (attenuation) along the fiber. Higher loss sensitivity helps the OTDR identify minor attenuation caused by factors like bends or splices.
Reflection Sensitivity	enable the OTDR scan to detect reflected signals from events such as connector interfaces, splices, or breaks. High reflection sensitivity is crucial for accurately locating and analyzing reflective faults in the fiber.

Use this option	to
Absolute Threshold	ensure that the OTDR scan can reliably detect and measure the lowest signal strength, allowing the OTDR to provide accurate and meaningful data essential for identifying weak signals or long-distance faults.
Unprovision	delete the OTDR scan results in the selected direction.

Step 8 Click **Start Scan** button to start OTDR scan.
The OTDR-SCAN-IN-PROGRESS-RX alarm is raised and displayed on the **Alarms** tab of the **Fault Monitoring** menu.

Step 9 Click **Stop Scan** button to terminate the OTDR scan.
An informational message appears indicating that the OTDR scan has been terminated.

The scan results are displayed in the graph.

View Details of Side

Use this task to view the details of the side in NFV.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

-
- Step 1** Click **Node Functional View** in the left panel.
The Node Functional View page appears.
- Step 2** Right-click a side in the map view and choose **View Details** to view the details of the selected side along with the right shoulder.
- Step 3** View the following information that is displayed in the right shoulder. Optional means that the information is displayed when available.
- Name of the side
 - Overall alarm status as a colored label and an icon
 - (Optional) Span loss
 - (Optional) ORL of OTDR
 - (Optional) Fiber End of OTDR
 - (Optional) OSC power

- (Optional) IP address of the node of its optional neighbor. To open the SVO web UI of the neighbor node in a new browser tab, click the IP address of the neighbor node.
 - Degree of its optional neighbor
 - **Card List** tab - Displays the list of all the cards present in the side. The shelf number and slot number are displayed with the card name. The trunk port number is also displayed for TXP cards.
To sort the list of cards, click the vertical ellipsis icon and choose **A-Z**, **Z-A**, **High Severity**, or **Low Severity**.
 - **Circuit List** tab - Displays the list of all the circuits present in the side.
To sort the list of circuits, click the vertical ellipsis icon and choose **A-Z**, **Z-A**, **High Severity**, or **Low Severity**.
-

View Details of Side for OLS Node

Use this task to view the details of the side for a node in NFV.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Node Functional View** in the left panel.
The Node Functional View page appears.
- Step 2** Right-click a side in the map view and choose **View Details** to view the details of the selected side along with the right shoulder.
Or
Click the arrow near the side name that is displayed inside the right shoulder.
- Step 3** View Side 1 and Side 2 merged information that is displayed in the right shoulder. Optional means that the information is displayed when available.
- Overall alarm status as a colored label and an icon
 - (Optional) Span loss
 - (Optional) ORL of OTDR
 - (Optional) Fiber End of OTDR
 - (Optional) OSC power
 - (Optional) IP address of the node of its optional neighbor. To open the SVO web UI of the neighbor node in a new browser tab, click the IP address of the neighbor node.

- Degree of its optional neighbor
 - **Card List** tab - Displays the list of all the cards present in both sides. The shelf number and slot number are displayed with the card name. The trunk port number is also displayed for TXP cards.
To sort the list of cards, click the vertical ellipsis icon and choose **A-Z**, **Z-A**, **High Severity**, or **Low Severity**.
 - **Circuit List** tab - Displays the list of all the circuits present in the side.
To sort the list of circuits, click the vertical ellipsis icon and choose **A-Z**, **Z-A**, **High Severity**, or **Low Severity**.
-

View Details of Card

Use this task to view the details of the card in NFV.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Node Functional View** in the left panel.
The Node Functional View page appears.
- Step 2** Right-click a side in the map view and choose **Open**.
- Step 3** Right-click a card in the map view and choose **View Details**.
- Step 4** View the following information that is displayed in the right shoulder:
- Name of the card
 - Overall alarm status as a colored label and an icon
 - **Port List** tab - Displays the list of all the ports with their aggregate power.
To sort the list of ports, click the vertical ellipsis icon and choose **A-Z**, **Z-A**, **High Severity**, or **Low Severity**.
 - **Circuit List** tab: Displays the list of all the circuits present in the card.
To sort the list of circuits, click the vertical ellipsis icon and choose **A-Z**, **Z-A**, **High Severity**, or **Low Severity**.
-

View Details of Port

Use this task to view the details of the port in NFV.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Node Functional View** in the left panel.
The Node Functional View page appears.
- Step 2** Right-click a side in the map view and choose **Open**.
- Step 3** Right-click a card in the map view and choose **Open**.
- Step 4** Click the port name in the map view.
- Step 5** View the following information that is displayed in the right shoulder:
- Name of the port
 - Overall alarm status as a colored label and an icon
 - **Agg. Powers** tab - Displays the list of all the links with their aggregate power.
The aggregate power displays the current power in case of a single port. The aggregate power displays a list of all the different power levels in case of an MPO port or logical group.
To sort the list of links, click the vertical ellipsis icon and choose **A-Z**, **Z-A**, **High Setpoint**, or **Low Setpoint**.
 - **Circuit List** tab: Displays the list of all the circuits present in the port.
To sort the list of circuits, click the vertical ellipsis icon and choose **A-Z**, **Z-A**, **High Severity**, or **Low Severity**.
-

View Details of Patch Cord

Use this task to view the details of a patch cord.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Node Functional View** in the left panel.

The Node Functional View page appears.

- Step 2** Click the patch cord in the map view.
The right panel displays the name and type of the patch cord.

Table 5: Node Details

Field	Description
Name	Displays a list of the nodes along with its details, such as span loss value, the IP address of the device it is connected to, and its degree.
Connections	Displays the ports that the patch cord connects with their cards and the aggregate power.
Connection Verification	Displays a list of the connections between the line cards and all passive modules. For more details, see Connection Verification, on page 19 .

- Step 3** To sort the list of patch cords, click the vertical ellipsis icon and choose **A-Z**, **Z-A**, **High Severity**, or **Low Severity**.

View Details of Circuit

Use this task to view the details of the circuit in NFV.

Circuits are created in EPNM and displayed as read-only in the **Optical Cross Connections** tab.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Node Functional View** in the left panel.
The Node Functional View page appears.
- Step 2** Click **Show/Hide Shoulder** to open the right shoulder.
- Step 3** Click > against the circuit in the right shoulder to view the sides that are involved in the circuit in graphical view.
- Step 4** View the following information that is displayed in the right shoulder:
- **Circuit Info** pane - Displays information on **Admin State**, **Frequency**, **From Degree**, and **To Degree**.

- **Path (Forward path)** pane - Click : next to the Path (Forward Path) pane and choose **Forward path**, **Backwards path**, or **Both paths** to specify the order of display of internal links. The pane name changes correspondingly.

Connection Verification

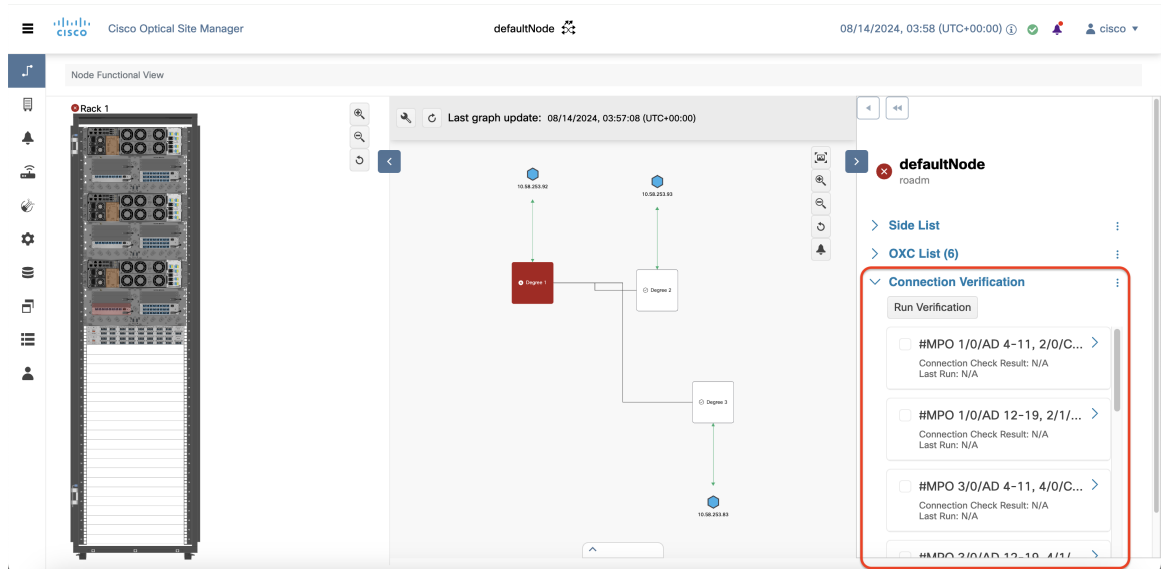
Table 6: Feature History

Feature Name	Release Information	Description
Connection Verification for NCS 1010	Cisco IOS XR Release 24.3.1	<p>You can now verify the connections between OLT-C line cards and passive modules of NCS 1010 devices from the Connection Verification list located in the right-panel of the Node Functional View.</p> <p>You can use Connection Verification to quickly identify and troubleshoot connectivity issues.</p>

Cisco Optical Site Manager allows you to verify connections between the OLT-C line card and the passive modules a NCS 1010 device, helping to prevent miscabling during node installation. This process involves generating a specific probe signal from the dedicated Connection Verification Tunable Laser (CV-TL) located at COM-RX-2, and then detecting the probe signal on:

- the same OLT-C line card.
- the passive modules (Mux/Demux panel or breakout panel) connected to the OLT-C line card.
- a different OLT-C line card or passive module belonging to the same near end (NE) node.
- an optical interface (router ports or transponder) connected to the line card.

Figure 3: Connection Verification



Verify Connections

Use this task to verify connections between the line cards and passive modules.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)

Procedure

-
- Step 1** Click **Node Functional View** in the left panel.
 - Step 2** Click the **Expand shoulder** icon to expand the right panel.
 - Step 3** Scroll to the **Connection Verification** section and click to expand it. A list of available connections is displayed.
 - Step 4** Select the check boxes corresponding to the connections you want to verify.
 - Step 5** Click **Run Verification**. Connection verification is initiated for the selected connections and an information message is displayed.
 - Step 6** Click **OK**.
-

The **Connection Check Result** field displays the status of the connection verification.

The different status includes:

Table 7: Connection Verification status

Status	Description
Connected	Cable or patchcord is connected.
Disconnected	Cable or patchcord is disconnected.
Connection-Not-Verified	Cable or patchcord is not tested for connection verification.

Set User Preferences

Use this task to set the user preferences in Node Functional View. The user preferences are stored in the local storage of the browser and are retained for that browser.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

-
- Step 1** Click **Node Functional View** from the left panel.
The Node Functional View page appears.
- Step 2** Click the **Settings** icon.
The **Preferences** dialog box appears.
- Step 3** In the **General** tab, perform these steps:
- Select a date format from the **Date format** drop-down list.
 - Select the channel from the **Configuration channel** drop-down list.
 - Select a unit for length from the **Length measurement unit** drop-down list.
- Step 4** In the **Right shoulder** tab, perform the following steps:
- Choose **A-Z**, **Z-A**, **Low Severity**, or **High Severity** from the **Shoulder element order** drop-down list to sort the components in the right shoulder based on name and alarm severity.
 - From the **Circuit path sorting** drop-down list, choose **Forward path**, **Backward path**, or **Both paths** to set the link path between source and destination.
 - Select the **Always display details** check box to automatically display the right shoulder upon opening NFV.
- Step 5** In the **Graph** tab, perform the following steps:
- Enter a degree space in the **Degrees space from the center** field.
 - Enter a value in the **Layers spacing** field to set the horizontal distance between the components in the map view.
 - Enter a value in the **Column spacing** field to set the vertical distance between the components in the map view.
 - Enter the zoom scale value in the **Zoom scaling factor** field.

Refresh the browser to apply this value.

- Step 6** In the **Rack** tab, perform these steps:
- Enter a value in the **Rack opacity factor** field to highlight the cards of interest in physical view. The other cards are covered by overlay with transparency depending on the value provided.
The range is from 0 to 1.
 - Enter the value in the **Left shoulder width (px)** field to set the width of the left shoulder.
The range is from 400 to 600.
 - Check the **Show only visible cards on the rack** check box to display only the visible cards in the rack view.
- Step 7** In the **Backdrop** tab, select **backdrop** or **visualization** from the Bottom shoulder visualization drop-down list.
- Step 8** Click **Apply** to apply the user settings.
- Step 9** Click **Reset** to reset the user settings to default values.
-

View Active Circuit List

Use this task to view the total number of circuits passing through a degree and a selected card.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Node Functional View** in the left panel.
The Node Functional View page appears.
- Step 2** Right-click a **Degree** and click **Open**.
The **OXC List** in the right panel displays the the total number of connections passing through the degree.
- Step 3** Right-click a card and click **Open**.
The **Connections** list in the right panel displays the the total number of connections passing through the degree.
-



CHAPTER 3

Cisco Optical Site Manager Topology

This chapter describes the different Cisco Optical Site Manager views. In this chapter, you will also learn to add new racks.

- [Cisco Optical Site Manager Topology, on page 23](#)
- [Create a Rack, on page 24](#)
- [Open the Card View, on page 25](#)
- [View Passive Device Details, on page 25](#)
- [View Voltage, Temperature and Current Information, on page 26](#)
- [View Power Monitoring Parameters, on page 26](#)

Cisco Optical Site Manager Topology

The **COSM Topology** page offers two distinct views:

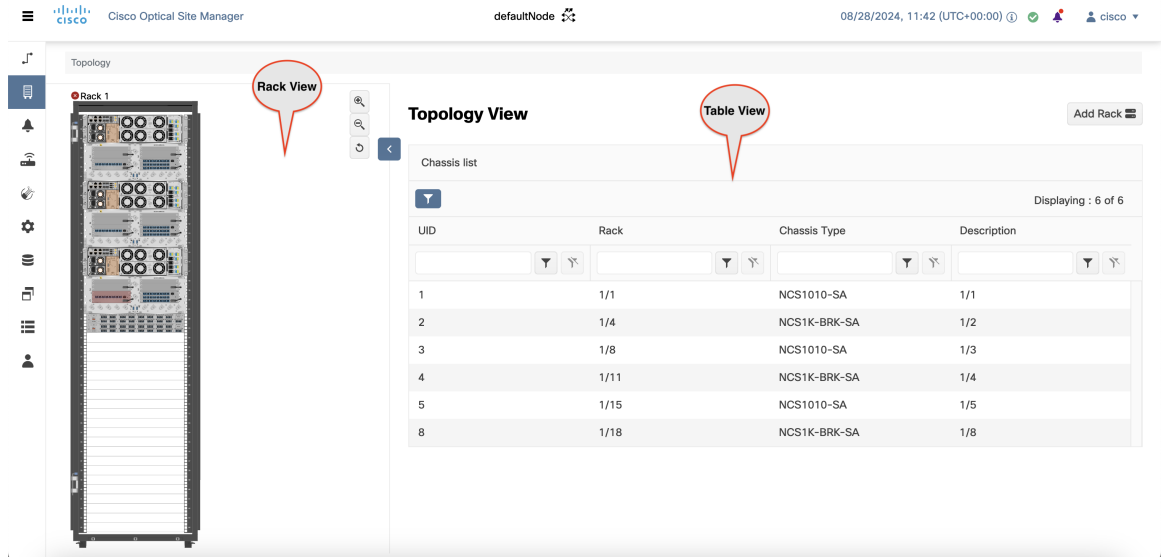
Rack View

The Rack view provides a visual representation of a rack, including its nodes and cards. Hovering over a device or node in this view displays the device's name as a tooltip.

Table View

The Table view displays the Chassis list along with details such as node UIDs, rack number, chassis type, and description. It also provides the option to add a new rack.

Figure 4: Cisco Optical Site Manager Topology



Create a Rack

Use this task to add a rack.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

-
- Step 1** Click **COSM Topology** in the left panel.
The COSM Topology page appears.
- Step 2** Click **Add Rack**.
The Add rack dialog box appears.
- Step 3** Enter a rack ID in the **Rack ID** field.
You can enter any value from 1 through 32767.
- Step 4** Click **Apply**.
The rack is added to the rack and table views.
-

Open the Card View

Use this task to open the card view.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **COSM Topology** in the left panel.
The Rack and Chassis view appear.
- Step 2** Navigate to the chassis view using any one of the following steps:
- Click the chassis icon in the logical view.
 - Click the ID in the Chassis List or the Chassis ID in the Cisco Optical Site Manager List in the tabular view.
 - Click the rack ID in the left panel to open the rack view and identify the chassis of interest.
 - Click the chassis name in the expanded rack tree view in the left panel.
- Step 3** From the Rack view, right-click the slot that contains the card and choose **Open Card**.
The card view appears.
-

View Passive Device Details

Use this task to view a passive device to a passive chassis. You can also use this task to identify a specific passive device that is associated to a USB port by using the LED blink function.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **COSM Topology** in the left panel.
- Step 2** Click the rack name in the Rack view.
- Step 3** Click the **Provisioning** tab.
- Step 4** Click **Passives** to expand the section.
The passive devices are displayed in the table.

- Step 5** Select the check box corresponding to a device and click **Edit**.
The **USB Port** field for the selected device becomes editable.
 - Step 6** Select the USB port from the drop-down list.
 - Step 7** Click **Apply**.
 - Step 8** (Optional) Click **LED Blink** to start blinking the LED of the passive device.
 - Step 9** (Optional) Click **LED Status** to know the LED status of the associated device.
 - Step 10** (Optional) Click **LED Blink** again to stop the blinking.
-

View Voltage, Temperature and Current Information

Use this task to display the voltage, temperature and current information of a chassis.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **COSM Topology** in the left panel.
The COSM Topology page appears.
 - Step 2** Click the rack name from the Rack view.
 - Step 3** Right-click the outer edge of the chassis from the Rack view and select **Open** to open the Chassis view.
Alternatively, you can also double-click the chassis to open the Chassis view.
The Chassis view appears.
 - Step 4** Click the **Provisioning** tab.
 - Step 5** Click the **Voltage/Temperature/Current** section to expand it.
Expand the **Voltage**, **Temperature**, and **Current** sections to view the voltage , temperature, and current information of the chassis.
-

View Power Monitoring Parameters

Use this task to display the power monitoring parameters of a chassis.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **COSM Topology** in the left panel.
The COSM Topology page appears.
- Step 2** Click the rack name from the Rack view.
- Step 3** Right-click the chassis from the Rack view and select **Open**.
Alternatively, you can also double-click the chassis to open the Chassis view.
The Chassis view appears.
- Step 4** Click the **Provisioning** tab.
- Step 5** Click the **Power Monitor** section to expand it.
The Power Monitor section displays the environment type, power summary, voltage thresholds of the chassis.
-



CHAPTER 4

Fault Monitoring

This chapter describes the tasks to view alarms and create alarm profiles.

- [Fault Monitoring](#), on page 29
- [View Rack, Chassis, or Card Alarms](#), on page 30
- [View All Alarms and Conditions](#), on page 30
- [View Rack, Chassis, or Card Transient Conditions](#), on page 31
- [View Alarms History](#), on page 31
- [Alarm Profiles](#), on page 32

Fault Monitoring

The Fault Monitoring panel displays a summary of all encountered alarms and conditions. It displays the number of Critical (CR), Major (MJ), Minor (MN), Warnings (W), and Non-applicable (NA) alarms. It displays the alarms, transient conditions, and historical alarms that are related to chassis, passive devices, pluggables, line cards, amplifier cards, and control cards. You can also create custom alarm profiles and apply them on the node using this pane.

Figure 5: Fault Monitoring

The screenshot shows the Cisco Optical Site Manager interface. The top navigation bar includes the Cisco logo, 'Cisco Optical Site Manager', 'defaultNode', and the date/time '08/29/2024, 13:23 (UTC+00:00)'. The main content area is titled 'Fault Monitoring' and features a sidebar with a rack icon and a search bar. The main panel is divided into tabs: 'Alarms', 'Conditions', 'History', and 'Profiles'. Below the tabs, there are colored indicators for alarm counts: 10 Critical (red), 5 Major (orange), 0 Minor (yellow), 2 Warning (green), and 0 Indeterminate (grey). An 'Alarm Summary' section includes a table with columns for Rack, Device Name, Severity, Service Affect, Condition, Timestamp, and Actual. The table displays 17 entries, with the first two being warnings and the remaining 15 being critical alarms. The 'Actual' column for the critical alarms contains the value 'NCS11'. The interface also includes a search bar, a 'Show Transient Alarms' dropdown set to '24 Hours', and a 'Displaying: 17 of 17' indicator.

