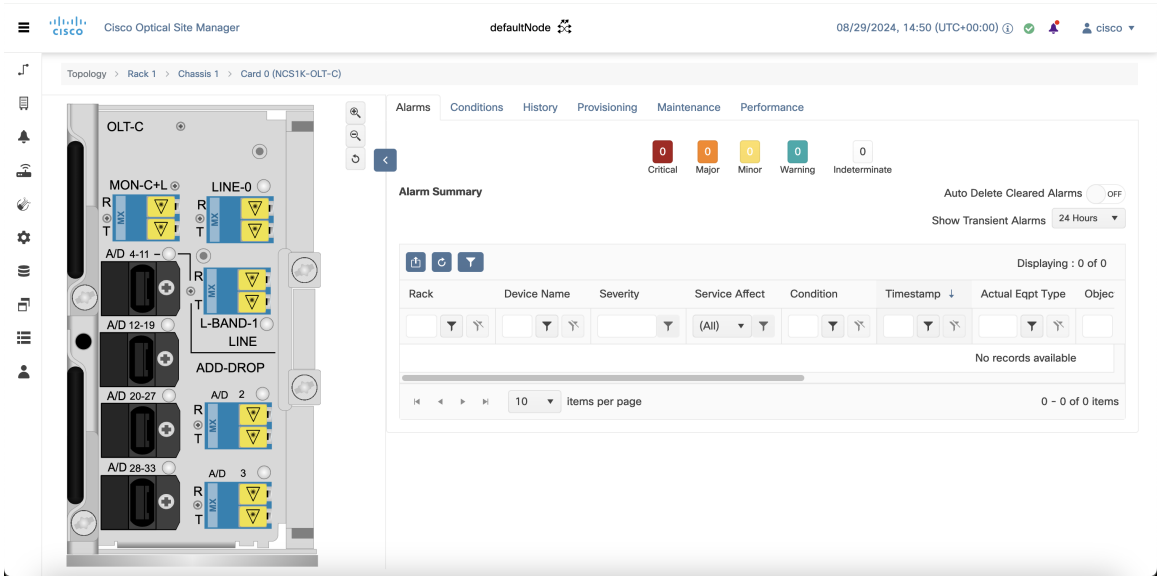
Provision Line Cards

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

Figure 1: Provision Line Cards



Supported Line Cards

Table 1: Feature History

Feature Name	Release Information	Description
Support for NCS1K-OTDR Line Card	Cisco IOS XR Release 25.1.1	Cisco Optical Site Manager now allows you to manage the NCS1K-OTDR line card.
Support for NCS 1001 and Cards	Cisco IOS XR Release 24.3.1	Cisco Optical Site Manager now allows you to manage the NCS 1001 node and its following cards: • NCS1K-PSM • NCS1K-EDFA

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

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

- Cisco NCS 1014
- Cisco NCS 1010
- Cisco NCS 1004
- Cisco NCS 1001

Provision Pluggable Port Module

Use this task to provision the Pluggable Port Module (PPM) on the control card.

Before you begin

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3

Procedure

Step 1 Click the **Provisioning** tab.

Step 2 Click the **Pluggable Port Modules** section to expand it.

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**.

Open the Card View

Use this task to open the card view.

Before you begin

Log into Cisco Optical Site Manager

Procedure

Step 1 Click **COSM Topology** in the left panel..

The COSM Topology page appears.

Step 2 Right-click the card from the Rack view and select **Open Card**.

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

Add Card Mode for NCS 1000 Cards

Table 2: Feature History

Feature Name	Release Information	Description
Additional Trunk Rates for the NCS1K14-2.4T-X-K9 Card	Cisco IOS XR Release 25.1.1	The **Select Card Mode** page of the **Card Configuration Wizard** has been updated to configure these trunk rates in the muxponder mode for 2x100-GE client traffic: • 800G • 900G • 1000G • 1100G
Additional Card Modes for OTN-XP Card	Cisco IOS XR Release 25.1.1	The **Card Configuration Wizard** now supports configuring these card modes for NCS1K4-OTN-XP card: • FC-MXP • MXP-4x100G-TXP-400G with 400GE and 100GE/OTU4 client rates Additionally, you can configure the OC192 and STM64 client datarates for the MXP-40X10G-4X100G card mode in the 40x10G HM configuration.
Support for 1.2T Cards	Cisco IOS XR Release 25.1.1	The **Card Configuration Wizard** now supports configuration of card mode for these cards: • NCS1K4-1.2T-K9 • NCS1K4-1.2TLCW-K9

