Configuration Guide for Cisco Optical Site Manager, IOS XR Release 7.11.x

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C H A P T E R 1

Cisco Optical Site Manager Overview

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

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.
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**.

Users Access and Authentication

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

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 1

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. a) **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). b) **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.

   c) Retype the password in the **Retype Password** field.

   d) **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.

   e) **Warning Before Expiry (days)**—Enter the number of days the user is warned of the expiry of the password.

   f) **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.

   g) **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

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

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:

a) Click **SELECTION** to expand the section.

b) Select the **Enable CAS** check box to enable SSO with CAS on Cisco Optical Site Manager.

c) Enter the EPNM server IP address in the **IP Address** field.

d) (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 1: 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 reacheable.
	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 1

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 upto ten RADIUS servers on Cisco Optical Site Manager.

Before you begin

- Log into Cisco Optical Site Manager, on page 1

- Create RADIUS Server Entry, on page 9

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 reacheable** 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 1 and Create RADIUS Server Entry, on page 9

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 1

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 reacheable** 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 1

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.

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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 1

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:

a) Click the + button.

    The **Create TACACS+ server Entry** dialog box appears.

b) 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

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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 reacheable** 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

and

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:

a) Click the **Edit** button.

b) Edit the following fields:

- **Name**

- **Host**

- **Authentication Port**

- **Shared Secret**

c) Click **Apply**.

Disable the TACACS+ Authentication

Use this task to disable TACACS+ authentication.

Before you begin

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:

a) Click **SELECTION** to expand it.

b) 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 reacheable** 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

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 Web Configurations

This chapter describes the tasks related to generating and applying web certificates, configuring Nodal Craft and Netconf session timeout.

Generate and Apply Certificates

Certificates are required to enable security protocols for Cisco Optical Site Manager. Use this task to generate a self-signed certificate or upload your own certificate.

Before you begin

Procedure

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

The **Users & Access** page is displayed.

Step 2   Click the **Web Configurations** tab.

Step 3   To automatically generate and apply certificate, click **Auto Generate & Apply Certificate** in the **Web Certificates Configuration** section.

Step 4   To manually generate and apply certificates, perform the following steps in the **Web Certificates Configuration** section:

     a) In the **Certificate file** field, click the **Select Files** to select a certificate file in *.crt*, *.cert*, or *.cer* formats.

     b) In the **Key file** field, click the **Select Files** to select a key file in *.key* format.

     c) Click **Apply** to upload and apply the certificate.

Configure Netconf and Nodal Craft Session Timeout

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

Before you begin

Procedure

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

Step 2   Click the **Web Configurations** tab.

Step 3   To configure the Nodal Craft session timeout, perform these steps in the **Nodal Craft Session Timeout Configuration** section:

a) Select the time in minutes from the **Idle Session Timeout** drop-down to configure how long users are inactive before they are signed out of the Nodal Craft session.

b) Select the time in hours from the **Absolute Session Timeout** drop-down to configure the maximum amount of time a session can be active.

c) Click **Apply**.

Step 4   To configure the Netconf session timeout, perform these steps in the **Netconf Session Timeout Configuration** section:

a) Select the time in minutes from the **Idle Session Timeout** drop-down to configure how long users are inactive before they are signed out of the Netconf session.

b) 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 1.

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 1.

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.

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.

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 1

- Ensure that LLDP is enabled on the GigabitEthernetinterface of the NCS 1010 device. For more details about enabling LLDP, see Link Layer Discovery Protocol Support on Management Interface.

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.

    a) To create an optical degree, perform these steps:

        1. Click the + button.

        The **Create Optical Degree** dialog box appears.

        2. Select the **Degree**, **Line In**, and **Line Out**, values from their respective drop-down lists.

        3. (Optional) Enter a description in the **Description** field.

        4. Click **Apply**.

    b) 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**.

    c) To delete an optical degree, perform these steps:

        1. Check the check box corresponding to the optical degree you want to delete.

        2. Click the **-** button to delete the selected optical degree.

        A confirmation message appears.

        3. 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

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:

a)   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.

b) Select the unique ID of the device from the **UID** drop-down list
The **Port** drop-down is displayed.

c) 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.

d) 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.

e) Click the **Add** button to add the selected Internal Patch Cord options to the **Adding** list.

f) (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.

Fiber Attributes

The Fiber Attributes tab lists the attributes of the fibers that are connected to the optical side.

Manage Fiber Attributes

Use this task to create, view, modify, or delete fiber attributes of a span.