Rack	Device Name	Severity	Service Affect	Condition	Timestamp	Actual
		Warning	NSA	USER-LOGIN	08/29/2024, 13:17:33 (UTC+00:00)	
		Warning	NSA	USER-LOGOUT	08/29/2024, 13:07:44 (UTC+00:00)	
1/15		Critical	SA	OPWR-LFAIL	08/29/2024, 11:00:42 (UTC+00:00)	NCS11
1/18		Critical	SA	LOS-P	08/29/2024, 11:00:42 (UTC+00:00)	NCS11
1/15		Critical	SA	LOS-P	08/29/2024, 11:00:42 (UTC+00:00)	NCS11
1/18		Critical	SA	LOS-P	08/29/2024, 11:00:42 (UTC+00:00)	NCS11
1/8		Critical	SA	LOS-P	08/29/2024, 10:59:25 (UTC+00:00)	NCS11
1/8		Critical	SA	OPWR-LFAIL	08/29/2024, 10:59:25 (UTC+00:00)	NCS11

View Rack, Chassis, or Card Alarms

Use this task to display the alarms raised on a rack, chassis, or card.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **COSM Topology** in the left panel.
The COSM Topology page appears.
- Step 2** Perform one of the following steps to view alarms for a rack, chassis or card:
- Click the rack name from the Rack view to view alarms for a rack.
 - Right-click the chassis screws from the Rack view and select **Open** to view alarms for a chassis.
 - Right-click the card from the Rack view and select **Open** to view alarms for a card.
- The **Alarms** tab displays the alarms with several severities, such as Critical, Major, Minor, Warning, and Intermediate. The alarm severities are indicated by different colors.
- Step 3** Select a specific time slot from the **Show Transient Alarms** drop-down list to view alarms for a specific time slot.
- Step 4**
- Step 5** (Optional) Click the **Auto Delete Cleared Alarms** toggle button to automatically delete the cleared alarms.
- Step 6** (Optional) Click the **Excel Export** button to export the alarms to an Excel sheet.
-

View All Alarms and Conditions

Use this task to display all alarms and transient conditions for all the racks, chassis, and cards.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Fault Monitoring** in the left panel.
Alternatively, you can also click the bell icon on the top-right corner.
- Step 2** Click the **Alarms** tab to view all the alarms.
Alarms are displayed with several severities, such as Critical, Major, Minor, Warning, and Intermediate. The alarm severities are indicated by different colors.

- Step 3** Click the **Conditions** tab to view all the transient conditions.
- Step 4** Click the **History** tab to view the alarms.
- Step 5** (Optional) Click the **Auto Delete Cleared Alarms** toggle button to automatically delete the cleared alarms.
- Step 6** (Optional) Click the **Excel Export** button to export the alarms to an Excel sheet.
-

View Rack, Chassis, or Card Transient Conditions

Use this task to display the transient conditions raised on a rack, chassis, or card.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **COSM Topology** in the left panel.
The COSM Topology page appears.
- Step 2** Perform one of the following steps to view the transient conditions:
- Click the rack name from the Rack view to view the transient conditions for a rack.
 - Right-click the chassis screws from the Rack view and select **Open** the transient conditions for a chassis.
 - Right-click the card from the Rack view and select **Open** the transient conditions for a card.
- Step 3** Click the **Conditions** tab.
- Step 4** Select a time slot from the **Show Transient Alarms In** drop-down list to view transient conditions for a specific time slot.
- Step 5** (Optional) Click the **Excel Export** button to export the conditions to an Excel sheet.
-

View Alarms History

Use this task to display the alarms history raised on a rack, chassis, or card.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **COSM Topology** in the left panel.
The COSM Topology page appears.
- Step 2** Perform one of the following steps to view the alarms history:

- Click the rack name from the Rack view to view alarms history for a rack.
- Right-click the chassis screws from the Rack view and select **Open** to view alarms history for a chassis.
- Right-click the card from the Rack view and select **Open** to view alarms history for a card.

Step 3 Click the **History** tab.

Alarms are displayed with several severities, such as Critical, Major, Minor, Warning, and Intermediate. The alarm severities are indicated by different colors.

Step 4 (Optional) Click the **Excel Export** button to export the alarms history to an Excel sheet.

Alarm Profiles

The alarm profiles feature allows the user to change default alarm severities by creating unique alarm profiles for individual ports, cards, chassis, passive units, optical cross-connects, and optical interfaces.

The Default alarm profile containing all the alarms is preprovisioned on the node. The Default profile sets alarm severities to standard Telcordia GR-474-CORE settings. The alarm severities in the Default profile cannot be changed. After loading the Default profile on the node, you can create custom alarm profiles. In the Inherited alarm profile, alarms inherit or copy severity from the next highest level. For example, a card with an Inherited alarm profile copies the severities that are used by the node hosting the card.

By default, you can view two alarm profiles:

- **Default**—The Default alarm profile containing all the alarms is preprovisioned on the node. The Default profile sets alarm severities to standard Telcordia GR-474-CORE settings. The alarm severities in the Default profile cannot be changed. After loading the Default profile on the node, you can create custom alarm profiles. In the Inherited alarm profile, alarms inherit or copy severity from the next highest level. For example, a card with an Inherited alarm profile copies the severities that are used by the node hosting the card.
- **all-suppressed alarms**—Includes all the suppressed alarms.

You do not have to apply a single alarm profile to the node, card, and port-level alarms. Different profiles can be applied at different levels. You could use the default profile on a node and on all the cards and ports, but apply a custom profile that downgrades an alarm on a specific card.

When you modify severities in an alarm profile, all the Critical (CR) or Major (MJ) default or user-defined severity settings are demoted to Minor (MN) in Non-Service-Affecting (NSA) settings and the other way round as defined in Telcordia GR-474. Default severities are used for all alarms and conditions until you create a new profile and apply it.

Create and Load Alarm Profiles

Use this task to create and load alarm profiles on a node.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Fault Monitoring** in the left panel.
- Step 2** Click the **Profiles** tab.
- Step 3** Click **Alarm Profile** to expand the section.
The default profile all-suppressed alarms is displayed along with the list of alarms.
- Step 4** Click the + button to create an alarm profile.
The **Alarm Profile** dialog box appears.
- Step 5** Enter the name of the custom alarm profile in the **Name** field.
- Step 6** (Optional) Choose the resources such as card, ecu, and fan-tray from the **Resources** drop-down list.
You can select multiple resources from the list.
- Step 7** Click **Apply**.
The created alarm profile is displayed in the list along with the default alarm profile.
- Step 8** Select the check-box corresponding to the alarm profile you just created and click **Load Profile** to load the alarm profile on the node.
The alarms that belong to the selected alarm profile appear in the **Alarms for Profile** sub-section.
-

Associate Alarm Profiles

Use this task to associate alarm profiles with the resources such as ports, cards, chassis, passive units, optical cross-connects, and optical interfaces.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Fault Monitoring** in the left panel.
- Step 2** Click the **Profiles** tab.
- Step 3** Click **Profile Association** to expand the section.
- Step 4** Click the + button above the *Association* column.
The **Profile Association** dialog box appears.
- Step 5** Enter the name of the association in the **Association** field.
- Step 6** Select the alarm profile from the **Profile** drop-down list.
- Step 7** Click **Apply**.
The association name and profile is displayed in the list under the *Association* and *Profile* column.
- Step 8** Select the check-box corresponding to the association you want to associate with a resource and click **Load Association**.

- Step 9** Click the + button above the *Resource Type* column to associate a resource to the association.
The **Resource** dialog box appears.
- Step 10** Select a resource from the **Resource Type** drop-down list.
The **Resource Type** drop-down list contains all the resources to which the alarm profile can be associated. Multiple resources can be associated with the same alarm profile. The other drop-down list options in the **Resource** dialog box may vary based on the selected resource type.
- Step 11** Choose the desired values from the other drop-down lists in the **Resource** dialog box.
- Step 12** From the **Inherited** drop-down list, choose **true** or **false** to indicate whether the association must be applied to all the children of this resource or not.
- Step 13** Click **Apply**.
When the alarm profile is associated with the resources, all the outstanding and new alarms matching these resources are immediately set with the new alarm severities.
-

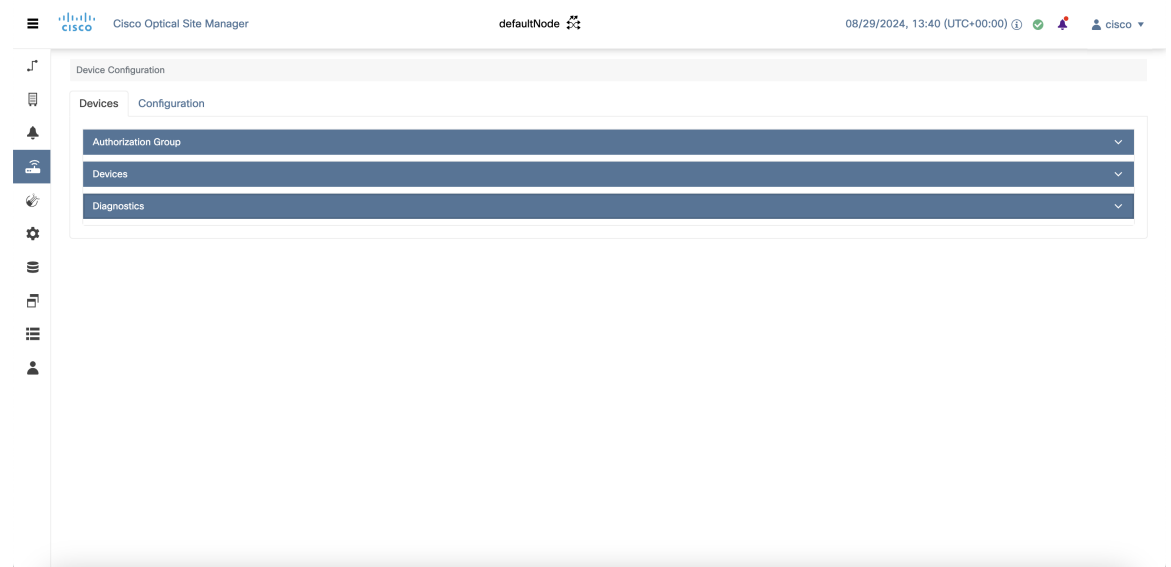


CHAPTER 5

Configure Devices

This chapter describes the tasks related to device configuration in Cisco Optical Site Manager.

Figure 6: Configure Devices



- [Manage Authorization Groups, on page 35](#)
- [Add NCS 1000 Devices, on page 37](#)
- [Add Unmanaged Devices, on page 40](#)
- [Delete Devices, on page 41](#)
- [Retrieve Device Diagnostics, on page 41](#)

Manage Authorization Groups

Use this task to create, edit, or delete authorization groups for devices.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Devices** in the left panel.
The *Device Configuration* page appears.
- Step 2** In the **Devices** tab, click the **Authorization Group** section to expand it.
A table appears that lists all the available groups.
- Step 3** Perform these steps, as needed:
- a) To create a new authorization group, perform these steps:
 1. Click the **Add Auth Group** button.
The **Add Authorization Group** dialog box appears.
 2. Enter the **Auth Group Name**, **Remote User Name**, and **Remote Password** in their respective fields.
 3. Click **Add**.
The new auth group is added to the table.
 - b) To edit an authorization group, perform these steps:
 1. Select the check box corresponding to the authorization group you want to edit.
 2. Click the **Edit Auth Group** button.
A warning message appears informing the user that there may be loss in device communication.
 3. Click **OK**.
The **Edit Authorization Group** dialog box appears.
 4. Edit the fields, as needed.
Note The auth group name cannot be edited.
 5. Click **Edit**.
The details are updated.
 - c) To delete an authorization group, perform these steps:
 1. Select the check box corresponding to the authorization group you want to edit.
 2. Click the **Delete Auth Group** button.
A confirmation message appears.
 3. Click **OK**.
The auth group is deleted from the table.
-

Add NCS 1000 Devices

Cisco Optical Site Manager automatically detects and onboards directly connected peer devices on the network. However, if you've added a new device after configuring Cisco Optical Site Manager, you can manually add the device for management using the application.

Figure 7: Add NCS 1000 Device

Use this task to add an NCS 1000 device.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

-
- Step 1** Click **Devices** in the left panel.
The *Device Configuration* page appears.
- Step 2** In the **Devices** tab, click the **Devices** section to expand it.
A table appears that lists all the devices that are configured.
- Step 3** Click the **Add Device** icon.
The **Add Device** dialog box appears.
- Step 4** Select the **Device Type** from the drop-down list.

Table 8: Device Type Options

Select	to
ncs1000	add a NCS 1000 device.
ncs2000	add a NCS 2000 device.
external-switch	add an external switch.

- Step 5** Enter the **Netconf Port**.
Note This field is displayed only if *ncs1000* is selected in the **Device Type** drop-down list.
- Step 6** Enter the **Device Name** and **IP Address**.
- Step 7** Enter the **UID**.
Note This field is displayed only if *ncs1000* or *ncs2000* is selected in the **Device Type** drop-down list.
- Step 8** Select an authorization group from the **Auth Group** drop-down list.
- Step 9** Click **Add**.
The new device is added to Cisco Optical Site Manager and displayed in the **Devices** section.
-

Add Unmanaged Devices

Table 9: Feature History

Feature Name	Release Information	Description
Add Unmanaged Devices	Cisco IOS XR Release 24.3.1	The Add Device dialog box now includes the unmanaged-network-element option, allowing the addition of unmanaged devices. This enhancement allows you to add and configure passive devices on the network.

Use this task to add an unmanaged device.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

-
- Step 1** Click **Devices** in the left panel.
The *Device Configuration* page appears.
- Step 2** In the **Devices** tab, click the **Devices** section to expand it.
A table appears that lists all the devices that are configured.
- Step 3** Click the **Add Device** icon.
The **Add Device** dialog box appears.
- Step 4** In the **Add Device** dialog box, perform these steps.
- Select **unmanaged-network-element** from the **Device Type** drop-down list.
 - Click **Add**.
The new device is added to Cisco Optical Site Manager and displayed in the **Devices** section.
- Step 5** In the Rack view, perform these steps.
- Right-click on an empty rack unit and select **Add a Passive Unit**.
The **Add Passive Unit in Ru Position** dialog box is displayed.
 - Select the unmanaged device from the **Select Device** drop-down list.
 - Select the passive type, slot and passive UID from the respective drop-down lists.
 - Click **Provision**.
A confirmation message is displayed.
- Step 6** Click **OK**.
-

The device is added to Cisco Optical Site Manager and displayed in the Rack view.

Delete Devices

Use this task to delete an NCS 1000, NCS 2000, passive device, or an external router.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Devices** in the left panel.
The *Device Configuration* page appears.
 - Step 2** In the **Devices** tab, click the **Devices** section to expand it.
A table is displayed listing all the configured devices.
 - Step 3** Select the check box corresponding to the devices you want to delete.
 - Step 4** Click the **Delete Device(s)** button to delete the selected devices.
A confirmation message appears.
 - Step 5** Click **Yes**.
-

Retrieve Device Diagnostics

Use this task to retrieve and download the device diagnostic logs.



Note The system retrieves the diagnostics of the selected device. The progress and errors are displayed at the top of the table.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Devices** in the left panel.
- Step 2** In the **Devices** tab, click the **Diagnostics** section to expand it.
The configured devices are listed in a table.
- Step 3** Select the **Node Diagnostics** check box corresponding to the device for which you want to retrieve the diagnostics.
- Step 4** Click **Retrieve**.

A confirmation message appears.

Step 5 Click **Yes** to proceed.

A **Request Accepted** message appears.

Step 6 Click **OK**.

A message appears when the diagnostic action is completed.

Step 7 Select the check box corresponding to the device for which you want to download the diagnostics and click **Download**.

A zip file containing the logs is downloaded.

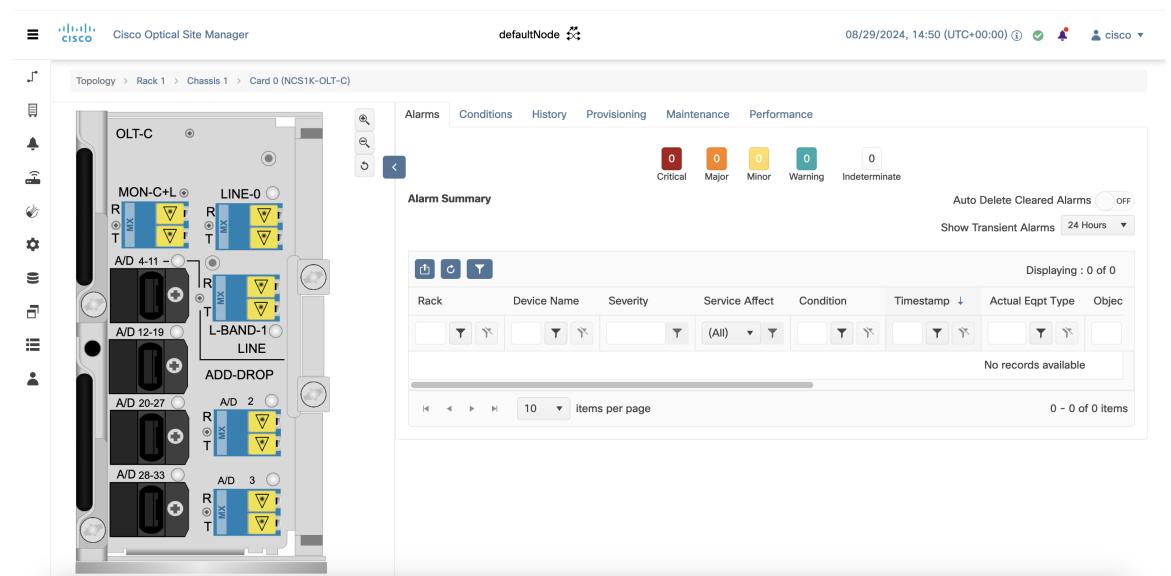


CHAPTER 6

Provision Line Cards

This chapter describes the tasks related to provisioning the Cisco NCS 1000 line cards in Cisco Optical Site Manager.

Figure 8: Provision Line Cards



- [Supported Line Cards, on page 44](#)
- [Open the Card View, on page 44](#)
- [Change Admin State for Card Ports, on page 45](#)
- [Add Card Mode, on page 45](#)
- [Edit Card Mode, on page 52](#)
- [Provision Trail Trace Monitoring, on page 53](#)
- [Provision ODU Interfaces, on page 54](#)
- [Provision OTU Interfaces, on page 55](#)
- [Provision Ethernet Interfaces, on page 57](#)
- [Provision Optical Channels, on page 59](#)
- [Change Trunk Port Parameters, on page 61](#)
- [Provision Optical Threshold Settings, on page 62](#)
- [Provision G.709 Thresholds, on page 63](#)

- [Provision FEC Thresholds, on page 64](#)
- [Provision RMON Thresholds, on page 64](#)
- [Provision Loopback, on page 65](#)
- [Provision Optical Safety , on page 66](#)
- [Enable Attention LED, on page 68](#)

Supported Line Cards

Table 10: Feature History

Feature Name	Release Information	Description
Support for NCS 1001 and Cards	Cisco IOS XR Release 24.3.1	Cisco Optical Site Manager now allows you to manage the NCS 1001 node and its following cards: <ul style="list-style-type: none"> • NCS1K-PSM • NCS1K-EDFA

Cisco Optical Site Manager supports configuration and management of various NCS 1000 cards.

For detailed information about the supported cards, you can refer to the following topics:

- [Cisco NCS 1014](#)
- [Cisco NCS 1010](#)
- [Cisco NCS 1004](#)
- [Cisco NCS 1001](#)

Open the Card View

Use this task to open the card view.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

-
- Step 1** Click **COSM Topology** in the left panel..
The COSM Topology page appears.
- Step 2** Right-click the card from the Rack view and select **Open Card**.

Alternatively, you can also double-click the card to open the Card view.

Change Admin State for Card Ports

Use this task to change the admin state of the ports on a card.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Open the Card View, on page 44](#)

Procedure

- Step 1** Click the **Provisioning** tab.
- Step 2** Click the **Pluggable Port Modules** section to expand it.
The different ports along with their rates, reach distances, and admin states are displayed.
- Step 3** Click the **Edit** button.
The fields in the table become editable.
- Step 4** Choose the admin state in the **Admin State** column from the drop-down list and click **Apply**.

Add Card Mode

Table 11: Feature History

Feature Name	Release Information	Description
Additional Card Mode and Trunk Rates for the NCS1K14-2.4T-X-K9 Card	Cisco IOS XR Release 24.3.1	<p>The Select Card Mode page of the Card Configuration Wizard is updated to include the 1.2T Splitted configuration on the Trunk 0 port.</p> <p>You can also use the wizard to configure these trunk rates in the muxponder mode:</p> <ul style="list-style-type: none"> • 100-GE client traffic for 600-G and 1000-G • 500-G and 900-G

Feature Name	Release Information	Description
Support for NCS 1004 Card and Card Modes	Cisco IOS XR Release 24.3.1	The Card Configuration Wizard now supports configuring these card modes for NCS1K4-OTN-XP cards: <ul style="list-style-type: none"> • 10G-GREY-MXP • 40x10G-4x100G-MXP You can also use the wizard to configure card mode for the NCS1K4-2-QDD-C-K9 card.
Card Configuration Wizard Enhancements	Cisco IOS XR Release 24.1.1	The Card Configuration Wizard is updated to select the MPX-1K muxponder mode supported by the new NCS1K14-2.4T-X-K9 card.

Cisco Optical Site Manager allows you to configure NCS 1000 line cards in various modes, including Muxponder and Slice configurations. These modes determine how the line card processes data and manages traffic, facilitating efficient client-to-trunk mapping.

How to Add a Card Mode

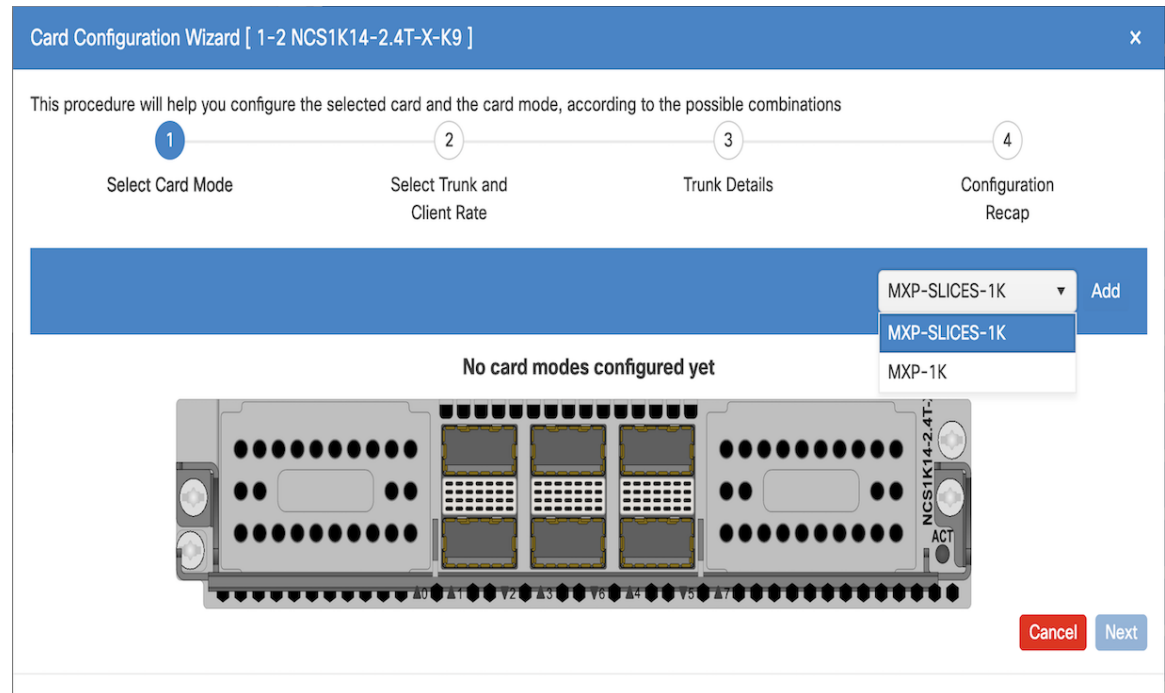
Perform these steps to add a card mode for a line card:

1. [Select Card Mode, on page 46](#)
2. [Select Trunk and Client Data Rate, on page 48](#)
3. [Add Internal Patch Cords, on page 49](#)
4. [Add Trunk Details, on page 51](#)
5. [Verify Configuration Details, on page 52](#)

Select Card Mode

Use this task to enter into the **Card Configuration Wizard** and select a card mode.

Figure 9: Select Card Mode



Before you begin

- Log into [Cisco Optical Site Manager](#), on page 2

Procedure

- Step 1** Open the **Card Configuration Wizard**.
- To open the **Card Configuration Wizard** from Rack view, perform these steps:
 - a. Right-click a line card in the Rack view.
 - b. Click **Card Mode**.
 - c. Select **Install**.
 - To open the **Card Configuration Wizard** from Card view, perform these steps:
 - a. Click the **Provisioning** tab.
 - b. Click the **Card Modes** section to expand it.
 - c. Click the **Add Card mode** button.
- Step 2** Select the card mode from the drop-down list and click **Add**.

Table 12: Supported Card Modes

For details on card modes for	refer to
NCS 1014	Configuring the Card Mode on NCS 1014 Line Cards
NCS 1004	Configuring the Card Mode on NCS 1004 Line Cards

Step 3 Click **Next**.

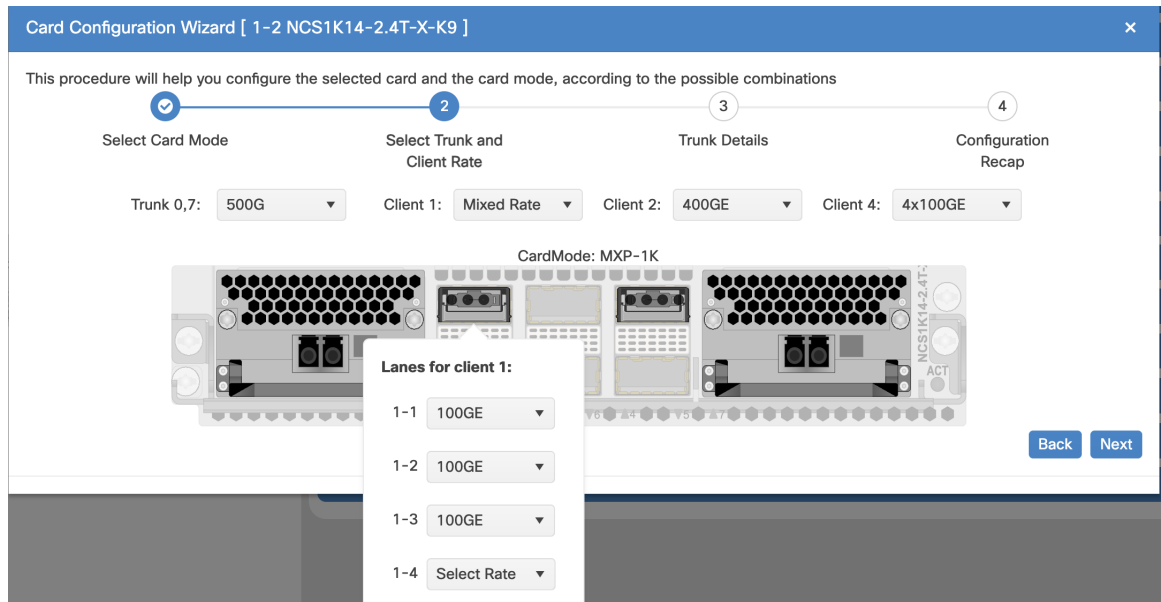
What to do next

Select the [Select Trunk and Client Data Rate](#).

Select Trunk and Client Data Rate

Use this task to select the trunk and client port data rates in the **Card Configuration Wizard**.

Figure 10: Select Trunk and Client Data Rate



Before you begin

- [Select Card Mode, on page 46](#)

Procedure

- Step 1** Select the trunk data rate from the **Trunk** drop-down list. The **Client** drop-down lists are displayed.
- Step 2** Select the client data rates.

Table 13: Client Data Rate Options

To configure	Perform these steps
Mixed client data rate for client ports	<ol style="list-style-type: none"> a. From the Client drop-down lists, select Mixed Rate. Mixed rate configuration information message is displayed. b. Close the message box. c. Right-click the lane in the line card image and select the data rate from the available drop-down lists.
Same client data rate for all client ports	From the Client drop-down lists, select the same data rate for each client port.

Step 3 Click **Next**.

What to do next

- If optical type is configured as *txp*, see [Add Trunk Details, on page 51](#).
- If optical type is configured as *roadm*, see [Add Internal Patch Cords, on page 49](#).

Add Internal Patch Cords

Use this task to add Internal Patch Cords (IPC) in the **Card Configuration Wizard**.



Note Adding IPC page is only available if optical type is configured as *roadm*.

Figure 11: Add Internal Patch Cords

Before you begin

- [Select Trunk and Client Data Rate, on page 48](#)

Procedure

Step 1 Select the port from the **Port** drop-down list in the **From** section.

Step 2 In the **To** section, perform these steps:

Table 14: IPC Drop-down Lists Displayed Based on Device Type

To create an IPC for a	Select these drop-down lists
<ul style="list-style-type: none"> • Chassis • Passive Chassis 	<ul style="list-style-type: none"> • UID • Slot • Port
Passive Unit	<ul style="list-style-type: none"> • UID • Port

Step 3 Click the **Add** button.

Step 4 (Optional) Do one of the following to remove internal patch cord:

- To remove a single internal patch cord, click the cross (x) icon next to the internal patch cord under the **Adding** section.

- To remove all added internal patch cords, click the **Reset** button.

Step 5 Click Next.

What to do next

Add the [Add Trunk Details](#) to configure the interfaces.

Add Trunk Details

Use this task to add select the trunk details in the **Card Configuration Wizard** to configure the interfaces.

Figure 12: Add Trunk Details

The screenshot shows the 'Card Configuration Wizard' for card '1-2 NCS1K14-2.4T-X-K9'. The wizard has four steps: 1. Select Card Mode, 2. Select Trunk and Client Rate, 3. Trunk Details (current step), and 4. Configuration Recap. Below the progress bar, there is a dropdown menu labeled 'Select trunk for configure the interfaces:' with the value '1/2/7'. The 'Optical Channel' section contains several input fields: 'Admin State' (dropdown with 'IS'), 'Frequency' (input with '193.1'), 'Rate' (input with '500G'), 'Baud Rate' (input), and 'Bits Per Symbol' (input). 'Back' and 'Next' buttons are located at the bottom right.

Before you begin

- If optical type is configured as *roadm*, make sure to [Add Internal Patch Cords](#), on page 49
- If optical type is configured as *txp*, make sure to [Select Trunk and Client Data Rate](#), on page 48

Procedure

- Step 1** Select the trunk port from the **Select trunk for configure the interfaces** drop-down list.
- Step 2** In the **Optical Channel** section, select the **Admin State**, **Frequency**, **Baud Rate**, **Bits Per Symbol** and **Rate** from their corresponding drop-down lists.

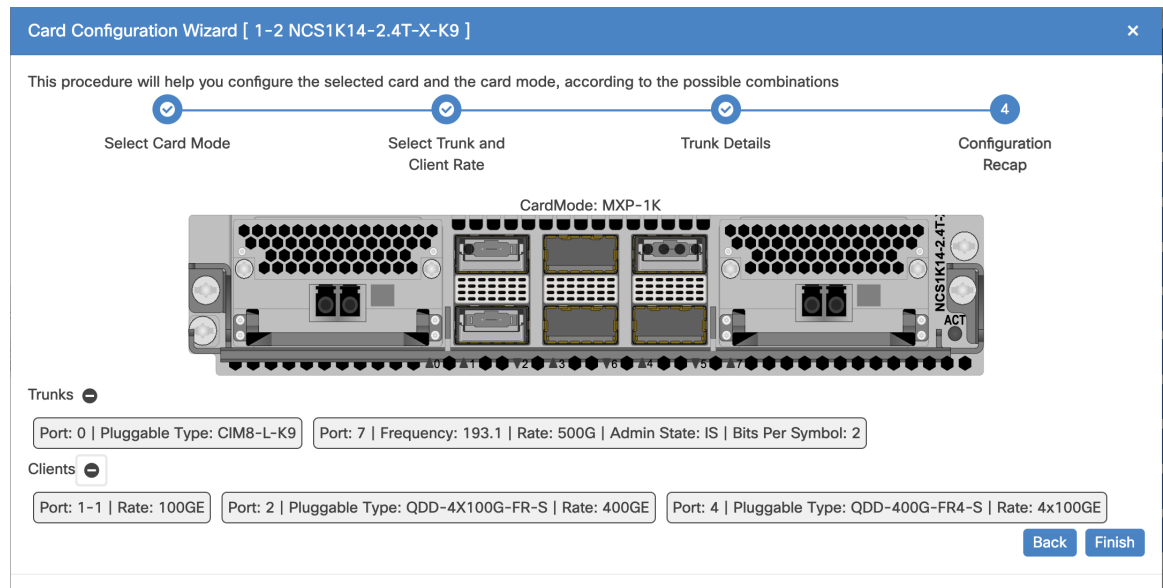
What to do next

[Verify Configuration Details](#), on page 52

Verify Configuration Details

In the **Configuration Recap** window, verify the selected configuration in the various windows of the **Card Configuration Wizard**.

Figure 13: Verify Configuration Details



Before you begin

[Add Trunk Details, on page 51](#)

Procedure

-
- Step 1** Click to expand the *Trunk* and *Client* sections to verify the configured details.
- Step 2** Click **Finish** to add the card mode.
-

Edit Card Mode

Use this task to edit the trunk and client port data rates for a card mode configured on a card.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)

Procedure

-
- Step 1** Open the **Card Configuration Wizard** using any of these options.

- To open the **Card Configuration Wizard** from Rack view, perform these steps:
 - a. Right-click a line card in the Rack, Chassis or Card view.
 - b. Click **Card Mode**.
 - c. Select **Edit**.
- To open the **Card Configuration Wizard** from Card view, perform these steps:
 - a. Click the **Provisioning** tab.
 - b. Click the **Card Modes** section to expand it.
 - c. Select the check box corresponding to the card mode you want to edit and click the **Edit card mode** button.

Step 2 Select the trunk and client data rates.

For more details about selecting trunk and client data rates, see [Select Trunk and Client Data Rate, on page 48](#).

Provision Trail Trace Monitoring

This task allows you to configure the parameters for trail trace monitoring.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Open the Card View, on page 44](#)

Procedure

Step 1 Click the **Provisioning** tab.

Step 2 Click the **Trail Trace Monitoring** section to expand it.

Step 3 From the **Level** drop-down list, choose **Section** to list all the OTU interfaces and **Path** to list all the ODU interfaces.

Step 4 Modify required settings as described in the following table.

Table 15: Trail Trace Identifier Settings

Parameter	Description	Options
Port	Displays the port number.	—
Legacy Tx-TTI	Displays the current transmit string of the TTI or sets a new transmit string.	0-64 bytes

Parameter	Description	Options
Legacy Expected-TTI	Displays the current expected string or sets a new expected string.	0-64 bytes
Legacy Rx-TTI	(Display only) Displays the current received string.	—
Alarm Propagation	If a discrepancy is detected between the expected and received trace, it raises an alarm. If set to True, the alarm is propagated downstream to the other nodes.	<ul style="list-style-type: none"> • True • False
Detect Mode	Sets the mode for detecting the discrepancy between the expected and received trace.	<ul style="list-style-type: none"> • Disabled • Enabled • SAPI • DAPI • SAPI-and-DAPI

Step 5 Click **Apply**.

Provision ODU Interfaces

Use this task to modify the ODU settings of the card.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Open the Card View, on page 44](#)

Procedure

- Step 1** Click the **Provisioning** tab.
- Step 2** Click the **ODU Interfaces** section to expand it.
- Step 3** Modify required settings described in the following table.

Table 16: ODU Interface Settings

Parameter	Description	Options
Port	(Display only) Displays the port name.	—
Description	Displays the description of the port.	—

Parameter	Description	Options
SF BER	Sets the signal fail (SF) bit error rate (BER).	Only 1E-5 is allowed.
SD BER	Sets the signal degrade (SD) bit error rate (BER).	<ul style="list-style-type: none"> • 1E-5 • 1E-6 • 1E-7 • 1E-8 • 1E-9
Squelch Mode	<p>When a LOS is detected on the near-end client input, the far-end client laser is turned off. It is said to be squelched.</p> <p>Alternatively, an AIS can be invoked.</p> <p>The OTU2-XP card supports Squelch Mode parameter when the card mode is set as Regenerator. The valid values are Squelch and AIS. When the card mode is set to Transponder or Mixed, the Squelch Mode cannot be changed and the parameter defaults to the Squelch value.</p>	<ul style="list-style-type: none"> • Squelch • AIS
SquelchHold Off Time	Sets the period in milliseconds that the client interface waits for resolution of issues on the trunk side. The client squelching starts after this period.	<ul style="list-style-type: none"> • Disable • 50 ms • 100 ms • 250 ms • 500 ms
Service State	Displays the service state.	—
Rate	Displays the rate.	—

Step 4 Click **Apply**.

Provision OTU Interfaces

Use this task to modify the OTU settings of the card.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Open the Card View, on page 44](#)

Procedure

- Step 1** Click the **Provisioning** tab.
- Step 2** Click the **OTU Interfaces** section to expand it.
- Step 3** Modify required settings described in the following table.

Table 17: OTU Interface Settings

Parameter	Description	Options
Port	(Display only) Displays the port name.	—
Description	Displays the description of the port.	—
HD FEC	Sets the OTN lines to forward error correction (FEC).	<ul style="list-style-type: none"> • DISABLE_FEC • EFEC • EFEC_14 • EFEC_17 • HG_FEC_20 • HG_FEC_7 • STANDARD_FEC
Interop Mode	Enables interoperability between line cards and other vendor interfaces.	<ul style="list-style-type: none"> • InteropNone • InteropEnable
Supports Sync	(Display only) Displays the SupportsSync card parameter. If the value is true, the card is provisioned as a NE timing reference.	<ul style="list-style-type: none"> • true • false
Sync Msg In	Sets the EnableSync card parameter. Enables synchronization status messages (S1 byte), which allow the node to choose the best timing source.	<ul style="list-style-type: none"> • true • false

Parameter	Description	Options
Admin SSM In	Overrides the synchronization status message (SSM) and the synchronization traceability unknown (STU) value. If the node does not receive an SSM signal, it defaults to STU.	<ul style="list-style-type: none"> • G811 • STU • G812T • G812L • SETS • DUS • PRS • ST2 • ST3E • ST3 • SMC • ST4 • RES • STU_SDH • DUS_SDH • SSM_FAILED • RES_SDH • TNC
Rate	Displays the rate.	—
Service State	Displays the service state.	—

Step 4 Click **Apply**.

Provision Ethernet Interfaces

Use this task to provision the parameters for the Ethernet interfaces of the card.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Open the Card View, on page 44](#)

Procedure

-
- Step 1** Click the **Provisioning** tab.
- Step 2** Click the **Ethernet Interfaces** section to expand it.
- Step 3** Click the **Edit** button.
- Step 4** Modify any of the Ethernet settings as described in the following table. These parameters appear depends on the card mode.
- Step 5** Click **Apply**.
-

Table 18: Card Ethernet Settings

Parameter	Description	Options
Port	(Display only) Displays the port number	—
Description	Description of the port.	—
Speed	Sets the expected port speed.	—
MTU	Sets the maximum size of the Ethernet frames that are accepted by the port. The port must be in OOS/locked state.	Numeric. Default: 1548 Range 64–9700
FEC	Sets the FEC mode. When set to On, FEC is enabled.	<ul style="list-style-type: none"> • NA • Auto (default) • On • Off
Duplex	Sets the expected duplex capability of ports.	<ul style="list-style-type: none"> • Full • Half
Mapping	Sets the mapping mode.	<ul style="list-style-type: none"> • CBR • GFP
Auto Negotiation	Enables or disables autonegotiation on the port.	<ul style="list-style-type: none"> • Disabled • Enabled
Squelch Mode	Sets the squelch mode.	<ul style="list-style-type: none"> • Disable • Squelch • LF

Parameter	Description	Options
Squelch Hold Off Time	Sets the period in milliseconds that the client interface waits for resolution of issues on the trunk side. The client squelching starts after this period or local fault is sent.	<ul style="list-style-type: none"> • Disable • 50 ms • 100 ms • 250 ms • 500 ms
Service State	Displays the service status of the port.	

Provision Optical Channels

Use this task to configure the parameters for the optical channels on the card.