Before you begin

Log into Cisco Optical Site Manager, on page 1

Procedure

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

Step 2   Click the **Optical Configuration** tab and then click **Fiber Attributes** to expand it.
A list of already added opticaldegrees is displayed.

Step 3   Perform these steps, as needed.

a) To create a fiber attribute, perform these steps:

1. Click the + button corresponding to a row you want to create a fiber attribute.

   The **Fiber Attributes** section is displayed.

2. Click the **Fiber Attributes** section to display it.

3. Enter the fiber ID in the **Fiber ID** field.

4. Select the **Fiber Direction**, **Fiber ID**, **Fiber Type**, **Length**, **PMD**, **Attenuator In**, and **Attenuator Out** from their respective scroll-lists.

5. Click **Apply**.

   The fiber attribute is created and added to the table that displays the following information.

   • **Fiber Direction**—Specifies the TX or RX direction.

   • **Fiber ID**—Specifies the fiber number in the duct.

   • **Fiber Type**—Specifies the type of fiber deployed.

   • **Length**—Specifies the length of the optical span in kms or miles.

   • **PMD**—Specifies the polarization mode dispersion (PMD) fiber coefficient in ps/sqrt (km).

   • **Attenuator In**—Specifies the input attenuation in dB between the node output port (typically LINE-TX port) and the input of the fiber span. The span may include patchcords, attenuators, and patch panels.

   • **Attenuator Out**—Specifies the output attenuation in dB between the node input port (typically LINE-RX port) and the output of the fiber span. The span may include patchcords, attenuators, and patch panels.

b) To modify the Fiber Type, Length, PMD, Attenuator In, Attenuator Out, or PMD values on an optical degree, perform these steps:

1. Hover over the related cell for which you want to edit the value.

2. Select a value from the drop-down list.

3. Click **Apply**.

   A confirmation message appears.

4. Click **Yes**.

c) To delete a fiber attribute, perform these steps:

1. Select the check box corresponding to the fiber attribute you want to delete.

2. Click the **-** button to delete the selected fiber attribute.

   A confirmation message appears.

3. Click **Yes**.

   The fiber attribute is deleted from the table.

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

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 1: Using Amplifier Gain Adjustment to Compensate for System Degradation
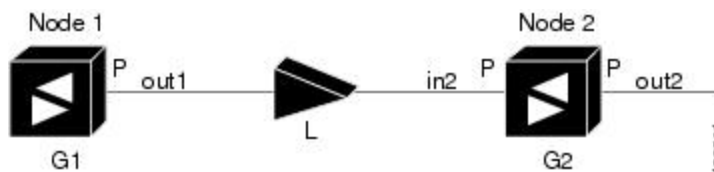
In the preceding figure, Node 1 and Node 2 are equipped with booster amplifiers and preamplifiers. The input power received at the preamplifier on Node 2 (Pin2) depends on the total power launched by the booster amplifier on Node1, Pout1(n) (where n is the number of channels), and the effect of the span 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:

Pin2 = LPout1(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:

Pout-Pre-2 = L x GPre-2 x Pout1(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:

GPre-2' = GPre-2 (L/ L') = GPre-2 + [Pout-Pre-2 –Exp(Pout-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, t1 and t2, as traffic fluctuations occur. In the formula, 'm' and 'n' denote distinct channel numbers, and Pin/ch signifies the input power per channel.

- $P_{in}(t1) = nP_{in}/ch$

- $P_{in}(t2) = mP_{in}/ch$

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 1

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 1

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 1

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.

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

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.

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 1.

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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.

Configure Amplifier Parameters

Use this task to configure the optical amplifier parameters.

For more details about the supported cards, see Supported Cards and Passive Devices, on page 41

Before you begin

- Log into Cisco Optical Site Manager, on page 1

- Open the Card View, on page 44

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 2: Amplifier Parameters for Amplifier Cards

Parameter	Description	Options
Working Mode	Shows the working mode.	• Channel Power • Total Power • Optimized • Fixed Gain • Start and Hold

Parameter	Description	Options
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.	• 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 3: 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.	—
Working Mode	Shows the working mode.	• Channel Power • Total Power • Optimized • Fixed Gain • Start and Hold
Role	Role of the amplifier.	• Preamplifier • Booster
Actual Gain (dB)	Actual gain setpoint.	—
Target Gain (dB)	Target gain setpoint.	—

Parameter	Description	Displayed Values
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.	• 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.	—
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.	—

Parameter	Description	Displayed Values
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 Supported Cards and Passive Devices, on page 41