Before you begin

Table 19: Feature History

Feature Name	Release Information	Description
Optical Channel Section Enhancements	Cisco IOS XR Release 24.3.1	The Optical Channel section is now updated to allow the configuration of the Target Power and Fixed Ratio parameter values.

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Open the Card View, on page 44](#)

Procedure

- Step 1** Click the **Provisioning** tab.
- Step 2** Click the **Optical Channel** section to expand it.
- Step 3** Click the **Edit** button and modify required parameters in the table.
- Step 4** Click **Apply**.

This table describes the parameters displayed in the **Optical Channel** section.

Table 20: Optical Channel Settings

Parameter	Description	Options
Port	(Display only) Displays the port name.	—

Parameter	Description	Options
Reach	Indicates the distance from one node to another node.	<ul style="list-style-type: none"> • Auto Provision • List of reach values
SD FEC	Indicates the standard FEC.	<ul style="list-style-type: none"> • SD_FEC_15_DE_OFF • SD_FEC_15_DE_ON • SD_FEC_20 • SD_FEC_25_DE_OFF • SD_FEC_25_DE_ON • SD_FEC_7
Tx Power (dBm)	Sets the Tx power on the trunk port.	The range is -10.0 to 0.25 dBm.
PSM Info	When enabled on a TXP or MXP trunk port that is connected to a PSM card, it allows fast switching on the cards.	<ul style="list-style-type: none"> • NA • Enable • Disable
Frequency (THz)	Sets the frequency in THz	-
Wavelength (nm)	Displays the wavelength is set based on the Frequency .	-
Tx Shutdown	(Display only)	<ul style="list-style-type: none"> • true • false
Width (GHz)	(Display only)	-
CD (Working Range) High (ps/nm)	Sets the threshold for maximum chromatic dispersion.	-
CD (Working Range) Low (ps/nm)	Sets the threshold for minimum chromatic dispersion.	-

Parameter	Description	Options
Admin State	Sets the port service state unless network conditions prevent the change.	<ul style="list-style-type: none"> • Unlocked (ETSI)/ IS (ANSI) • Locked, disabled (ETSI)/ OOS, DSBLD (ANSI) • Locked, maintenance (ETSI)/ OOS, MT (ANSI) • Unlocked, automaticInService (ETSI)/ IS, AINS (ANSI)
Service State	Displays the service state.	—
Target Power	Sets the Rx VOA target power. Note You cannot configure this parameter if Fixed Ratio is already configured.	<ul style="list-style-type: none"> • Valid range: -19 dBm to +3 dBm • Default value: -2.0 dBm
Fixed Ratio	Sets the Rx VOA fixed ratio. Note You cannot configure this parameter if Target Power is already configured.	<ul style="list-style-type: none"> • Valid value: 0.0 dBm
Rate	Displays the rate.	—

Change Trunk Port Parameters

You can directly change the trunk port parameters from the Rack, Chassis, or Card view. These parameter values can then be viewed in the **Optical Channel** section of the **Provisioning** tab.

Use this task to configure the trunk port parameters, such as admin state, frequency, baud rate, and bits per symbol.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Right-click the trunk ports in the Rack, Chassis, or Card view and click **Change Trunk Details**. The **Change Configuration** dialog box is displayed.

- Step 2** Select the **Admin State** to change the admin status of the trunk port to Out of Service or Automatic in Service.
- Step 3** Enter or select the frequency in the **Frequency** field.
The Wavelength of the trunk port is automatically selected based on the frequency configured.
- Step 4** Enter or select the **Baud Rate** or **Bits Per Symbol**.
For more details about these fields, see the table [Table 20: Optical Channel Settings, on page 59](#)
- Step 5** Click **Apply**.

The parameter values are saved and displayed in the **Optical Channel** section of the **Provisioning** tab.

Provision Optical Threshold Settings

Use this task to set the threshold crossing alert values on the card.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Open the Card View, on page 44](#)

Procedure

- Step 1** Click the **Provisioning** tab.
- Step 2** Click the **Optics Thresholds** section to expand it.
- Step 3** Choose the type of threshold that you want to change, *15 Min* or *24 Hour*.
- Step 4** Click **Add Optical Threshold** button.
New Optical Threshold dialog box is displayed.
- Step 5** In the **New Optical Threshold** dialog box, add these details:
- Select the **Interface** from the drop-down list.
 - Select **Granularity** from the drop-down list to set the threshold crossing alert for 15-minute or 24-hour interval.
 - Select **Location** from the drop-down list.
 - Select **Direction** from the drop-down list.
 - Select the performance monitoring type from the **PM Type** from the drop-down.
 - Select the parameter for which you want to set the threshold value from the **PM Type Extension** drop-down list.

Table 21: Performance Monitoring Parameters

Use this parameter	to
amplifierTilt	configure the thresholds for ingress or egress amplifier tilt.

Use this parameter	to
amplifierGain	configure the thresholds for ingress or egress amplifier gain.
opticalPower	configure the thresholds for total Rx or Tx power.
opticalPowerOSC	configure the thresholds for total Rx or Tx OSC power.
opticalPowerBackReflection	configure thresholds for optical power back reflection.
opticalPowerBackReflectionRatio	
Raman - 1	

g) Enter the minimum threshold value in the **Low** field and the maximum threshold value in the **High** field.

Step 6 Click **Apply**.

Provision G.709 Thresholds

Use this task to provision the G.709 PM thresholds for the OTN ports.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Open the Card View, on page 44](#)

Procedure

- Step 1** Click the **Provisioning** tab.
- Step 2** Click the **G.709 Thresholds** section to expand it.
- Step 3** Choose the value for the G.709 PM thresholds, and click **Apply**.

You can set the thresholds for Near End or Far End, for 15 minutes or 1 day intervals, or for SM (OTUk) or PM (ODUk).

Table 22: G.709 PM Thresholds

Parameter	Description
ES	Errored Seconds shows the number of errored seconds recorded during the PM time interval.

Parameter	Description
SES	Severely Errored Seconds shows the severely errored seconds recorded during the PM time interval.
UAS	Unavailable Seconds shows the unavailable seconds recorded during the PM time interval.
BBE	Background block error shows the number of background block errors that are recorded during the PM time interval.
FC	Failure Counter shows the number of failure counts recorded during the PM time interval.

Provision FEC Thresholds

Use this task to provision the FEC thresholds for the card.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Open the Card View, on page 44](#)

Procedure

- Step 1** Click the **Provisioning** tab.
- Step 2** Click the **FEC Thresholds** section to expand it.
- Step 3** Choose the value for the FEC PMs and click **Apply**.

You can set the FEC thresholds for 15 minutes or one-day intervals.

The possible PM types are:

- BIT-EC—Sets the value for bit errors corrected.
- UNC-WORDS—Sets the value for uncorrectable words.

Provision RMON Thresholds

Use this task to provision the RMON thresholds on the control card.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Open the Card View, on page 44](#)

Procedure

-
- Step 1** Click the **Provisioning > RMON Thresholds** tabs.
- Step 2** Click the + button.
- The Create RMON Threshold dialog box appears.
- Step 3** From the **Port ID** drop-down list, choose the port number.
- Step 4** From the **Variable** drop-down list, choose a variable.
- Step 5** From the **Alarm Type** drop-down list, indicate whether the event is triggered by the rising threshold, falling threshold, or both thresholds.
- The available options are **Rising Threshold**, **Falling Threshold**, and **Rising and Falling Threshold**.
- Step 6** From the **Sampling Type** drop-down list, choose either **Relative** or **Absolute**.
- Relative** restricts the threshold to use the number of occurrences within the user-set sample period.
- Absolute** sets the threshold to use the total number of occurrences, regardless of the time period.
- Step 7** Enter the appropriate number of seconds in the **Sampling Period** field.
- Step 8** Enter the appropriate number of occurrences in the **Rising Threshold** field.
- For a rising type of alarm, the measured value must move from below the falling threshold to above the rising threshold. For example, if a network is running below a rising threshold of 1000 collisions every 15 seconds and a problem causes 1001 collisions in 15 seconds, the excess occurrences trigger an alarm.
- Step 9** Enter the appropriate number of occurrences in the **Falling Threshold** field.
- In most cases, a falling threshold is set lower than the rising threshold.
- Step 10** Click **Apply**.
-

Provision Loopback

Use this task to provision loopback on the card.



Caution This task is traffic-affecting.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)

- [Open the Card View, on page 44](#)
- Perform the loopback configuration only in the maintenance service state. To place the trunk ports in the Locked, maintenance state, see [Provision Optical Channels, on page 59](#).

Procedure

- Step 1** Click the **Maintenance** tab.
- Step 2** Click the **Loopback** section to expand it.
- Step 3** From the **Loopback Type** drop-down list, choose Terminal, Facility, Terminal-Drop, or Facility-Drop for each port required.
- Step 4** Select the admin state from the **Admin State** drop-down list.
- Step 5** Click **Apply**.
-

Provision Optical Safety

Use this task to provision the optical safety parameters for cards.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Open the Card View, on page 44](#)

Procedure

- Step 1** Click the **Maintenance** tab.
- Step 2** Click the **Live Data** section to expand it.
- Step 3** Modify required settings described in the following table:

Table 23: Optical Safety Parameters for Cards

Parameter	Description	Options
Interface	(Display only) Displays the port name, port type, and direction.	—
Supported Safety	(Display only) Displays the supported safety mechanism.	<ul style="list-style-type: none"> • ALS for line cards and control cards. • ALS-OSRI for amplifier cards.

Parameter	Description	Options
ALS Mode	Automatic laser shutdown mode. The ALS mode is disabled for RX ALS interfaces.	From the drop-down list, choose one of the following: <ul style="list-style-type: none"> • ALS-Disabled—Deactivates ALS. • Automatic Restart—(Default) ALS is active. The power is automatically shut down when needed, and it automatically tries to restart using a probe pulse until the cause of the failure is repaired. • Manual Restart
OSRI	Optical safety remote interlock. The default value is OSRI-OFF. When set to OSRI-ON, the TX output power is shut down. Note OSRI configuration is not supported on the transponder and muxponder cards.	From the drop-down list, choose one of the following: <ul style="list-style-type: none"> • OSRI-OFF • OSRI-ON
ALS Status	(Display only) ALS status of the device.	<ul style="list-style-type: none"> • Working • Shutdown
Recovery Pulse Interval (Sec.)	Displays the interval between two optical power pulses.	60 to 300 seconds.
Recovery Pulse Duration (Sec.)	Displays the duration of the optical power pulse that begins when an amplifier restarts.	2 to 100 seconds
Manual Restart	Triggers manual restart action for the ALS interface. However, manual restart does not happen if Mode is set to Automatic Restart or Disabled.	—

Step 4 Click **Apply** to save the changes.

Enable Attention LED

Table 24: Feature History

Feature Name	Release Information	Description
Enable Attention LED on Demand	Cisco IOS XR Release 24.1.1	You can now turn on the Attention LED by selecting <i>true</i> from the Attention Led for drop-down list in the Provisioning tab. The Attention LED is available for specific ports, chassis, line cards, and controller cards. Once turned on, it will help field engineers quickly identify the relevant device at the installation location for maintenance or troubleshooting.

The Attention LED can be enabled on specific ports, chassis, line cards, or controller cards. This is particularly helpful for troubleshooting and maintenance by locating the device in its installed location.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Open the Card View, on page 44](#)

Procedure

-
- Step 1** Click the **Provisioning** tab.
- Step 2** Click the **Attention Led** section to expand it.
- Step 3** Perform any one of the following steps:
- To turn on the Attention LED of a chassis provisioned on the rack, perform these steps:
 1. Select *true* from the **Attention Led for** drop-down list and click **Apply**.
 - To turn on the Attention LED of all the ports of a line card, perform these steps:
 1. Select *true* from the **Attention Led for** drop-down list and click **Apply**.
 - To turn on the Attention LED of a specific port of a line card, perform these steps:
 1. Click **Edit**.
 2. Select *true* corresponding to the port you want to blink the Attention LED and click **Apply**.
- Step 4** To turn off the Attention LED for a chassis or port, select *false* from the drop down list and click **Apply**.
-



CHAPTER 7

Configure the Node

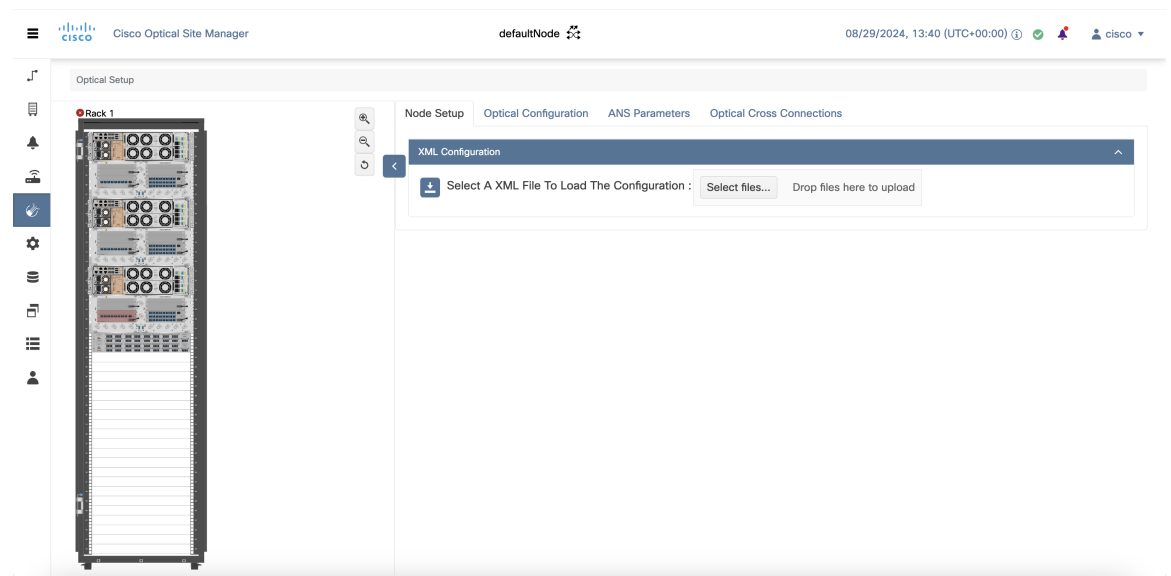
This chapter describes the tasks related to node configuration in Cisco Optical Site Manager.

If Cisco Optical Site Manager is used to manage an XR device, any configuration changes made to the device using XR (CLI or NETCONF) will trigger a resynchronization of the device in Cisco Optical Site Manager. This means that Cisco Optical Site Manager will temporarily be out of sync with the device while it updates itself with the changes. Any alarms during this period will be reported on Cisco Optical Site Manager after the synchronization process is complete.



Note Removing any line card from the XR device will cause the configuration of the card to revert to the preconfigure state. This will result in the same behavior described above.

Figure 14: Configure the Node



- [Import the Cisco Optical Network Planner Configuration File, on page 70](#)
- [Optical Degrees, on page 71](#)
- [Internal Patch Cords, on page 72](#)
- [Automatic Power Control, on page 73](#)

- [Span Loss Measurement](#), on page 78
- [Configure Amplifier Parameters](#), on page 79
- [Provision Interface Parameters](#), on page 82
- [Provision Raman Amplifier Parameters](#), on page 84
- [Manage Raman Interface Parameters](#), on page 86
- [Optical Cross-connect Management](#), on page 88

Import the Cisco Optical Network Planner Configuration File

If you have a configuration file NETCONF file (.xml) exported from Cisco Optical Network Planner, you can import it to Cisco Optical Site Manager. The file includes parameters for the node, shelf, card type, port (including the wavelength of the card), pluggable port module (PPM), OTN, and FEC parameters.

Only the values present in XML format appear in the configuration file parameters. If the values are not in XML format, a column appears blank. The XML file values are independently reported and do not affect any configuration changes that you apply.

Use this task to import the Cisco Optical Network Planner NETCONF file (.xml) into Cisco Optical Site Manager.

Before you begin

Before importing the NETCONF file (.xml), ensure that:

1. The NETCONF file (.xml) contains the following parameters available on Cisco Optical Site Manager:
 - device name
 - uid
 - rack id
 - chassis/passive unit id
2. You are logged in to Cisco Optical Site Manager. For details, see [Log into Cisco Optical Site Manager](#), on page 2.

Procedure

-
- Step 1** Click **Optical Setup** in the left panel.
 - Step 2** Click the **Node Setup** tab.
 - Step 3** Click **Select Files**, navigate to the location where the NETCONF file (.xml) is present and select it. A confirmation message appears.
 - Step 4** Click **Yes**.
 - Step 5** Click **Upload**.
A confirmation message appears after the upload is complete.
 - Step 6** To export the XML file, click the **Download Node Configuration as XML** button.
-

Optical Degrees

From a topological point of view, all the units that are equipped in a node belong to a side. A side can be identified by a letter, or by the ports that are physically connected to the spans. A node can be connected to a maximum of 20 different spans. Each side identifies one of the spans to which the node is connected.

Manage Optical Degrees

Use this task to create, view, modify, or delete optical degrees in the node.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Optical Setup** in the left panel.
- Step 2** Click the **Optical Configuration** tab and then click **Optical Degrees** to expand it.
- Step 3** Perform these steps, as needed.
- To create an optical degree, perform these steps:
 - Click the + button.
The **Create Optical Degree** dialog box appears.
 - Select the **Degree**, **Line In**, and **Line Out**, values from their respective drop-down lists.
 - (Optional) Enter a description in the **Description** field.
 - Click **Apply**.
 - To modify any one of the optical degree parameters described below degree, perform the following step as needed:
 - To modify the span validation of an optical degree, select a value from the drop-down list in the **Span Validation** column and click **Apply**.
 - Go to the related cell in the **Channel Spacing** column, select 50 or 100 from the drop-down list, and click **Apply**.
 - Go to the related cell in the **Spectrum Occupancy** column, enter a valid value, and click **Apply**.
 - To delete an optical degree, perform these steps:
 - Check the check box corresponding to the optical degree you want to delete.
 - Click the - button to delete the selected optical degree.
A confirmation message appears.
 - Click **Yes**.

The optical degree is deleted from the table.

Step 4 (Optional) Click the **Export to Excel** button to export the information to an Excel sheet.



Note You can only create a maximum of 20 optical degrees. The optical degree is created and added to the table that displays the following information.

- **Degree**—Specifies the optical span of the side.
- **Description**—Specifies the description as entered while creating the optical degree.
- **Line In**—Specifies line in settings.
- **Line Out**—Specifies line out settings.
- **Connected-to (IP/Degree)**—Specifies the IP address and the optical degree of the remote Cisco Optical Site Manager instance that is connected on the other side of the span.
- **Span Validation**—Specifies whether the span can be used by the GMPLS algorithm for channel routing and validation. Values are True or False.
- **Channel Grid**—Specifies the type of grid. Values are Flexible-Grid or Fixed-Grid.
- **Channel Spacing**—Specifies the minimum frequency spacing between two adjacent channels in the optical grid. Values are 100 or 50 GHz.
- **Spectrum Occupancy**—Specifies a percentage of the spectral density (the ratio of the C-band used by the carrier versus the total bandwidth). The valid range is 50% to 91%.
- **Domain Type**—Specifies the algorithm that is active on the span. By default, LOGO is displayed.

Internal Patch Cords

Virtual links can be created between network termination points using internal patchcords. These termination points include OSC ports, transponder or muxponder trunk ports, line ports, and passive device ports.

Manage Internal Patch Cords

Use this task to create, modify, view, or delete internal patch cords in the node.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

Step 1 Click **Optical Setup** in the left panel.

- Step 2** Click the **Optical Configuration** tab and then click **Internal Patch Cords** to expand it.
- Step 3** Click the + button.
The **Create Internal Patch Cord** dialog box appears. It displays the **From** and **To** columns indicating the two termination points.
- Step 4** Perform the following steps for the **From** and **To** columns:
- Select the patch cord type from the **Type** drop-down lists. of the patch cord from the **From** and **To** drop-down lists.
Available options are *Chassis*, *Passive Chassis*, and *Passive Unit*.
The **UID** drop-down is displayed.
 - Select the unique ID of the device from the **UID** drop-down list
The **Port** drop-down is displayed.
 - Select **Bidirectional** or **Mpo** check box for the **From** column.
If you want to make the patch cord bidirectional, select the **Bi-directional** check box.
 - Select the slot from the **Slot** type drop-down list for the **To** column.
If the selected UID in the previous step is a *Passive Unit*, the **Slot** field is not displayed.
 - Click the **Add** button to add the selected Internal Patch Cord options to the **Adding** list.
 - (Optional) the **Reset** button to remove all the added Internal Patch Cords from the **Adding** list.
- Step 5** Click **Apply**.
The internal patch cord is created and added to the table that displays the following information:
- **From**—Specifies the location from where the connection originates.
 - **To**—Specifies the location where the connection terminates.
 - **Type**—Specifies the type of internal patch cord. Possible values are Transport and Add-Drop.
- Step 6** (Optional) Select the check boxes corresponding to the internal patch cords you want to delete and click the - button.
- Step 7** (Optional) Click the **Export to Excel** button to export the information to an Excel sheet.