Before you begin

- Log into Cisco Optical Site Manager, on page 1
- Open the Card View, on page 44

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 4: 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: • 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.	• 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 Supported Cards and Passive Devices, on page 41

Before you begin

- Log into Cisco Optical Site Manager, on page 1
- Open the Card View, on page 44

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 5: 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.	• 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.	• 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 6: 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 Supported Cards and Passive Devices, on page 41

Before you begin

- Log into Cisco Optical Site Manager, on page 1
- Open the Card View, on page 44

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 7: 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: • 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.	• 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 Degrade High (mW)	(Display only) Shows that the current value of the optical power degrade high threshold. Power Degrade 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.

Connection Verification

Connection verification validates card connectivity and detects incorrect cabling between NCS1K-E-OLT-C and NCS1K14-CCMD-16-C cards. This feature also measures power levels and verifies the optical cables and patchcords in a node for the following:

- Connectivity: Checks whether the cable is connected.

- Insertion Loss: Checks whether the cable loss is within expected value.

A connectivity check signal is generated and transmitted into the DMUX input port of a card by a dedicated laser source. This signal is detected by an embedded photo diode to complete the connection verification.

Note   The connection verification feature is only compatible with OLT-E and CCMD-16 cards.

Supported Cards and Passive Devices

The following table lists the cards and passive devices that support connection verification:

Table 8: Supported Devices and Cards for Connection Verification

Card Type	PIDs
Transponder and Muxponder Cards	• NCS1K14-2.4T-K9 • NCS1K14-2.4T-K9
Active Add/Drop Modules	NCS1K-CNTRL-B-K9

Card Type	PIDs
Optical Add/Drop and Amplifier Modules	• NCS1K-CNTRL-K9 • NCS1K-ILA-R-C • NCS1K-ILA-2R-C • NCS1K-OLT-R-C • NCS1K-E-OLT-C • NCS1K-E-OLT-R-C • NCS1K-E-ILA-C • NCS1K-E-ILA-R-C • NCS1K-E-ILA-R-C-2 • NCS1K14-CNTLR-K9 • NCS1K14-CTLR-B-K9
Controller Modules	• NCS1K-ILA-C • NCS1K-OLT-C • NCS1K14-CCMD-16-C

Note The passive devices require loopback caps on unused ports. The connection verification version of the passive devices is shipped with loopback caps.

CHAPTER **4**

Cisco Optical Site Manager Topology

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

- Cisco Optical Site Manager Views, on page 43
- Create a Rack, on page 44
- Open the Card View, on page 44
- View Voltage, Temperature and Current Information, on page 45
- View Power Monitoring Parameters, on page 45
- View Passive Device Details, on page 46

Cisco Optical Site Manager Views

The COSM Topology page helps you access the topology in two different views:

- The Rack View

- The Table View

You can display or hide the left panel in either view by using the toggle button on the top-right of the COSM topology page.

Rack View

The left panel of the rack view contains the list of racks and the NCS 1000 cards. You can navigate to the nodes in the network by clicking the node or chassis name from the expanded rack view in the left panel or by clicking the node from the rack view. When you hover over a node in the rack view, the chassis type and alarm details are displayed. You can zoom in or zoom out the view by clicking the + and - symbols.

Table View

The table view displays the Chassis List table that lists the UIDs of the nodes, rack number, Chassis Type, and Description.

You can navigate to the nodes in the network by clicking the chassis name from the expanded rack view in the left panel or by clicking the ID of the chassis in the Chassis List.

Create a Rack

Use this task to add a rack.

Before you begin

Log into Cisco Optical Site Manager, on page 1

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 1

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 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 1

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 **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 1

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.

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 1

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.

Configure Devices

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

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 1

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 exapnd 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 crresponding 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 crresponding 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.

Manage Devices

Use this task to add, synchronize, or delete devices.

Before you begin

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 exapnd it.

       A table appears that lists all the devices that are configured.

Step 3   Perform these steps, as needed:

    a) To create a new device, perform these steps:

       1. Click the **Add Device** icon.

          The Add Device dialog box appears.

       2. Enter the Netconf port in the **Netconf Port** field.

3. Choose the **Device Type** from the drop-down list.

4. Enter the Device Name and IP Address in their respective fields.

5. Select an authorization group from the **Auth Group** drop-down list.

6. Click **Add**.

   The new device is added to the table.

b) To delete a device, perform these steps:

1. Select the check box corresponding to the device you want to delete.

2. Click the **Delete Devices** button.

   A confirmation message appears.