Tip You can view the internal patch cords and detailed information about cards and ports from the Map and Detailed views.

Automatic Power Control

The Automatic Power Control (APC) feature performs the following functions:

- Maintains constant per-channel power increases optical network resilience, even when changes to the number of channels occur.
- Compensates for the degradation of optical networks caused by aging effects.
- Simplifies installation and upgrades of DWDM optical networks by automatically calculating amplifier setpoints.

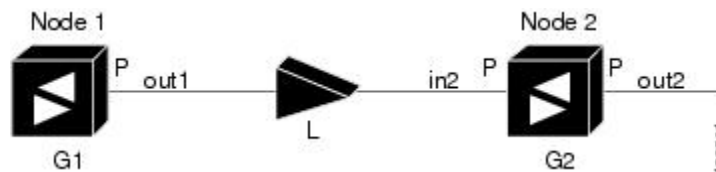
The amplifier software uses a control gain loop to keep channel power constant regardless of the number of channels. It monitors input power changes and adjusts output power proportionately. The shelf controller software emulates the control output power loop to compensate for fiber degradation.

For proper functioning, the control card needs to know the channel distribution via a signaling protocol, and the expected per-channel power which you can set. It compares actual amplifier output power with expected power and adjusts setpoints if needed.

APC at the Shelf Controller Layer

Amplifiers are managed through software to monitor changes in the input power. Changes in the network characteristics have an impact on the amplifier input power. Changes in the input power are compensated for by only modifying the original calculated gain, because input power changes imply changes in the span loss. As a consequence, the gain to span loss established at the amplifier start-up is no longer satisfied, as shown in the following figure.

Figure 15: Using Amplifier Gain Adjustment to Compensate for System Degradation



In the preceding figure, Node 1 and Node 2 are equipped with booster amplifiers and preamplifiers. The input power received at the preamplifier on Node 2 (Pin2) depends on the total power launched by the booster amplifier on Node 1, Pout1(n) (where n is the number of channels), and the effect of the span attenuation (L) between the two nodes. Span loss changes due to aging fiber and components or changes in operating conditions. The power into Node 2 is given by the following formula:

$$P_{in2} = L P_{out1}(n)$$

The phase gain of the preamplifier on Node 2 (GPre-2) is set during provisioning to compensate for the span loss so that the Node 2 preamplifier output power (Pout-Pre-2) is equal to the original transmitted power, as represented in the following formula:

$$P_{out-Pre-2} = L \times G_{Pre-2} \times P_{out1}(n)$$

In cases of system degradation, the power received at Node 2 decreases due to the change of span insertion loss (from L to L'). As a consequence of the preamplifier gain control working mode, the Node 2 preamplifier output power (Pout-Pre-2) also decreases. The goal of APC at the shelf controller layer is simply to detect if an amplifier output change is needed because of changes in the number of channels or to other factors. If factors other than the "changes in the number of channels" factor occur, APC provisions a new gain at the Node 2 preamplifier (GPre-2') to compensate for the new span loss, as shown in the formula:

$$G_{Pre-2}' = G_{Pre-2} (L / L') = G_{Pre-2} + [P_{out-Pre-2} - \text{Exp}(P_{out-Pre-2})]$$

Generalizing on the preceding relationship, APC is able to compensate for system degradation by adjusting working amplifier gain or variable optical attenuation (VOA) and to eliminate the difference between the power value read by the photodiodes and the expected power value. The expected power values are calculated using:

- Provisioned per channel power value
- Channel distribution (the number of express, add, and drop channels in the node)

- ASE estimation

Channel distribution is determined by the sum of the provisioned and failed channels. Information about provisioned wavelengths is sent to APC on the applicable nodes during the circuit creation. Information about failed channels is collected through a signaling protocol that monitors alarms on ports in the applicable nodes and distributes that information to all the other nodes in the network.

ASE calculations purify the noise from the power level that is reported from the photodiode. Each amplifier can compensate for its own noise, but cascaded amplifiers cannot compensate for ASE generated by preceding nodes. The ASE effect increases when the number of channels decreases; therefore, a correction factor must be calculated in each amplifier of the ring to compensate for ASE build-up.

APC is a network-level feature that is distributed among different nodes. An APC domain is a set of nodes that are regulated by the same instance of APC at the network level. An APC domain optically identifies a network portion that can be independently regulated. Every domain is terminated by two node sides residing on a terminal node, ROADM node, hub node, line termination meshed node, or an XC termination meshed node. An optical network can be divided into several different domains, with the following characteristics:

- Every domain is terminated by two node sides. The node sides terminating domains are:
 - Terminal node (any type)
 - ROADM node
 - Hub node
 - Cross-connect (XC) termination mesh node
 - Line termination mesh node
- APC domains are shown in the GUI.

Inside a domain, the APC algorithm designates a primary node that is responsible for starting APC hourly or every time a new circuit is provisioned or removed. Every time the primary node signals APC to start, gain and VOA setpoints are evaluated on all nodes in the network. If corrections are needed in different nodes, they are always performed sequentially following the optical paths starting from the primary node.

APC corrects the power level only if the variation exceeds the hysteresis thresholds of ± 0.5 dB. Any power level fluctuation within the threshold range is skipped because it is considered negligible. Because APC is designed to follow slow time events, it skips corrections greater than 3 dB. This is the typical total aging margin that is provisioned during the network design phase. After you provision the first channel or the amplifiers are turned up for the first time, APC does not apply the 3-dB rule. In this case, APC corrects all the power differences to turn up the node.

To avoid large power fluctuations, APC adjusts power levels incrementally. The maximum power correction is ± 0.5 dB. This is applied to each iteration until the optimal power level is reached. For example, a gain deviation of 2 dB is corrected in four steps. Each of the four steps requires a complete APC check on every node in the APC domain. APC can correct up to a maximum of 3 dB on an hourly basis. If degradation occurs over a longer time period, APC compensates for it by using all margins that you provision during installation.

APC can be manually disabled. In addition, APC automatically disables itself when:

- A Hardware Fail (HF) alarm is raised by any card in any of the domain nodes.
- A Mismatch Equipment Alarm (MEA) is raised by any card in any of the domain nodes.
- An Improper Removal (IMPROPRMVL) alarm is raised by any card in any of the domain nodes.

- Gain Degrade (GAIN-HDEG), Power Degrade (OPWR-HDEG), and Power Fail (PWR-FAIL) alarms are raised by the output port of any amplifier card in any of the domain nodes.
- A VOA degrade or fail alarm is raised by any of the cards in any of the domain nodes.
- The signaling protocol detects that one of the APC instances in any of the domain nodes is no longer reachable.

APC raises the following minor, non-service-affecting alarms:

- APC Out of Range—APC cannot assign a new setpoint for a parameter that is allocated to a port because the new setpoint exceeds the parameter range.
- APC Correction Skipped—APC skipped a correction to one parameter allocated to a port because the difference between the expected and current values exceeds the +/- 3-dB security range.

APC at the Amplifier Card Level

In constant gain mode, the amplifier power out control loop performs the following input and output power calculations, where G represents the gain and t represents time.

- $P_{out}(t) = G * P_{in}(t)$ (mW)
- $P_{out}(t) = G + P_{in}(t)$ (dB)

In a power-equalized optical system, the input power scales with the number of channels, and the amplifier software adjusts for power fluctuations caused by changes in the incoming signal's channel count.

The amplifier software detects input power changes at two instances, t_1 and t_2 , as traffic fluctuations occur. In the formula, 'm' and 'n' denote distinct channel numbers, and P_{in}/ch signifies the input power per channel.

- $P_{in}(t_1) = nP_{in}/ch$
- $P_{in}(t_2) = mP_{in}/ch$

The output power is quickly adjusted in response to input power changes, maintaining constant power for each channel, even during upgrades or fiber cuts, with a reaction time in milliseconds.

The power and mode for each channel are determined by Automatic Node Setup (ANS) on a per-degree basis during provisioning.

Forcing Power Correction

A wrong use of maintenance procedures can lead the system to raise the APC Correction Skipped alarm. The APC Correction Skipped alarm strongly limits network management (for example, a new circuit cannot be converted into In-Service (IS) state).

The **Force Power Correction** button in the **APC** section helps the user to restore normal conditions by clearing the APC Correction Skipped alarm. The use of the **Force Power Correction** button must be supervised by Cisco TAC to prevent any traffic loss.

Enable APC

Use this task to enable APC.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

-
- Step 1** Click **Optical Setup** in the left panel.
- Step 2** Click the **Optical Configuration** tab and then click **APC** to expand it.
A list of degrees is displayed.
- Step 3** Select the check box corresponding to the degree you want to enable APC and click the **Edit** button.
- Step 4** Select **automatic-enabled** from the **Admin Status** drop-down list.
Only degrees with Admin Status as force-disabled can be enabled.
- Step 5** Click **Apply**.
- Step 6** Verify that the **Service Status** field changes to enabled.
-

Disable APC

Use this task to disable APC.



Caution When APC is disabled, aging compensation is not applied and circuits cannot be activated. Disable APC only to perform specific troubleshooting or node provisioning tasks. When the tasks are completed, enable and run APC. Leaving APC disabled can cause traffic loss.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

-
- Step 1** Click **Optical Setup** in the left panel.
- Step 2** Click the **Optical Configuration** tab and then click **APC** to expand it.
A list of degrees is displayed.
- Step 3** Select the check box corresponding to the degree you want to enable APC and click the **Edit** button.
- Step 4** Select **force-disabled** from the **Admin Status** drop-down list.
Only degrees with Admin Status as automatic-enabled can be disabled.
- Step 5** Click **Apply**.
- Step 6** Verify that the **Service Status** field changes to force-disabled.
-

Span Loss Measurement

Span loss measurements (in dB) check the span loss and are useful whenever changes to the network occur.

The span loss operational parameters are:

- **Measured By**—Displays whether the span loss is measured by the channel or Optical Service Channel (OSC). If a channel is not configured, the span loss is measured by the OSC. An EDFA measures the span loss based on circuits.
- **Measured Span Loss**—Displays the measured span loss.
- **Measured Span Loss Accuracy**—Displays the accuracy of the span loss measurement. For example, if the measured span loss is 20 dB and the displayed accuracy value is 2.5, the actual span loss could either be 19 or 21 dB.
- **Measured Time**—Displays the time and date when the last span loss measured value is changed.

If there is a new network with Cisco Optical Site Manager, the operational parameters list of span loss has two rows. The first row displays the OSC-measured span loss details. After the channel is configured, the second row is added, which displays the channel-measured span loss details. After the channel is configured, only the channel-measured span loss details are updated.

View or Modify Span Loss Parameters

Use this task to view or modify span loss parameters.



Note If a channel or OSC is not configured, span loss measurement is not reported and the operational parameters list is empty.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Optical Setup** in the left panel.
- Step 2** Click the **Optical Configuration** tab and then click **Span Loss** to expand it.
- Step 3** Click the + button corresponding to a degree in the list and then click **Span Loss Measured Data** to expand it.
- Step 4** Select a row and click the **Measure Span Loss** button.
A message appears. Click **OK**.
- Step 5** Click the Retrieve button to view the updated **Measured Span Loss**, **Measured Accuracy**, and **Measured time** values.
- Step 6** Enter the values for **Min. Exp. Span Loss** or **Max. Exp. Span Loss** in dB. The range is from 0 to 99.

- Step 7** Click **Apply**.
A confirmation message appears.
- Step 8** Click **Yes**.
The span loss range is extended including the Accuracy value. A Span Loss Out of Range condition is raised when the measured span loss is higher than the extended range.
- Step 9** (Optional) Click the **Export to Excel** button to export the information to an Excel sheet.

The **Span Loss Measured Data** section displays the following information:

- **Degree**—Displays the side for which span loss information appears.
- **Measured By**—Displays whether the measurement was executed with or without channels. Values are OSC or CHANNEL.
- **Min Exp. Span Loss (dB)**—Displays the minimum expected span loss (in dB) for the incoming span.
- **Max Exp. Span Loss (dB)**—Displays the maximum executed span loss (in dB) for the incoming span.
- **Measured Span Loss (dB)**—Displays the measured span loss value.
- **Measured Accuracy (dB)**—Displays the resolution or accuracy of the span loss measurement. The resolution is +/-1.5 dB if the measured span loss is 0–25 dB. The resolution is +/-2.5 dB if the measured span loss is 25–38 dB.
- **Measured Time**—Displays the time and date when the last span loss measured value is changed.

Configure Amplifier Parameters

Use this task to configure the optical amplifier parameters.

For more details about the supported cards, see [#unique_10 unique_10_Connect_42_supported_cards](#)

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Open the Card View, on page 25](#)

Procedure

- Step 1** Click **Optical Setup** in the left panel.
- Step 2** Click the **ANS Parameters** tab and then click **Amplifier** to expand it.
- Step 3** Modify any of the settings described in the following table.

Table 25: Amplifier Parameters for Amplifier Cards

Parameter	Description	Options
Working Mode	Shows the working mode.	<ul style="list-style-type: none"> • Channel Power • Total Power • Optimized • Fixed Gain • Start and Hold
Tilt Setpoint (dB)	Target output tilt requested by the user.	—
PSD Setpoint (dBm/GHz)	Power Spectral Density. Target output power requested by the user for each circuit.	—
Gain Setpoint (dB)	Target amplifier gain requested by the user.	—
Gain Range	Sets the gain range of the amplifier.	<ul style="list-style-type: none"> • Gain Range 1 • Gain Range 2 • No Gain Range

Step 4 Click **Apply** to save the changes.

The **Amplifier** section displays the following details:

Table 26: Amplifier Parameters for Amplifier Cards

Parameter	Description	Displayed Values
Port	(Display only) Displays the port number, port type, and direction (TX or RX).	—
Total Output Power (dBm)	(Display only) Shows the current power level for each port.	—
Output Power Setpoint (dBm)	Shows the output power setpoint.	—

Parameter	Description	Displayed Values
Working Mode	Shows the working mode.	<ul style="list-style-type: none"> • Channel Power • Total Power • Optimized • Fixed Gain • Start and Hold
Role	Role of the amplifier.	<ul style="list-style-type: none"> • Preamplifier • Booster
Actual Gain (dB)	Actual gain setpoint.	—
Target Gain (dB)	Target gain setpoint.	—
Tilt Setpoint (dB)	Target output tilt requested by the user.	—
PSD Setpoint (dBm/GHz)	Power Spectral Density. Target output power requested by the user for each circuit.	—
PSD Optimized (dBm/GHz)	Optimized PSD	—
Gain Setpoint (dB)	Target amplifier gain requested by the user.	—
Gain Range	Sets the gain range of the amplifier.	<ul style="list-style-type: none"> • Gain Range 1 • Gain Range 2 • No Gain Range
Power Degrade Threshold (High) (dBm/GHz)	Shows the current value of the optical power degrade high threshold.	—
Power Degrade Threshold (Low) (dBm/GHz)	Shows the current value of the optical power degrade low threshold.	—
Status	Shows the current status of the amplifier.	—

Parameter	Description	Displayed Values
Gain Degrade High (dB)	(Display only) Shows the current value of the gain degrade high threshold configured in the card. This threshold applies only when the amplifier is active and in constant gain mode. Gain Degrade High refers to the Gain value of the port and is automatically calculated by the control card when the amplifier is turned up.	—
Gain Degrade Low (dB)	(Display only) Shows the current value of the gain degrade low threshold configured in the card. This threshold applies only when the amplifier is active and in constant gain mode. Gain Degrade Low refers to the Gain value of the port and is automatically calculated by the control card when the amplifier is turned up.	—

Provision Interface Parameters

Use this task to change the optical interface parameters.

For more details about the supported cards, see [#unique_10 unique_10_Connect_42_supported_cards](#)

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Open the Card View, on page 25](#)

Procedure

-
- Step 1** Click **Optical Setup** in the left panel.
- Step 2** Click the **ANS Parameters** tab and then click **Interface** to expand it.
- Step 3** Modify the settings described in the following table. The provisionable parameters are listed in the *Options* column in the table.

Table 27: Interface Options

Parameter	Description	Options
Port	(Display only) Displays the port number, port type, and direction (RX or TX)	All the RX and TX ports
Admin State	Sets the administrative state of the port.	From the drop-down list, choose one of the following: <ul style="list-style-type: none"> • Unlocked / IS • Locked, disabled/OOS, DSBLD • Locked, maintenance/OOS, MT • Unlocked, automaticInService/IS, AINS
Service State	(Display only) Identifies the autonomously generated state that gives the overall condition of the port. Service states appear in the format: Primary State-Primary State Qualifier, Secondary State.	<ul style="list-style-type: none"> • IS-NR/ Unlocked-enabled • OOS-AU,AINS/ Unlocked-disabled, automaticInService • OOS-MA,DSBLD/ Locked-enabled,disabled • OOS-MA,MT/ Locked-enabled,maintenance
Optical Power (dBm)	(Display only) Displays the optical power for each port.	—
OSC Power (dBm)	(Display only) Displays the service-channel power level for each port.	—
Optical PSD Setpoint (dBm/GHz)	Target output Power Spectral Density requested by the user.	-50 to 10
Attenuator Value (dB)	Sets the attenuator value.	—
Optical Power Threshold Low (dBm)	Fail low threshold used to detect the LOS alarm on the port.	—
OSC Power Threshold Low (dBm)	(Display only) Displays the OSC power level for each port.	—

Parameter	Description	Options
Current Power Degrade High (dBm)	(Display only) Shows the current value of the optical power degrade high threshold configured in the card. Power Degrade High refers to the Signal Output Power value of the port and is automatically calculated by the control card.	—
Current Power Degrade Low (dBm)	(Display only) Shows the current value of the optical power degrade low threshold configured in the card. Power Degrade Low refers to the Signal Output Power value of the port and is automatically calculated by the control card.	—
Current Power Failure Low (dBm)	(Display only) Shows the optical power failure low threshold for the port.	—

Step 4 Click **Apply** to save the changes.

Provision Raman Amplifier Parameters

Use this task to provision the optical Raman amplifier parameters.

For more details about the supported cards, see [#unique_10 unique_10_Connect_42_supported_cards](#)

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Open the Card View, on page 25](#)

Procedure

- Step 1** Click **Optical Setup** in the left panel.
- Step 2** Click the **ANS Parameters** tab and then click **Raman Amplifier** to expand it.
- Step 3** Modify any of the settings described in the following table.

Table 28: Raman Amplifier Parameters for Amplifier Cards

Parameter	Description	Options
Port	(Display only) Displays the port number, port type, and direction (TX or RX).	—
Status	Displays the Status of the port.	
Gain Setpoint (dB)	Target amplifier gain requested by the user.	—
Actual Gain (dB)	(Display only) Displays the actual amplifier gain.	—
Pumping Scheme	(Display only) Displays the pumping scheme that the card uses.	<ul style="list-style-type: none"> • Counter-Propagating for the RAMAN-CTP, RMN-CTP-CL, EDRA-1-xx, and EDRA-2-xx cards. • Co-Propagating for the RAMAN-COP card.
Calibration Type	Calibration type that the card uses. The RAMAN-COP card supports only manual calibration. The RAMAN-CTP card supports both automatic and manual calibration. The RMN-CTP-CL card supports only automatic calibration. If a node has both RAMAN-CTP and RAMAN-COP cards, the RAMAN-CTP card supports only manual calibration.	<ul style="list-style-type: none"> • Automatic • Manual • No-Calibration
Unsaturated Gain Setpoint (dBm)	Unsaturated target amplifier gain. This field is editable only for the RAMAN-COP card.	0–50

Step 4 Click **Apply** to save the changes.
The RAMAN port section is displayed.

Step 5 Expand the RAMAN port to view the pump power details.

Table 29: RAMAN Pump Power Parameters

Parameter	Description
Pump ID	(Display only) Identifier of the Raman Pump (2 pumps with RAMAN-CTP and 4 pumps with EDRA).