3. Click **OK**.

   The device is deleted from the table.

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 1

Procedure

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

Step 2   In the **Devices** tab, click the **Diagnostics** section to exapnd 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.

View Inventory

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

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 1

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

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.

Node Functional View

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

Understanding Node Functional View

The Node Functional View (NFV) provides you with a display of the components and the association links between them in a graphical view. The graphical representation allows you to understand the connections and also guides you to troubleshoot.

The NFV can be accessed by clicking the hamburger icon at the top-left of the page in Cisco Optical Site Manager web interface and selecting **Node Functional View**.

There are three views in the NFV representation:

View	Description
Rack view	Displays a visual representation of a rack, including the node and all its cards.

View	Description
Map view	Displays a visual map of the components of the node (sides, cards, and so on), connected by patch cords according to physical connections.
	In the map view, you can switch between different contexts, such as the node view, side view, card view, circuit view, port view, and patch cord view. Based on the chosen context, the relevant details are displayed on the right side of the screen.
	When you expand a node or a branch in the map view, the cards associated with them are highlighted in the Rack view. Similarly, when you expand a card in the map view, the card is zoomed in and the corresponding rack is highlighted and zoomed in the Rack view.
	You can view the circuits and Internal Patch Cords (IPC) connecting the devices and line cards in the map view.
Detail view	Displays all relevant information about nodes, sides, cards, circuits, ports, or patch cords in the map view.

Alarm Status

The highest alarm severity appears as the overall status on the right. Possible alarm statuses, sorted by severity, are:

- Normal - Displayed with White color

- Minor - Displayed with Yellow color

- Major - Displayed with Orange color

- Critical - Displayed with Red color

Action Icons in NFV

Icon	Description
Scroll View/Fit View	Scrolls or fits the rack view.
Zoom Reset	Resets the zoomed view to normal view.
Refresh	Refreshes the view with current information.
Last graph update	Displays the last timestamp of NFV pane refresh that is done using the **Refresh** button.

Icon	Description
Open/Close Rack View	Opens or closes the rack view.
Status Filters	Displays only the alarms with specific severity. Click this button and check the **Critical**, **Major**, **Minor**, or **Normal** check boxes and click **Apply**.
User Settings	Sets the user preferences. See #unique_75.
Zoom In	Zooms in the map view.
Zoom Out	Zooms out the map view.
Show/Hide Shoulder	Displays or hides the right shoulder.

View Details of Node

Use this task to view the details of the node in the Node Functional View.

Before you begin

Log into Cisco Optical Site Manager, on page 1

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 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

- (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

- Icon corresponding to the alarm severity level

• (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

View Details of OLA Node

Use this task to view the details of the OLA 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

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 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 1

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 OLA Node

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

Before you begin

Log into Cisco Optical Site Manager, on page 1

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 1

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 1

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 the patch cord in NFV.

Before you begin

Log into Cisco Optical Site Manager, on page 1

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.

Step 3   View the following information that is displayed in the right shoulder:

• Type of the patch cord

• Status of the patch cord as a colored label and an icon

• **Connections** tab - Displays the ports that the patch cord connects with their cards and the aggregate power.

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 1

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.

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

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:

a)   Select a date format from the **Date format** drop-down list.
b)   Select the channel from the **Configuration channel** drop-down list.
c)   Select a unit for length from the **Length measurement unit** drop-down list.

Step 4   In the **Right shoulder** tab, perform the following steps:

a)   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.
b)   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.

c) 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:

a) Enter a degree space in the **Degrees space from the center** field.

b) Enter a value in the **Layers spacing** field to set the horizontal distance between the components in the map view.

c) Enter a value in the **Column spacing** field to set the vertical distance between the components in the map view.

d) 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:

a) 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.

b) 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.

c) 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.

Display Active Circuit List

You can view the total number of active circuits passing through a particular card on a degree.

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

Before you begin

Procedure

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

The Node Functional View page appears.

Step 2 Select and right click **Degree**. Click Open.

In the right side pane, you can see the total number of circuits passing through the degree under **Circuit List**.

Step 3   Select and right click the card. Click **Open**.

In the right side pane, you can see the total number of circuits passing through the card under **Circuit List**.

Display Active Circuit List

Provision Line Cards

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

For details about the supported line cards, see the following topics:

Open the Card View

Use this task to open the card view.

Before you begin

Log into Cisco Optical Site Manager, on page 1

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.