Parameter	Description
Pump Power Setpoint (mW)	(Only for RAMAN-CTP and RAMAN-COP cards) Provisioned value of pump power setpoint. This value is effective only for manual calibration of RAMAN-CTP and RAMAN-COP cards and if the calibration is not performed. The value of this parameter must also be provided for automatic calibration of the RAMAN-CTP card even if the value is not effective.
Pump Power Target (mW)	(Display only) Target power set by the internal control algorithm. The result of calibration can be both automatic and manual.
Pump Power (mW)	(Display only) Actual power value of the individual pump.

Step 6 Click **Apply** to save the changes.

Manage Raman Interface Parameters

Use this task to manage the Raman interface parameters.

For more details about the supported cards, see [#unique_10 unique_10_Connect_42_supported_cards](#)

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Open the Card View, on page 25](#)

Procedure

Step 1 Click **Optical Setup** in the left panel.

Step 2 Click the **ANS Parameters** tab and then click **Raman Interface** to expand it.

Step 3 View the settings described in the following table. Only the Admin State parameter can be modified.

Table 30: Interface Options

Parameter	Description	Options
Port	(Display only) Displays the port number, port type, and direction (RX or TX)	All the RX and TX ports

Parameter	Description	Options
Admin State	Sets the administrative state of the port.	From the drop-down list, choose one of the following: <ul style="list-style-type: none"> • Unlocked (ETSI)/ IS (ANSI) • Locked, disabled (ETSI)/OOS, DSBLD (ANSI) • Locked, maintenance (ETSI)/OOS, MT (ANSI) • Unlocked, automaticInService (ETSI)/ IS, AINS (ANSI)
Service State	(Display only) Identifies the autonomously generated state that gives the overall condition of the port. Service states appear in the format: Primary State-Primary State Qualifier, Secondary State.	<ul style="list-style-type: none"> • IS-NR/ Unlocked-enabled • OOS-AU,AINS/ Unlocked-disabled, automaticInService • OOS-MA,DSBLD/ Locked-enabled,disabled • OOS-MA,MT/ Locked-enabled,maintenance
Optical Power (mW)	(Display only) Displays the optical power for each port.	—
Current Optical Power Setpoint (mW)	(Display only) Shows the current value of the optical power setpoint that must be reached.	—
Current Power Degrad High (mW)	(Display only) Shows that the current value of the optical power degrade high threshold. Power Degrad High refers to the Signal Output Power value of the port and is automatically calculated by the control card.	—

Parameter	Description	Options
Current Power Degrade Low (mW)	(Display only) Shows that the current value of the optical power degrade high threshold configured in the card. Power Degrade Low refers to the Signal Output Power value of the port and is automatically calculated by the control card.	—
Current Power Failure Low (mW)	(Display only) Shows the optical power failure low threshold for the port.	—

Step 4 Click **Apply** to save the changes.

Optical Cross-connect Management

Optical cross-connect (OXC) circuits are used to connect two optical nodes on a specified C-band wavelength. These circuits are created using data models and are bidirectional in nature. The connection is established through the ports present on the wavelength selective switches, multiplexers, demultiplexers, and add/drop cards.

In an OXC circuit, the wavelength from a source interface port enters to a DWDM system and then exits from the DWDM system to the destination interface port.

The administrative states are:

- IS/Unlocked
- IS, AINS/Unlocked, AutomaticInService
- OOS, DSBLD/Locked, disabled

View Optical Cross-connect Circuits

Use this task to view the details of the optical cross-connects that are created for a node using data models.



Note The optical cross-connects are read-only and cannot be modified.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

-
- Step 1** Click **Optical Setup** in the left panel.
- Step 2** Click the **Optical Cross Connections** tab.
- Step 3** To delete an optical cross-connect, select the check box corresponding to the OXC you want to delete and click the - button.
- Step 4** (Optional) Click the **Export to Excel** button to export the information to an Excel sheet.
- Step 5** (Optional) Click the **Download OXC as XML** button to download the details of the optical cross-connects as a XML file.
- Step 6** (Optional) Click the **Sync from device** button to synchronize the optical cross-connect information with the associated NCS 1000 device.
-

The **Optical Cross Connections** tab displays the following details for each cross-connect.

- **Connection Label**—Displays the name of the cross-connect.
- **Type**—Displays the type of cross-connect. It is bidirectional.
- **Admin Status**—Displays the admin state on the circuit.
- **Service Status**—Displays the status of the service.
- **Central Frequency (THz)**—Displays the spectral position of the circuit.
- **Allocation Width (GHz)**—Displays the bandwidth occupied by the service. The range is 25 to 300GHz.
- **Signal Width (GHz)**—Displays the carrier bandwidth.



Note The payload bandwidth is lesser than the allocation bandwidth.

- **Path 1 End-points**—Displays the source and destination interfaces of the path.
- **Path 2 End-points**—Displays the source and destination interfaces of the path.

To view Path 1 or Path 2, click the + icon to expand the cross-connect. Click the down arrow on the right to view the internal details of Path 1 or Path 2. The details are:

- **Interface Name**—Displays the interface name.
- **Optical Power**—Displays the value of the optical power.
- **Power Failure Low**—Displays the threshold for power failure.
- **Optical PSD Setpoint (dBm/GHz)**—Displays the configured optical power spectral density setpoint. This setpoint is independent of the width of the circuit.
- **Current PSD Setpoint**—Displays the current optical power spectral density setpoint. This setpoint is independent of the width of the circuit.
- **Optical Power Setpoint**—Displays optical power setpoint. This setpoint is scaled to the width of the circuit and matches the value of the optical power parameter.

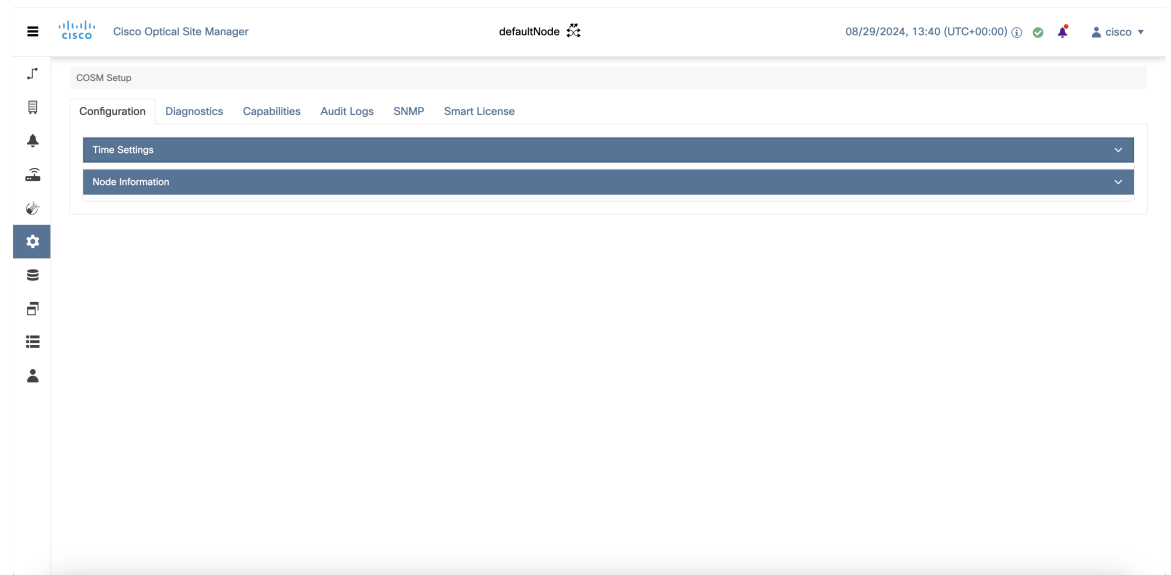


CHAPTER 8

Cisco Optical Site Manager Setup

This chapter covers the tasks for configuring the Cisco Optical Site Manager's timezone and node information. Additionally, you'll learn how to view diagnostic and audit logs, as well as configure smart licensing.

Figure 16: Cisco Optical Site Manager Setup



- [Configure Timezone, on page 91](#)
- [View Cisco Optical Site Manager Diagnostics, on page 92](#)
- [View Audit Logs, on page 93](#)
- [Cisco Optical Site Manager Smart Licensing, on page 94](#)

Configure Timezone

Use this task to configure the time zone.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **COSM Setup** in the left panel.
- Step 2** Click the **Configuration** tab and then click **Time Settings** to expand it.
- Step 3** Type the name of the city or press space in the **Time Zone** field and select a time zone from the drop-down list.
- Step 4** Click **Apply**.
A confirmation message appears.
- Step 5** Click **Yes**.
-

View Cisco Optical Site Manager Diagnostics

Use this task to retrieve and download Cisco Optical Site Manager diagnostics information.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **COSM Setup** in the left panel.
The **COSM Configuration** page appears.
- Step 2** Click the **Diagnostics** tab.
- Step 3** To retrieve Cisco Optical Site Manager diagnostic logs, perform these steps:
- Select the check boxes for which you want to retrieve the logs.

Note By default, all the check boxes are selected except **NCS Callback Log**.

Table 31: Fields Description

Fields	Description
Alarms	Collects the active alarms
Audit Logs	Collects NSO audit logs
Conditions	Collects the active conditions
Admin Logs	Collects the Admin logs
Engineer Logs	Collects all the system software logs
History Logs	Collects the alarms history logs
Inventory Logs	Collects the hardware inventory logs

Fields	Description
NCS Callback Log	Collects information about the implementation status and return values of entire NSO data tree

- b) Click **Retrieve** to retrieve the diagnostics report.
A confirmation message appears.
 - c) Click **Yes**.
 - d) Click **Download** to download the diagnostics report.
A zip file containing the logs is downloaded.
-

View Audit Logs

Use this task to retrieve and download Cisco Optical Site Manager audit logs.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **COSM Setup** in the left panel.
The **COSM Configuration** page appears.
 - Step 2** Click the **Audit Logs** tab.
 - Step 3** Select the search criteria from the **Search filters** section and click **Search**.
Details of each event including the date, user type, SID and event details are displayed in a table.
-

Cisco Optical Site Manager Smart Licensing

Description

Table 32: Feature History

Feature Name	Release Information	Feature Description
Cisco Optical Site Manager Smart Licensing	Cisco IOS XR Release 24.3.1	<p>Cisco Optical Site Manager now supports the smart licensing. It enables you to automate the time-consuming manual licensing tasks and allows you to easily track the status of your license and software usage trends.</p> <p>You can choose any of smart licensing modes based on your requirement:</p> <ul style="list-style-type: none"> • Smart Transport • CSLU • Offline



Note In the **Fault Monitoring** section, two alarms appear, UNTRUSTED APPLICATION and USAGE-NOT-REPORTED. UNTRUSTED APPLICATION alarm gets cleared once trust is established by the **Smart License** and the USAGE-NOT-REPORTED alarm gets cleared when the license is consumed.

COMS Smart Licensing is a cloud-based, software license management solution that enables you to automate time-consuming, manual licensing tasks. The solution allows you to easily track the status of your license and software usage trends.

Smart Licensing helps you simplify three core functions:

- **Purchasing:** The software that you have installed in your Cisco Optical Site Manager can be registered without External or Local Authentication.
- **Management:** You can automatically track activations against your license entitlements. Smart Licensing offers you Cisco Smart Software Manager, a centralized portal that enables you to manage all your Cisco software licenses from one centralized website.
- **Reporting:** Through the portal, Smart Licensing offers an integrated view of the licenses you have purchased and what has been deployed in your network. You can use this data to make better purchasing decisions, based on your consumption.

Cisco Smart Account

Cisco Smart Account is an account where all products enabled for Smart Licensing are deposited. Cisco Smart Account allows you to manage and activate your licenses to devices, monitor license use, and track Cisco license purchases. Through transparent access, you have a real-time view into your Smart Licensing products. IT administrators can manage licenses and account users within your organization's Smart Account through the Smart Software Manager.

When creating a Smart Account, you must have the authority to represent the requesting organization. After you submit the request, it goes through a brief approval process. Access <http://software.cisco.com> to learn about, set up, or manage Smart Accounts.

Cisco Smart Software Manager enables you to manage all your Cisco Smart software licenses from one centralized website. With Cisco Smart Software Manager, you organize and view your licenses in groups called virtual accounts (collections of licenses and product instances). Use the Cisco Smart Software Manager to do these tasks:

- Create, manage, or view virtual accounts.
- Create and manage Product Instance ID Tokens.
- Transfer licenses between virtual accounts or view licenses.
- Transfer, remove, or view product instances.
- Run reports against your virtual accounts.
- Modify your email notification settings.
- View overall account information.

Virtual Accounts

A Virtual Account exists as a subaccount titling the Smart Account. Virtual Accounts are a customer-defined structure based on organizational layout, business function, geography, or any defined hierarchy. They are created and maintained by the Smart Account administrator. Smart Licensing allows you to create multiple license pools or virtual accounts within the Smart Software Manager portal. Using the Virtual Accounts option that you can aggregate licenses into discrete bundles that are associated with a cost center so that one section of an organization cannot use the licenses of another section of the organization. For example, if you segregate your company into different geographic regions, you can create a virtual account for each region to hold the licenses and product instances for that region.

All new licenses and product instances are placed in the default virtual account in the Smart Software Manager, unless you specify a different one during the order process. After you access the default account, you may choose to transfer them to any other account, provided you have the required access permissions.

Use the Smart Software Manager portal to create license pools or transfer licenses.

Product Instance ID Tokens

ID tokens are stored in the Product Instance ID Token Table that is associated with your enterprise account. ID tokens can be valid 1–365 days.

Product Instances

A product instance is an individual device with a unique device identifier (UDI) that is registered using a product instance ID token (or ID token). You can register any number of instances of a product with a single

ID token. Each product instance can have one or more licenses residing in the same virtual account. Product instances must periodically connect to the Cisco Smart Software Manager servers during a specific renewal period. If you remove the product instance, its licenses are released and made available within the virtual account.

Create a Token

Before you begin

To create a new token using Cisco Smart Software Manager, perform the following tasks:

Procedure

-
- Step 1** Log in to the Cisco Smart Software Manager.
<https://software.cisco.com/software/cswws/platform/home#SmartLicensing-Inventory>
- Step 2** Click the Inventory tab, and select your virtual account from the **Virtual Account** drop-down list. The Create **Registration Token** window is displayed.
- Step 3** Click the **General** tab, and click **New Token**.
- Step 4** Enter the token description. Specify the number of days the token must be active.
- Step 5** Check the **Allow export-controlled functionality on the products registered with this token** check box.
- Step 6** Click **Create Token**.
- Step 7** Copy the token and register Cisco Optical Site Manager with the same token ID.

An example of the token ID:

```
YzY2ZjYyNjktY2NlOS00NTc4LWlxNTAtMjZkNmNiNzMxMTY1LTE2NjAzNjQ3
%0ANzY4Njl8ZVJSckxKN2pFV2IeHV0MUkxbGxTazFDVm9kc1B5MGIHQmlFWUJi%0Ac3VNRT0%3D%0A
```

Configure Smart Transport

Use this task to configure Smart Transport Licensing Mode.

Before you begin

- [Create a Token, on page 96](#)
- Provide network configuration, as Cisco Optical Site Manager will not be accessible from outside the network.
 1. Use this sample configuration to communicate to outside network.

```
Config
admin server-information networking dns-configuration dns-server <ipaddress of DNS>
commit
exit
```


Procedure

- Step 1** Click **Cisco Optical Site Manager Setup** in the left panel, and then click **Smart License**.
- Step 2** Click the **Configuration** to expand it.
- Step 3** Under **Transport Settings**, select the **Transport Mode** as **Smart Transport** from the drop-down list.
- Step 4** Add <https://smartreceiver.cisco.com/licservice/license> under **Smart Transport URL**.
- Step 5** Under **Proxy Setting**
- Perform these steps as needed.
 - HTTPS Proxy** (*Optional*)
 - HTTP Proxy** (*Optional*)
 - Username** (*Optional*)
 - Password** (*Optional*)
- Step 6** Under **Reports Settings**, add **Reporting Interval (Days)**
- Enter `<1-30>`
- Step 7** Check the check box **Send Hostname** to receive the hostname information.
- Step 8** Check the check box **Send Product Version** to receive the product version.
- Step 9** Click **Apply** to apply the settings.
- Step 10** Click **Check Connection** to check the connection with the new settings.
- If the **Check Connection** button turns **Green**, it indicates that the connection good.
- If the **Check Connection** button turns **Yellow**, it indicates that there is an issue with the connection.
-

- **Transport Mode**—Specifies the optical span of the side.
- **Smart Transport**—Specifies the optical span of the side.
- **CSLU URL**—Specifies the optical span of the side.
- **Smart Transport URL**—Specifies the optical span of the side.
- **HTTPS Proxy**—(Optional) Type the HTTPS Proxy Address.
- **HTTP Proxy**—(Optional) Type the HTTP Proxy Address.
- **Username**—(Optional) Type the Username.
- **Password**—(Optional) Type the Password.
- **Reporting Interval (Days)**—Specifies the reporting interval in days.
- **Hostname**—Specifies the hostname which will be sent.
- **Product Version**—Specifies the product version which will be sent.

What to do next

Establish Trust.

1. Go to **Information Tab**, click **Establish Trust**, it displays **Establish Trust** pop up.
2. Copy the **Token** text from the **Virtual Account**, paste under the **ID Token** dialog box and click **Trust**.
3. Configuration Verification
 - Under **Trust** tab **Trust Established** time and **Last Attempt Result** as **Success** displays, indicating that the **Trust Established**.
 - Click **Sync**, under **Reporting** it displays **Last Report Pushed** time and **Last Acknowledgement Received** time indicating synchronization is done.
 - Under **License Usage**, license count displays.



Note For the NCS 1010, the license count is based on the chassis, whereas for the NCS 1014, the license count is based the number of line cards available on Cisco Optical Site Manager application.

Configure CSLU

Use this task to configure CSLU Licensing Mode.

Before you begin

- [Install CSLU Application on Windows System or Linux.](#)
 1. Login using Cisco User ID and Password.
 2. Go to CSLU application fill the appropriate details under **Preferences** tab Click **Apply**.
 3. Click **Test Connection**.
 4. CSLU displays a pop-up showing the **Test connection** is successful.

Procedure

-
- Step 1** Click **Settings** in the left panel, and then click **Smart License**.
- Step 2** Click the **Configuration** to expand it.
- Step 3** Under **Transport Settings**, select the **CSLU/OnPrem** from the drop-down list.
- Step 4** Enter the **CSLU URL**.
- Step 5** *http://<Device IP>:8182/cslu/v1/pi* under **CSLU URL**.
Device IP is the Ethernet2 IP address of the computer in which the CSLU application is installed.
- Step 6** Under **Proxy Setting**
- a) Perform these steps as needed.

1. HTTPS Proxy (*Optional*)
2. HTTP Proxy (*Optional*)
3. Username (*Optional*)
4. Password (*Optional*)

Step 7 Under **Reports Settings**, add **Reporting Interval (Days)**

a) Enter <1-30>

Step 8 Check the check box **Send Hostname** to receive the hostname information.

Step 9 Check the check box **Send Product Version** to receive the product version.

Step 10 Click **Apply** to apply the settings.

Step 11 Click **Check Connection** to check the connection with the new settings.

If the **Check Connection** button turns **Green**, it indicates that the connection good.

If the **Check Connection** button turns **Yellow**, it indicates that there is an issue with the connection.

-
- **Transport Mode**—Specifies the optical span of the side.
 - **CSLU URL**—Specifies the optical span of the side.
 - **HTTPS Proxy**—(Optional) Type the HTTPS Proxy Address.
 - **HTTP Proxy**—(Optional) Type the HTTP Proxy Address.
 - **Username**—(Optional) Type the Username.
 - **Password**—(Optional) Type the Password.
 - **Reporting Interval (Days)**—Specifies the reporting interval in days.
 - **Hostname**—Specifies the hostname which will be sent.
 - **Product Version**—Specifies the product version which will be sent.

What to do next

Configure **Sync**.

1. In the COSM application, click the **Sync** button.
2. CSLU displays **COMPLETE: Sync response acknowledgement to product instance** when the **Sync** is complete from the CSLU.
 1. Configuration Verification
 - Under **Trust** tab **Trust Established** time and **Last Attempt Result** as **Success** displays, indicating that the **Trust Established**.
 - When **Sync** is done, under **Reporting** it displays **Last Report Pushed** time and **Last Acknowledgement Received** time indicating synchronization is done.
 - Under **License Usage**, license count displays.



Note For the NCS 1010, the license count is based on the chassis, whereas for the NCS 1014, the license count is based on the number of line cards available on Cisco Optical Site Manager application.

Configure Offline

Use this task to configure Offline Licensing Mode.