Step 4   Right-click the card from the Chassis view and select **Open Card**.

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

Add a Card Mode

Use this task to configure the card modes on the line cards. You can configure the line cards in the following two modes:

- **Muxponder mode (MXP-1K)** - In this mode, trunk ports 0 and 7 are synchronized with the same trunk rate and offer options of either 600G or 1000G. The mapping of clients to trunks follows a sequential order. This mode is only available for the NCS1K14-2.4T-X-K9 line card.

  Under the 600G trunk rate setting, both trunks 0 and 7 are provisioned with 600G each. Client ports 1 and 4 operate at 400GE each, and the data from client port 2, also at 400G, is split between the trunks.

  When configured with a trunk rate of 1000G, trunks 0 and 7 are configured with 1000G each. Client ports 1, 2, 4, and 5 are set to 400GE each, whereas the traffic from client port 3, also operating at 400GE, is split between the trunks.

- **Muxponder slice mode (MXP-SLICES-1K)** - In this mode, each trunk port is configured independently with different trunk rates. The client-to-trunk mapping is fixed. Client ports 1, 2, and 3 are assigned to trunk 0 while client ports 4, 5, and 6 are assigned to trunk 7.

For more details about the card modes and supported data rates, see Configuring the Card Mode.

Before you begin

- Log into Cisco Optical Site Manager, on page 1
- Open the Card View, on page 67

Procedure

Step 1   Click the **Provisioning** tab.

Step 2   Click the **Card Modes** section to expand it.

Step 3   Click the **Add Card mode** button.

The Card Configuration Wizard dialog appears.

Step 4   Choose the card mode from the drop-down list and click **Add**.

Step 5   Click **Next**.

Step 6   Select the trunk and client rate for the listed slices from the **Trunk** and **Client** drop-down lists.

                The **Client** drop-down lists are only enabled if the trunk rate from the **Trunk** drop-down list is selected.

Step 7   Click **Next**.

Step 8   In the **Add IPC** window, perform the following steps to add internal patch cords:

         a)   Select the port from the **From** drop-down list.

         b)   Select the **Chassis**, **UID**, **Slot** and **Port** from the **To** drop-down lists.

         c)   Click **Add**.

         d)   (Optional) To remove a added internal patch cord, click the cross (x) on the internal patch cord under **Adding** or click the **Reset** button to remove all the added internal patch cords.

         e)   Click **Next**.

Step 9   In the **Trunk Details** window, perform the following steps:

         a)   Select the trunk port from the **Select trunk for configure the interfaces** drop-down list.

         b)   In the **Optical Channel** section, select the **Admin State**, **Frequency**, **Baud Rate**, **Bits Per Symbol** and **Rate** from their corresponding drop-down lists.

Step 10   In the **Configuration Recap** window, expand the Trunk and Client sections to verify the configured details.

Step 11   Click the **Finish** button to add the card mode.

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 1

- Open the Card View, on page 67

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**.

Provision Trail Trace Monitoring

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

Before you begin

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 9: 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
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.	• True • False
Detect Mode	Sets the mode for detecting the discrepancy between the expected and received trace.	• 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 1
- Open the Card View, on page 67

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 10: ODU Interface Settings

Parameter	Description	Options
Port	(Display only) Displays the port name.	—
Description	Displays the description of the port.	—
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).	• 1E-5 • 1E-6 • 1E-7 • 1E-8 • 1E-9

Parameter	Description	Options
Squelch Mode	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. Alternatively, an AIS can be invoked. 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.	• 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.	• 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

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 11: 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).	• 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.	• 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.	• 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.	• 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.	• 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

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 12: 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.	• NA • Auto (default) • On • Off
Duplex	Sets the expected duplex capability of ports.	• Full • Half
Mapping	Sets the mapping mode.	• CBR • GFP
Auto Negotiation	Enables or disables autonegotiation on the port.	• Disabled • Enabled
Squelch Mode	Sets the squelch mode.	• 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.	• 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 provision the parameters for the optical channels on the card.

Before you begin

- Log into Cisco Optical Site Manager, on page 1
- Open the Card View, on page 67

Procedure

Step 1 Click the **Provisioning** tab.

Step 2 Click the **Optical Channel** section to expand it.

Step 3 Modify required settings described in the following table.

Table 13: Optical Channel Settings

Parameter	Description	Options
Port	(Display only) Displays the port name.	—
Reach	Indicates the distance from one node to another node.	• Auto Provision • List of reach values
SD FEC	Indicates the standard FEC.	• 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

Parameter	Description	Options
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.	• NA • Enable • Disable
Frequency (THz)	Sets the frequency in THz	-
Wavelength (nm)	(Display only) Wavelength is set based on the frequency.	-
Tx Shutdown	(Display only)	• 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.	-
Admin State	Sets the port service state unless network conditions prevent the change.	• 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.	—
Rate	Displays the rate.	—

Step 4   Click **Apply**.

Provision Optical Threshold Settings

Use this task to provision the optical thresholds on the card.

Before you begin

- Log into Cisco Optical Site Manager, on page 1

- Open the Card View, on page 67

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 *1 Day*.
Step 4	Click **Add Optical Threshold** button. **New Optical Threshold** dialog box is displayed.
Step 5	Modify any of the following threshold settings as needed by double-clicking the threshold value, deleting it, and entering a new value.

- **Port**—(Display only) Displays the port number and port type.

- **Laser Bias High**—Sets the maximum laser bias in percentage.

- **RX Power High**—Sets the maximum optical power received in dBm.

- **RX Power Low**—Sets the minimum optical power received in dBm.

- **TX Power High**—Sets the maximum optical power transmitted in dBm.

- **TX Power Low**—Sets the minimum optical power transmitted in dBm.

Step 6	Click **Apply**.
Step 7	Click **Yes** to complete the changes.

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 1

- Open the Card View, on page 67

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 14: G.709 PM Thresholds

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

-
-

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 1
- Open the Card View, on page 67

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 1

- Open the Card View, on page 67

- 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 76.

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 1

- Open the Card View, on page 67

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 15: 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.	• ALS for line cards and control cards. • ALS-OSRI for amplifier cards.
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: • 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: • OSRI-OFF • OSRI-ON
ALS Status	(Display only) ALS status of the device.	• 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

Parameter	Description	Options
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.

Fault Monitoring

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

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.

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 1

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 sepcific 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

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

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

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 hisyory 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 defalut, you can view two alarm profiles:

- Defalut—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 alrams.

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 a node.

Before you begin

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 resouces 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

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.

View Logs

This chapter describes the tasks to view Cisco Optical Site Manager diagnostic logs and view audit logs.

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 1

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:

a) 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 16: 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

Fields	Description
History Logs	Collects the alarms history logs
Inventory Logs	Collects the hardware inventory logs
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

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.

Upgrade Software

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

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

The **Software Manager** page has following tabs which are used for upgrading the device software.

Note The following sequence is mandatory for software upgrade.

1. Use the **Download** tab to download the necessary packages. The relevant procedure is discussed at Download Software Package, on page 94. The downloaded packages appear in the **Software Packages** tab.

2. Use the **COSM Software** tab to view the active software versions.

3. Use the **Device Software** tab to download the NCS 1000 device software packages. The relevant procedure is discussed at Download Device Software , on page 95.

Download Software Package

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

Before you begin

Log into Cisco Optical Site Manager, on page 1

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.

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 1

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**.

Download Device Software

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

Before you begin

- Log into Cisco Optical Site Manager, on page 1

Procedure

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

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

The following details of the software packages are displayed:

- **Name**—Displays the name of the device where the software package is downloaded.

- **Component**—Displays the platform component name.

- **Working SW Version**—Displays the package version that is active.

- **Status**—Displays the progress of the download.

Step 3   Select 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 device 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.

     Note   • We recommend that you limit the number of simultaneous software downloads to eight nodes.

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

Activate Device Software

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

Before you begin

- Log into Cisco Optical Site Manager, on page 1

- Download Device Software , on page 95

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. |

Workflow for Software Downgrade

The **Software Manager** page has four tabs which are used for downgrading the device software.

Note   The following sequence is mandatory for software downgrade.

1. Use the **Cisco Optical Site Manager Software** tab to list the active software versions.

2. Use the **Device Software** tab to download the NCS 1000 device software packages. The relevant procedure is discussed at Download Device Software , on page 95.

3. Use the **Device Software** tab to activate or revert the NCS 1000 device software packages. The relevant procedure is discussed at Activate Device Software, on page 96.

CHAPTER 12

Alarm Troubleshooting

The information on alarms and their clearing procedures can be found in the Alarm Troubleshooting section.

- Alarm Troubleshooting, on page 97

Alarm Troubleshooting

For information about alarms and clearing procedures, see the *Alarm Troubleshooting* chapter in the following guides:

- Troubleshooting Guide for Cisco NCS 1014
- Troubleshooting Guide for Cisco NCS 1010