Procedure

-
- Step 1** Click **Settings** in the left panel, and then click **Smart License**.
 - Step 2** Click the **Configuration** to expand it.
 - Step 3** Under **Transport Settings**, select **Transport Mode** and then by selecting **Offline** from the drop-down list.
 - Step 4** Check the check box **Send Hostname** to receive the hostname information.
 - Step 5** Check the check box **Send Product Version** to receive the product version.
 - Step 6** Click **Apply** to apply the settings.
 - Step 7** **Check Connection** is disabled for **Offline** mode.
-

What to do next

Establishing Trust

1. Click the **Information** tab to expand it.
2. Click **Save** button, choose **Trust Request**.
3. **trust-request** XML file downloads.
4. Go to Cisco Smart Software Manager then go to **Reports** then click **Usage Data Files** then click **Upload Usage Data** and select the **Virtual Account** and click on **Ok**.
5. **Upload Usage Data** window opens, click the **Browse** button and upload the **trust-request** file.
6. Check under the **Reporting Status** tab to see **No Errors**. It may take a few minutes to show **No Errors**. If it shows **Errors**, you have to fix them.
7. Click **Download** under **Acknowledgement** tab.
8. In the Cisco Optical Site Manager click **Import** button, it opens a **Establish Trust** window.
9. Click **Select files...** and upload **Ack_trust-request-xxxx** click **Open** then click **Upload**.
10. Click **Save**, then **Usage**, it opens a **Select what to save** window, then choose any one option.
 - unreported
 - all
 - days

11. **rum-report-xxx** downloads
12. In the CSSM, under **Usage Data Files** click **Upload Usage Data**.
13. It opens a **Upload Usage Data** window, click **Browse** and select **rum-report-xxx** click **Open** then click **Upload Data** In the **Select Virtual Accounts** window, select the appropriate account and click **ok**.
14. It may take a few minuets to show **No Errors**. If it shows **Errors**, you have to fix them.
15. When **No Errors** appears, **Download** the **Ack_rum-report-xxx**.
16. In the Cisco Optical Site Manager click **Import** button,
it opens **Establish Trust** click **Select files..** and select **Ack_rum-report-xxx** click **Open** then click **Done**.
17. Click the **Refresh** button to see updated information.
18. Configuration Verification
 - Under the **Trust** tab you will see **Trust Established** time indicating that the trus is established.
 - Under **Reporting** it displays **ACK Report Time** will be displayed.
 - Under **License Usage**, license count displays.



Note For the NCS 1010, the license count is based on the chassis, whereas for the NCS 1014, the license count is based the number of line cards available on Cisco Optical Site Manager application.



CHAPTER 9

Backup and Restore Database

This chapter describes the tasks to backup and restore Cisco Optical Site Manager database.

Table 33: Feature History

Feature Name	Release Information	Description
Backup and Restore Database	Cisco IOS XR Release 24.3.1	Cisco Optical Site Manager now supports backup and restore for both its own database and the databases of the devices it manages. When unexpected failures occur, such as hardware malfunctions or software corruption, your data is securely backed up and easily recoverable.

Figure 17: Back Up and Restore Database

- [Database Backup and Restore, on page 105](#)

Database Backup and Restore

Cisco Optical Site Manager allows the backup of its own database as well as the databases of the devices it manages, ensuring that data can be restored in case of disaster. Backups are executed and stored within the device on which Cisco Optical Site Manager is installed and are accessible through the Cisco Optical Site Manager web user interface.

Backup and Download Database

Backing up the Cisco Optical Site Manager database ensures data integrity and availability in case of unexpected failures, such as hardware malfunctions or software corruption. By maintaining regular backups, administrators can quickly restore the system to its last known good state, minimizing downtime and operational disruptions.

Use this task to back up and download the database for both Cisco Optical Site Manager and the devices it manages.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Database** in the left panel.
- Step 2** Click the **Backup** button.
A confirmation dialog box appears.
- Step 3** (Optional) Enable the **Stop on Error** toggle button to stop the backup process if any of the selected devices for backup are disconnected, unresponsive, or locked.
- Step 4** Click **Yes** to start the backup.

The *Logs Summary* section displays the backedup components, their status, and timestamps.
The DBBACKUP-IN-PROGRESS alarm is triggered and can be viewed in the **Alarms** tab of the **Fault Monitoring** menu.
- Step 5** Click the backup file name under **Back Up Information** to download entire backup as a ZIP file on your local system.
-

Restore Database

When performing a restore operation, you restore Cisco Optical Site Manager and its managed devices database to the state it was in at the backup time. You can choose to restore only the Cisco Optical Site Manager database, only one or multiple managed devices database, or both simultaneously.

Use this task to restore the database of either the Cisco Optical Site Manager or the devices it manages.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

-
- Step 1** Click **Database** in the left panel.
- Step 2** Click the **Restore Options** button.
The **Choose a Restore Option** dialog box appears.
- Step 3** Do one of the following to restore the database:

Note When restoring the Cisco Optical Site Manager or full database on the host device, the Cisco Optical Site Manager becomes temporarily unavailable.

To restore	click the <i>Restore</i> button
only Cisco Optical Site Manager database,	in the <i>COSM</i> section.
only the managed devices database,	in the <i>Devices</i> section after selecting the one or all check boxes corresponding to the devices for which you want to restore the data.
both Cisco Optical Site Manager and the managed devices database,	in the <i>Full</i> section.

A confirmation dialog box appears.

- Step 4** (Optional) Enable the **Stop on Error** toggle button to stop the restore process if any of the selected devices for restore are disconnected, unresponsive, or locked.
- Step 5** Click **Yes** to start the restore process.

The *Logs Summary* section displays the restored components, their status, and timestamps.

The DBREST-IN-PROGRESS alarm is triggered and can be viewed in the **Alarms** tab of the **Fault Monitoring** menu.

Upload Database

While multiple backups can be created, only the most recent backup is available for download and restoration. You may need to upload and restore your database in the following situations:

- **Reinstall Cisco Optical Site Manager:** If you need to reinstall Cisco Optical Site Manager, uploading the backup file allows you to restore the data to its state prior to the re-installation.
- **Database Transfer Between Nodes:** Copy the database from one device to another by backing up from the source device and uploading it on the destination device.

Use this task to upload the database from a downloaded backup ZIP file.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Database** in the left panel.
- Step 2** Click the **Upload Backup** button.
The **Upload DB Backup** dialog box appears.
- Step 3** Click **Select Files** to select a ZIP file.
- Tip** You can also drag and drop the backup ZIP file in the **Upload DB Backup** dialog box.
- Step 4** Click **Upload** to upload the backup.
The uploaded backup file is displayed under **Back Up Information**.
-



CHAPTER 10

Upgrade Software

This chapter describes the software upgrade in Cisco Optical Site Manager and its related tasks.

- [Cisco Optical Site Manager Software Package, on page 109](#)
- [Workflow for Software Upgrade, on page 109](#)
- [Download Software Package on Cisco Optical Site Manager Card, on page 110](#)
- [Download Software Package on Device, on page 111](#)
- [Activate Device Software, on page 112](#)
- [Delete Software Package, on page 113](#)

Cisco Optical Site Manager Software Package

The software package is distributed as a single file that is downloaded to the local file system of Cisco Optical Site Manager and it contains all the required packages for upgrading the system. The single file image is different depending on the Cisco Optical Site Manager installation type: Cisco Optical Site Manager line card (ISO image file).

ISO line card image consists of the following:

- NCS 1000 image
- Cisco Optical Site Manager Software application

Workflow for Software Upgrade

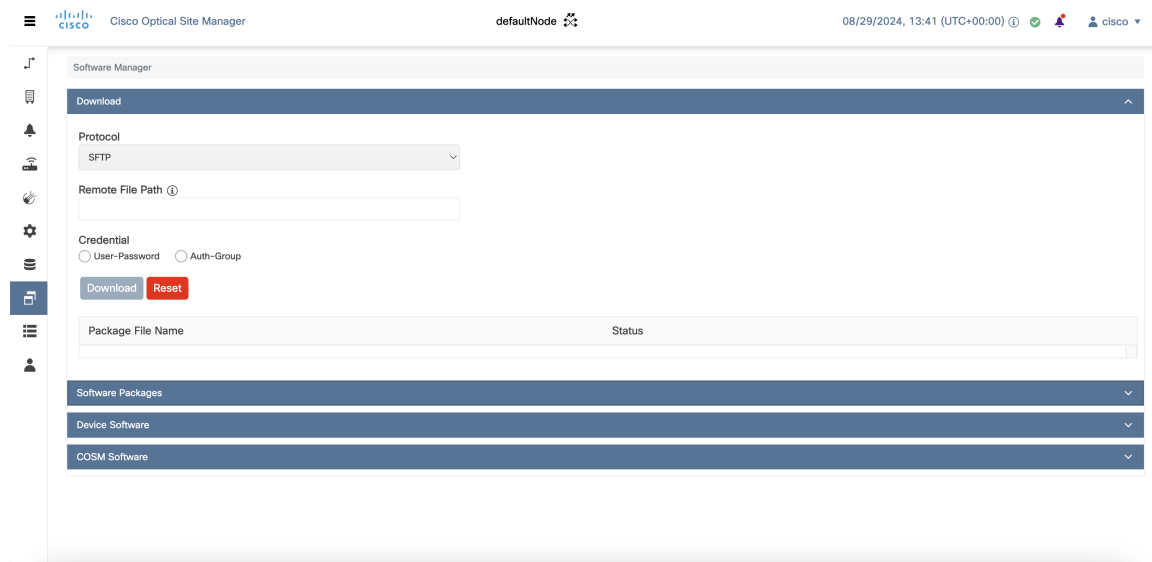
You can upgrade NCS 1000 device and Cisco Optical Site Manager application software using the Software Manager.

Perform these tasks to upgrade software NCS 1000 device and Cisco Optical Site Manager application software.

1. **Download Software Package** : Download the necessary packages from the Cisco repository to the Cisco Optical Site Manager card. For more details, see [Download Software Package on Cisco Optical Site Manager Card, on page 110](#). The downloaded packages appear in the **Software Packages** tab.
2. **Download Software Package to Device**: Download the software package from Cisco Optical Site Manager card to the NCS 1000 device. For more details, see [Download Software Package on Device, on page 111](#).

3. **Activate Device Software:** Activate the device software. For more details, see [Activate Device Software, on page 112](#).

Figure 18: Software Upgrade



Download Software Package on Cisco Optical Site Manager Card

Use this task to download the Cisco Optical Site Manager software package.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Software Manager** from the left panel.
- Step 2** Click the **Download** tab.
- Step 3** Select SFTP from the **Protocol** drop-down list.
- Step 4** Enter the path of the software package file in the **Remote File Path** field.
- Step 5** Choose to enter the credentials either through **User-Password** or **Auth-Group**.
 - If you choose **User-Password**, enter the **Username** and **Password** in the given fields.
 - If you choose **Auth-Group**, choose the authentication group from the **Auth Group** drop-down list.
- Step 6** Click **Download** to download the software package.
The download status is displayed in the **Status** column.

Step 7 Click the **Refresh** icon in the **Software Packages** section.

The downloaded software package ID is displayed in the **Software Packages** list in the increasing order of their release.

What to do next

[Download Software Package on Device, on page 111](#)

Download Software Package on Device

Use this task to download the software package from the Cisco Optical Site Manager card to NCS 1000 device.

Before you begin

- [Download Software Package on Cisco Optical Site Manager Card, on page 110](#)

Procedure

Step 1 Click **Software Manager** from the left panel.

Step 2 Click the **Device Software** section.

The following describes the fields displayed in the on the **Device Software** section:

Table 34: Device Software Fields

Field	Description
Name	Displays the IP address of the device.
Component	Displays the platform component name.
App Status	Displays the status of the Cisco Optical Site Manager application on the device. <ul style="list-style-type: none"> • <i>Active</i>: Cisco Optical Site Manager is currently active on the device. • <i>Standby</i>: Cisco Optical Site Manager is in standby mode on the device. If the <i>Active</i> application fails, this application takes over.
Working SW Version	Displays the currently active software version on the device.
Status	Displays the progress of the download.

Step 3 Select the check box corresponding to the device for which you want to download the new software.

Note The **Device Software** tab lists the NCS 1000, cosm-primary, and cosm-secondary devices. Only the NCS 1000 IOS XR software package can be downloaded.

Step 4 Click **Download**.

The **Select Software Image** dialog box appears.

Step 5 Select the software package from the **Software Image** drop-down list.

Step 6 Click **Download**.

The **Status** column displays the download progress.

Step 7 (Optional) Click the **Terminate Download** button to terminate the software downloading on the selected device.

Note When upgrading the software for the Cisco Optical Site Manager High Availability devices, select and upgrade all devices listed under **Device Software**.

What to do next

[Activate Device Software, on page 112](#)

Activate Device Software

Use this task to activate the NCS 1000 device software package.

Before you begin

- [Download Software Package on Device, on page 111](#)

Procedure

Step 1 Click **Software Manager** from the left panel.

Step 2 Click the **Device Software** section.

Step 3 Select the NCS 1000 device for which you want to activate the software, and click **Activate**.

Step 4 Select the ISO from to be activated.

Note If the device hosting the Cisco Optical Site Manager application is activated, manageability is temporarily lost while the new device image is loaded and the updated Cisco Optical Site Manager application restarts.

Caution Do not install a base ISO without Cisco Optical Site Manager component on the device that already has COSM. This will remove the Cisco Optical Site Manager application and leave the device in an inconsistent state.

Delete Software Package

Use this task to delete the software package on the Cisco Optical Site Manager card or application.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Software Manager** from the left panel.
 - Step 2** Click to expand the **Software Packages** section.
A list of package names and their corresponding software versions is displayed.
 - Step 3** Select the checkbox corresponding to the *SW Package ID* of the Cisco Optical Site Manager package you want to delete.
 - Step 4** Click **Delete**.
A confirmation message appears.
 - Step 5** Click **Ok**.
-



CHAPTER 11

View Inventory

This chapter describes the tasks to view the inventory details of a single or multiple racks.

Figure 19: View Inventory

Location	UID ↑	Display Name	Equipment Type	Connected To	Actual Type	Serial No	Product ID	HW Part No	CLE
1-Chassis [R1-P1]	1	1/1	NCS1010-SA		NCS1010-SA		NCS1010-SA		WO
1-0 [R1 - P1]	1	1/1	NCS1K-OLT-C		NCS1K-OLT-C		NCS1K-OLT-C		WO
1-RP0 [R1 - P1]	1	1/1	NCS1K-CNTRL-K9		NCS1010-CNTRL-K9		NCS1010-CNTRL-K9		WO
1-RP0-PTP0 [R1 - P1]	1	1/1	PPM-1-PORT						
1-RP0-PTP1 [R1 - P1]	1	1/1	PPM-1-PORT						
1-RP0-UDCO [R1 - P1]	1	1/1	PPM-1-PORT						
1-RP0-UDC1 [R1 - P1]	1	1/1	PPM-1-PORT						
1-FAN-FT0 [R1 - P1]	1	1/1	NCS1K-FAN		NCS1010-FAN		NCS1010-FAN		WO
1-FAN-FT1 [R1 - P1]	1	1/1	NCS1K-FAN		NCS1010-FAN		NCS1010-FAN		WO
1-PWR-PM0 [R1 - P1]	1	1/1	NCS1K-PSU		NCS1010-AC-PSU		NCS1010-AC-PSU		WO
1-PWR-PM1 [R1 - P1]	1	1/1	NCS1K-PSU		NCS1010-AC-PSU		NCS1010-AC-PSU		WO
1-Chassis-BackPlane [R1 - P1]	1	1/1							

- [View Inventory of All Racks and Chassis, on page 115](#)
- [View Inventory of Single Rack and Chassis, on page 116](#)

View Inventory of All Racks and Chassis

You can view inventory of all the racks and chassis used on the network from the **Inventory** tab. To view the inventory of all the racks and chassis, perform these steps:

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

Step 1 Click **Inventory** in the left panel.

The Inventory page appears and displays the following details:

- **Location**—Displays the location where the equipment is installed.
- **UID**—Displays the unique identifier of each component.
- **Display Name**—Displays the display name of each component.
- **Equipment Type**—Displays the type of equipment.
- **Connected To**—Displays the passive unit associated with the USB port of the chassis.
- **Actual Type**—Displays the specific card name.
- **Serial No**—Displays the equipment serial number.
- **Product ID**—Displays the manufacturing product identifier.
- **HW Part No**—Displays the hardware part number.
- **CLEI Code**—Displays the Common Language Equipment Identifier (CLEI) code.
- **Version ID**—Displays the manufacturing version identifier.
- **HW Rev**—Displays the hardware revision number.
- **Boot ROM Rev**—Displays the boot read-only memory (ROM) revision number.
- **Manufacturing Date**—Displays the manufacturing date of the component.

Step 2 (Optional) Click the **Export to Excel** icon to export and download the inventory information to an Excel file.

View Inventory of Single Rack and Chassis

To view the inventory details of a single rack or chassis, such as location, display name, and equipment type, perform these steps:

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

Step 1 Click **COSM Topology** in the left panel.
The COSM Topology page appears.

Step 2 Click the rack name from the Rack view.

Step 3 Right-click the chassis from the Rack view and select **Open**

The Inventory page appears and displays the following details:

- **Location**—Displays the location where the equipment is installed.
- **UID**—Displays the unique identifier of each component.
- **Display Name**—Displays the display name of each component.
- **Eqpt Type**—Displays the type of equipment.
- **Connected To**—Displays the passive unit associated with the USB port of the chassis.
- **Actual Eqpt Type**—Displays the specific card name.
- **Serial No**—Displays the equipment serial number.
- **Product ID**—Displays the manufacturing product identifier.
- **HW Part No**—Displays the hardware part number.
- **CLEI Code**—Displays the Common Language Equipment Identifier (CLEI) code.
- **Version ID**—Displays the manufacturing version identifier.
- **HW Rev**—Displays the hardware revision number.
- **Boot ROM Rev**—Displays the boot read-only memory (ROM) revision number.
- **Manufacturing Date**—Displays the manufacturing date of the selected rack or chassis.

Step 4 (Optional) Click the **Export to Excel** icon to export and download the inventory information to an Excel file.

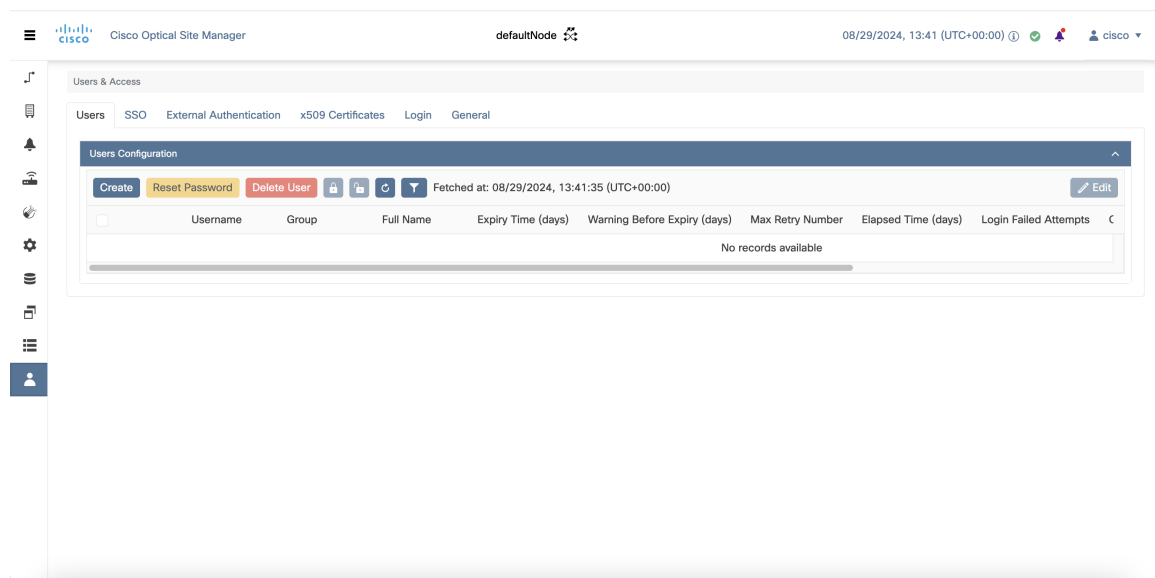


CHAPTER 12

Users Access and Authentication

This chapter describes the tasks to manage users accounts, SSO authentication, external authentication, web certificates.

Figure 20: Users Access and Authentication



- [Users Configuration, on page 119](#)
- [Single sign-on \(SSO\), on page 122](#)
- [Manage External Authentication, on page 123](#)
- [Manage x509 Certificates, on page 131](#)
- [View Active Login User Details, on page 132](#)
- [Manage Web Configurations, on page 133](#)

Users Configuration

This section describes the tasks to manage users and user profile passwords.

Create Users

Use this task to create new users. Only an admin can create new users.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Users & Access** in the left panel.
- Step 2** Click the **Users** tab.
- Step 3** In the **Users Configuration** section, click **Create**.
The **Create User** dialog box is displayed.
- Step 4** Enter the following details in the **Create User** dialog box.
- User Name**—Type the user name. The user name must be a minimum of six and a maximum of 40 characters. It can include alphanumeric characters (a-z, A-Z, 0-9) and special characters @, " - " (hyphen), and " . " (dot).
 - Password**—Enter the password that will be used by the user to log into Cisco Optical Site Manager. The password must be a combination of alphanumeric (a-z, A-Z, 0-9) and special (+, #, %) characters. The minimum number of characters in the password is eight and the maximum number is 127. The password must not contain the user name.
 - Retype the password in the **Retype Password** field.
 - Expiry Time (days)**—Enter the time period in days before which the user needs to change the password. For example, if the user has set the expiry time to be 20 days, the user must change the password before 20 days are over.

The user is automatically moved to the *Password* group after this time elapses. The user must change the password before performing any other action.
 - Warning Before Expiry (days)**—Enter the number of days the user is warned of the expiry of the password.
 - Max Retry Number**—Specify the maximum number of consecutive unsuccessful login attempts that are allowed. When the maximum number of failed login attempts is reached, the account is automatically moved to the *Password* group.
 - Group**—Select the group from the drop-down list. The available options are *admin*, *editor*, *maintenance*, *snmp* and *viewer*.
- Step 5** Click **Create**.
The new user is added to the list.
-

Change User Password

Use this task to change password for a user. Only an admin or superusers can change the password.

Before you begin

[Log into Cisco Optical Site Manager, on page 2.](#)

Procedure

-
- Step 1** Click **Users & Access** in the left panel.
The **User & Access** page is displayed.
- Step 2** Click the **Users** tab.
- Step 3** Select the check box corresponding to the user you want to change the password in the **Users Configuration** section.
- Step 4** Click **Reset Password**.
The **Reset Username Password** dialog box appears.
- Step 5** Enter the new password in the **New Password** field.
The password must be a combination of alphanumeric (a-z, A-Z, 0-9) and special (+, #, %) characters. The minimum number of characters in the password is eight and the maximum is 127. The password must not contain the user name.
- Step 6** Retype the same password in the **Retype Password** field.
- Step 7** Click **Reset Password**.
A confirmation message appears.
- Step 8** Click **OK**.
-

Delete Users

Use this task to delete users. Only an admin or superuser can delete users. Superusers cannot be deleted using this task.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

-
- Step 1** Click **Users & Access** in the left panel.
- Step 2** Click the **Users** tab.
- Step 3** Select the check box corresponding to the user you want to delete in the **Users Configuration** section.
- Step 4** Click **Delete User**.
A confirmation message appears.
-

Single sign-on (SSO)

This chapter describes the tasks to create and enable Single Sign On in Cisco Optical Site Manager using Security Assertion Markup Language (SAML) and Central Authentication Service (CAS).

Create and Enable SSO with SAMLv2

Use this task to configure and enable SSO SAMLv2 details. Only an admin can configure SSO SAMLv2 details.

Procedure

- Step 1** Click **Users & Access** in the left panel.
 - Step 2** Click the **SSO SAMLv2** section to expand it.
 - Step 3** Select the **Enable SAML** check box to enable the SAMLv2 protocol.
 - Step 4** Perform any one of the following:
 - Type the entity ID and metadata URL of the identity provider in the **IDP Entity ID** and **IDP Metadata Url** fields respectively.
 - Type the entity ID and metadata of the identity provider in the **IDP Entity ID** and **IDP Metadata** fields respectively.
 - Step 5** (Optional) Type the **Proxy Address** and **Proxy Port**.
 - Step 6** Click **Apply**.
-

Create SSO with CAS

Use this task to add an SSO user with CAS. Only an admin can add SSO users.

Ensure that both SSO users and other users are different.

Procedure

- Step 1** Click **Users & Access** in the left panel.
- Step 2** Click the **SSO CAS** section to expand it
- Step 3** In the **SSO Users** area, perform these steps:
 - a) Click the + button.

The **Creat SSO User** dialog box appears.
 - b) Enter the username in the **Username** field.
 - c) Choose the user group from the **Group** drop-down list.

The options are *viewer* and *editor*. The viewer when mapped for SSO, can only view the Cisco Optical Site Manager configurations. The Editor when mapped for SSO, can configure devices.

- Step 4** Click **Apply**.
A confirmation message appears.
- Step 5** Click **Yes**.
-

Enable SSO with CAS

Use this task to enable SSO. Only an admin or superuser can enable SSO.

Procedure

- Step 1** Click **Users & Access** in the left panel.
- Step 2** Click the **SSO CAS** tab.
- Step 3** In the **SSO CAS** page, perform these steps:
- Click **SELECTION** to expand the section.
 - Select the **Enable CAS** check box to enable SSO with CAS on Cisco Optical Site Manager.
 - Enter the EPNM server IP address in the **IP Address** field.
 - (Optional) You can change the port number in the **Port** field. The default port number is 443.
- Step 4** Click **Apply**.
A confirmation message appears.
- Step 5** Click **Yes**.
-

Manage External Authentication

This chapter describes the tasks related to external authentication in Cisco Optical Site Manager.

Manage External Authentication

Cisco Optical Site Manager supports RADIUS and TACACS modes of external authentication. Ensure that you enable and use either RADIUS or TACACS authentication method. You can add a maximum of up to ten servers for each of RADIUS or TACACS on Cisco Optical Site Manager.

There should be at least one RADIUS or TACACS authentication server that is configured for authentication to be enabled. In order to delete the last RADIUS or TACACS server, you must disable the external authentication first, and then delete the RADIUS or TACACS server.

When your login to Cisco Optical Site Manager with the external authentication enabled, Cisco Optical Site Manager first tries with the configured list of servers. If external authentication servers are not reachable, then

Cisco Optical Site Manager uses local authentication provided the local authentication is enabled on Cisco Optical Site Manager.

To manage Cisco Optical Site Manager, the following users are created:

- Local users (local authentication)—Specifies users who are created to manage Cisco Optical Site Manager instances.
- External users (external authentication)—Specifies users who are created on the external authentication servers.

For more information related to users, see .

The following table lists some external authentication scenarios that describe some possible authentication errors, causes, and actions.

Table 35: External and Local Authentication Scenarios

External and Local Authentication Combination	Possible Authentication Scenario	Possible Cause	Action to be Taken
• External Authentication Enabled and Local Authentication Disabled	Server denies authentication	External username or password is incorrect	Enter the correct username and password to log in to the system.
	Server not reachable	IP address, shared secret or port number is not configured correctly although username or password could be correct	You are locked out of the system. Ensure that you have configured correct IP address, shared secret, and port number.
• External authentication enabled and Local authentication enabled	Server denies authentication (although location authentication is enabled)	External username or password is incorrect	Enter the correct username and password to log in to the system. Local authentication only works when the RADIUS or TACACS external servers are not reachable.
	Server not reachable (Local authentication is enabled)	IP address, shared secret, port number is not configured correctly although username or password could be correct	Use local authentication credentials to log in to Cisco Optical Site Manager.

Limitations for RADIUS or TACACS Authentication

- External user list is maintained with username and its respective group (admin, editor, or viewer). The user list is populated whenever a new username is successfully authenticated. This user list is limited to 500 users. The **Clear External Users List** button available under the **External Authentication** tab is activated when 450 users limit is reached. Whenever you click the **Clear External Users List** button,

the external users are cleared. In the user list, if the user limit is reached (500 users), then the new external user (501th external user) cannot login to Cisco Optical Site Manager.

If you are logged in as external user and cleared the list, ensure that you must relogin on all the logged-in sessions. If you do not relogin, the system might not respond properly and information might not appear properly.

- External authentication is applicable only on Cisco Optical Site Manager web user interface. External authentication using logging into the Netconf console is not supported.

RADIUS Authentication

Use the following tasks to manage RADIUS authentication on Cisco Optical Site Manager.



Note Only an admin or superuser can manage RADIUS authentication on Cisco Optical Site Manager.

Create RADIUS Server Entry

Use this task to create RADIUS server entry on Cisco Optical Site Manager. Only an admin can add RADIUS server.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Ensure that you have added Cisco Optical Site Manager instances with RADIUS IP addresses in the Cisco Secure ACS server.

Procedure

- Step 1** Click **Users & Access** in the left panel.
- Step 2** Click the **External Authentication** tab.
- Step 3** In the **RADIUS Configuration** section, perform the following steps:
- a) Click the + button.
The **Create RADIUS Server Entry** dialog box appears.
 - b) Enter the following fields:
 - **Name**—Name of the RADIUS server.
 - **Host**—IPv4 or IPv6 address of the RADIUS server.
 - **Authentication Port**—1812 is default for RADIUS. The range is from 0 to 65535. RADIUS server must be running on the port that is configured.
 - **Shared Secret**—Shared secret configured on the RADIUS server.
 - **Confirm Secret**—Confirm the above shared secret for the RADIUS server.

- c) Click **Apply**.

The RADIUS server is added to the RADIUS server list on Cisco Optical Site Manager.

Enable RADIUS Authentication

Use this task to enable RADIUS authentication. Only an admin or superuser can enable RADIUS authentication. You can add up to ten RADIUS servers on Cisco Optical Site Manager.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Create RADIUS Server Entry, on page 125](#)

Procedure

Step 1 Click **Users & Access** in the left panel.

Step 2 Click the **External Authentication** tab.

Step 3 In the **RADIUS Configuration** area, perform the following steps:

- a) Click **SELECTION** to expand it.
- b) Check the **Enable RADIUS Authentication** check box to enable RADIUS server on Cisco Optical Site Manager.
- c) Check the **Enable node as final authentication when RADIUS server is reachable** check box to enable the RADIUS server as a final authentication option.

Note When you enable external authentication, local authentication is enabled by default to avoid lock out scenarios (such as configuration errors). Until external authentication is enabled, local authentication can be enabled or disabled based on your requirement.

- d) In the **Timeout (seconds)** field, enter the time interval (seconds) to wait for a response from the RADIUS server before retrying to contact the server.
- e) In the **Attempts** field, enter the number of attempts to contact the first RADIUS server in the authentication list. If there is no response after the allotted number of attempts, then Cisco Optical Site Manager tries to contact the the next RADIUS server in the list.

Step 4 Click **Apply**.

Modify RADIUS Server Parameters

Use this task to modify RADIUS authentication settings. Only an admin or superuser can modify RADIUS server settings.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#) and [Create RADIUS Server Entry, on page 125](#)

Procedure

- Step 1** Click **Users & Access** in the left panel.
The **Users & Access** page is displayed.
- Step 2** Click the **External Authentication** tab.
- Step 3** In the **RADIUS Configuration** area, select the RADIUS server to edit from the list of available RADIUS servers and perform the following tasks:
- a) Click the **Edit** button.
 - b) Edit the following fields:
 - **Name**
 - **Host**
 - **Authentication Port**
 - **Shared Secret**
 - c) Click **Apply**.
-

Disable the RADIUS Authentication

Use this task to disable RADIUS authentication.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Users & Access** in the left panel.
The **Users & Access** page is displayed.
- Step 2** Click the **External Authentication** tab.
- Step 3** In the RADIUS Configuration area, perform the following steps:
- a) Click **SELECTION** to expand it.
 - b) Uncheck the **Enable RADIUS Authentication** check box to disable RADIUS authentication on Cisco Optical Site Manager.
 - c) Uncheck the **Enable node as final authentication when RADIUS server is reachable** check box to disable the RADIUS server as a final authentication option.

Note When external authentication is disabled, then local authentication is disabled by default.

- Step 4** Click **Apply**.
-

Delete the RADIUS Server from Cisco Optical Site Manager

Use this task to delete the RADIUS server entry from Cisco Optical Site Manager.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Users & Access** in the left panel.
- Step 2** Click the **External Authentication** tab.
- Step 3** In the **RADIUS Configuration** area, select the RADIUS server to delete and click the - button.
-

TACACS+ Authentication

Use the following tasks to manage TACACS+ authentication.



Note Only users with admin privileges can manage TACACS+ authentication on Cisco Optical Site Manager.

Create TACACS+ Server Entry on Cisco Optical Site Manager

Use this task to create TACACS+ server entry on Cisco Optical Site Manager. Only an admin or superuser can add TACACS+ server. You can add upto ten TACACS+ server.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Ensure that you have added Cisco Optical Site Manager instances with TACACS+ IP addresses in the Cisco Secure ACS server.

Procedure

- Step 1** Click **Users & Access** in the left panel.
- Step 2** Click the **External Authentication** tab.
- Step 3** In the **TACACS+ Configuration** section, perform the following steps:
- Click the + button.
The **Create TACACS+ server Entry** dialog box appears.
 - Enter the following fields:
 - **Name**—Name of the TACACS+ server.
 - **Host**—IP address of the TACACS+ server.

- **Authentication Port**—49 is default for TACACS+. TACACS+ server must be running on the port that is configured.
- **Shared Secret**—Shared secret configured on the TACACS+ server.
- **Confirm Secret**—Confirm the above shared secret for the TACACS+ server.

c) Click **Apply**.

The TACACS+ server is added to the TACACS+ server list on Cisco Optical Site Manager.

Enable TACACS+ Authentication

Use this task to enable TACACS+ authentication.

Before you begin

- [Log into Cisco Optical Site Manager, on page 2](#)
- [Create TACACS+ Server Entry on Cisco Optical Site Manager, on page 128](#)

Procedure

- Step 1** Click **Users & Access** in the left panel.
The **Users & Access** page is displayed.
- Step 2** Click the **External Authentication** tab.
- Step 3** In the **TACACS+ Configuration** section, perform the following steps:
- a) Click **SELECTION** to expand it.
 - b) Check the **Enable TACACS+ Authentication** check box to enable TACACS+ server on Cisco Optical Site Manager.
 - c) Check the **Enable node as final authentication when TACACS+ server is reachable** check box to enable the TACACS+ server as a final authentication option.
Note When you enable external authentication, local authentication is enabled by default to avoid lock out scenarios (such as configuration errors). Until external authentication is enabled, local authentication can be enabled or disabled based on your requirement.
 - d) In the **Timeout (seconds)** field, enter the time interval (seconds) to wait for a response from the TACACS+ server before retrying to contact the server.
 - e) In the **Attempts** field, enter the number of attempts to contact the first TACACS+ server in the authentication list. If there is no response after the allotted number of attempts, then Cisco Optical Site Manager tries to contact the the next RADIUS server in the list.
- Step 4** Click **Apply**.
-

Modify TACACS+ Server Parameters

Use this task to modify TACACS+ authentication settings. Only an admin or superuser can modify TACACS+ server settings.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#) and [Create TACACS+ Server Entry on Cisco Optical Site Manager, on page 128](#)

Procedure

- Step 1** Click **Users & Access** in the left panel.
- Step 2** Click the **External Authentication** tab.
- Step 3** In the **TACACS+ Configuration** area, select the TACACS+ server to edit from the list of available TACACS+ servers and perform the following tasks:
- Click the **Edit** button.
 - Edit the following fields:
 - **Name**
 - **Host**
 - **Authentication Port**
 - **Shared Secret**
 - Click **Apply**.
-

Disable the TACACS+ Authentication

Use this task to disable TACACS+ authentication.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Users & Access** in the left panel.
The **Users & Access** page is displayed.
- Step 2** Click the **External Authentication** tab.
- Step 3** In the **TACACS+ Configuration** area, perform the following steps:
- Click **SELECTION** to expand it.
 - Uncheck the **Enable TACACS+ Authentication** check box to disable TACACS+ authentication on Cisco Optical Site Manager.

- c) Uncheck the **Enable node as final authentication when TACACS+ server is reachable** check box to disable the TACACS+ server as a final authentication option.

Note When external authentication is disabled, then local authentication is disabled by default.

Step 4 Click **Apply**.

Delete the TACACS+ Server from Cisco Optical Site Manager

Use this task to delete the TACACS+ server entry from Cisco Optical Site Manager.

Before you begin

[Disable the TACACS+ Authentication, on page 130](#)

Procedure

- Step 1** Click **Users & Access** in the left panel.
- Step 2** Click the **External Authentication** tab.
- Step 3** In the **TACACS+ Configuration** area, select the TACACS+ server to delete and click the - .

Manage x509 Certificates

Table 36: Feature History

Feature Name	Release Information	Description
Improved x509 Certificate Handling	Cisco IOS XR Release 24.1.1	<p>You can now upload an x509 certificate in the Personal Information Exchange (PEX) format, which improves the security of the connection between the Cisco Optical Site Manager and its server. PEX files can be password-protected, offering an extra layer of protection against potential attackers.</p> <p>The options to automatically generate and upload certificates are available in the new x509 Certificates tab under the Users & Access menu.</p>

x509 certificates are used to establish a secure communication channel between a client and a server. In Cisco Optical Site Manager, you have the option to either automatically generate a self-signed x509 certificate or

upload CA authorized certificate in digital or PFX format. This certificate is essential for building trust between the client and server, and it helps protect sensitive information from unauthorized parties. Additionally, x509 certificates provide the ability to detect any tampering or modification of data during transmission.

Generate and Upload x509 Certificates

Use this task to automatically generate and apply a x509 certificate. You can also use this task to upload the certificate in digital (.cert) or PFX (.pfx) file formats.

Before you begin

[Log into Cisco Optical Site Manager, on page 2](#)

Procedure

- Step 1** Click **Users & Access** in the left panel.
 - Step 2** Click the **x509 Certificates** tab.
 - Step 3** Click the **Certificates Configuration** section to expand it.
 - Step 4** Perform any one of the following steps:
 - a) Click **Auto Generate and Apply Certificate** to generate and apply a self signed certificate automatically.
 - b) To upload a digital certificate, perform these steps:
 1. Select *CERT + KEY* from the **Certificate Type** drop-down list.
 2. Select the *.cert* or *.crt* file from the **Certificate File** field and click **Upload**.
 3. Select the *.key* file from the **Key File** field and click **Upload**.
 4. Click **Apply**.
 - c) To upload a Personal Information Exchange (PFX) certificate, perform these steps:
 1. Select *PFX + PASSWORD* from the **Certificate Type** drop-down list.
 2. Select the *.pfx* file from the **Certificate File** field and click **Upload**.
 3. Type the password in the **Password** field if the input private key file is password protected.
 4. Click **Apply**.
-

View Active Login User Details

This chapter describes the procedures involved in monitoring active users and their login records.

View Active Login Sessions

You can view the currently logged in users and their details, such as username, login time, interface name, and IP address. To view the list of currently logged in users, perform these steps:

Before you begin

[Log into Cisco Optical Site Manager, on page 2.](#)

Procedure

- Step 1** Click **Users & Access** in the left panel.
The **Users & Access** page is displayed.
 - Step 2** Click the **Login** tab.
 - Step 3** Click **Active Login Sessions** to view the currently logged in users and their details.
-

View User Login History

You can view the user login history and their details, such as login ID, username, last login and logout date, interface name, and IP address. To view the user login history, perform these steps:

Before you begin

[Log into Cisco Optical Site Manager, on page 2.](#)

Procedure

- Step 1** Click **Users & Access** in the left panel.
The **Users & Access** page is displayed.
 - Step 2** Click the **Login** tab.
 - Step 3** Click **Last Successful Logins** to view user login history and their details.
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Manage Web Configurations

Configure Netconf and Nodal Craft Session Timeout

To configure timeout for Netconf and Nodal Craft sessions, follow these steps:

Before you begin

[Log into Cisco Optical Site Manager, on page 2.](#)

Procedure

- Step 1** Click **Users & Access** in the left panel.
- Step 2** Click the **General** tab.
- Step 3** To configure the Nodal Craft session timeout, perform these steps in the **Nodal Craft Session Timeout Configuration** section:
- Select the time in minutes from the **Idle Session Timeout** drop-down.
This setting configures how long users are inactive before they are signed out of the Nodal Craft session.
 - Select the time in hours from the **Absolute Session Timeout** drop-down.
This setting configures the maximum amount of time a session can be active.
 - Click **Apply**.
- Step 4** To configure the Netconf session timeout, perform these steps in the **Netconf Session Timeout Configuration** section:
- Select the time in minutes from the **Idle Session Timeout** drop-down.
This setting configures how long users are inactive before they are signed out of the Netconf session.
 - Click **Apply**.
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