Feature Name	Release Information	Description
Support for NCS2000 Cards	Cisco IOS XR Release 25.1.1	The **Card Configuration Wizard** now supports configuration of card mode for these cards: • 10x10G-LC • 200G-CK-C • 400G-XP-LC • 1.2T-MXP
Additional Card Mode and Trunk Rates for the NCS1K4-OTN-XP Card	Cisco IOS XR Release 24.3.1	The **Select Card Mode** page of the **Card Configuration Wizard** is updated to include the **1.2T Splitted** configuration on the **Trunk 0** port. You can also use the wizard to configure these trunk rates in the muxponder mode: • 100-GE client traffic for 600-G and 1000-G • 500-G and 900-G
Support for NCS 1004 Card and Card Modes	Cisco IOS XR Release 24.3.1	The **Card Configuration Wizard** now supports configuring these card modes for NCS1K4-OTN-XP cards: • 10G-GREY-MXP • 40x10G-4x100G-MXP You can also use the wizard to configure card mode for the NCS1K4-2-QDD-C-K9 card.
Card Configuration Wizard Enhancements	Cisco IOS XR Release 24.1.1	The **Card Configuration Wizard** is updated to select the **MXP-1K** muxponder mode supported by the new NCS1K14-2.4T-X-K9 card.

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

How to Add a Card Mode

To add a card mode using the **Card Configuration Wizard** in Cisco Optical Site Manager, perform these tasks:

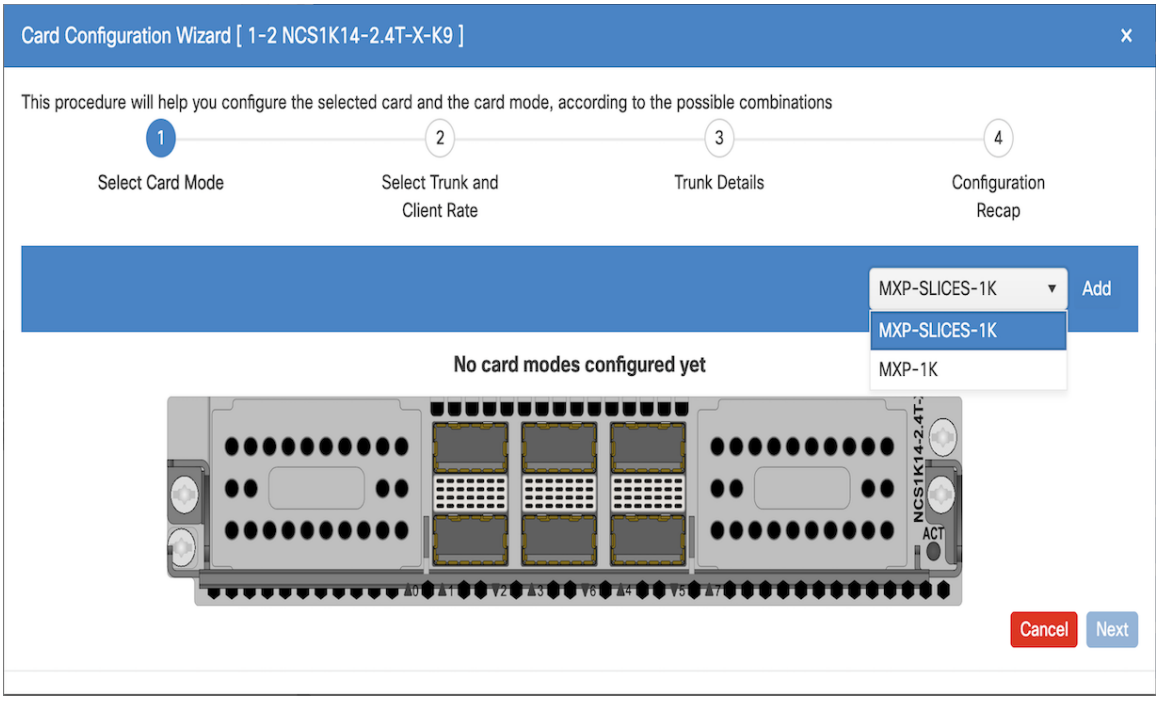
1. Select Card Mode, on page 6
2. Select Trunk and Client Data Rate, on page 7
3. Add Internal Patch Cords, on page 9
4. Add Trunk Details, on page 10
5. Verify Configuration Details, on page 11

Select Card Mode

The **Select Card Mode** in the Cisco Optical Site Manager **Card Configuration Wizard** allows users to choose from various card modes.

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

Figure 2: Select Card Mode



Before you begin

- Log into Cisco Optical Site Manager

Procedure

Step 1 Open the **Card Configuration Wizard**.

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

Step 2 Select the card mode from the drop-down list and click **Add**.

Table 3: Supported Card Modes

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

Step 3 Click **Next**.

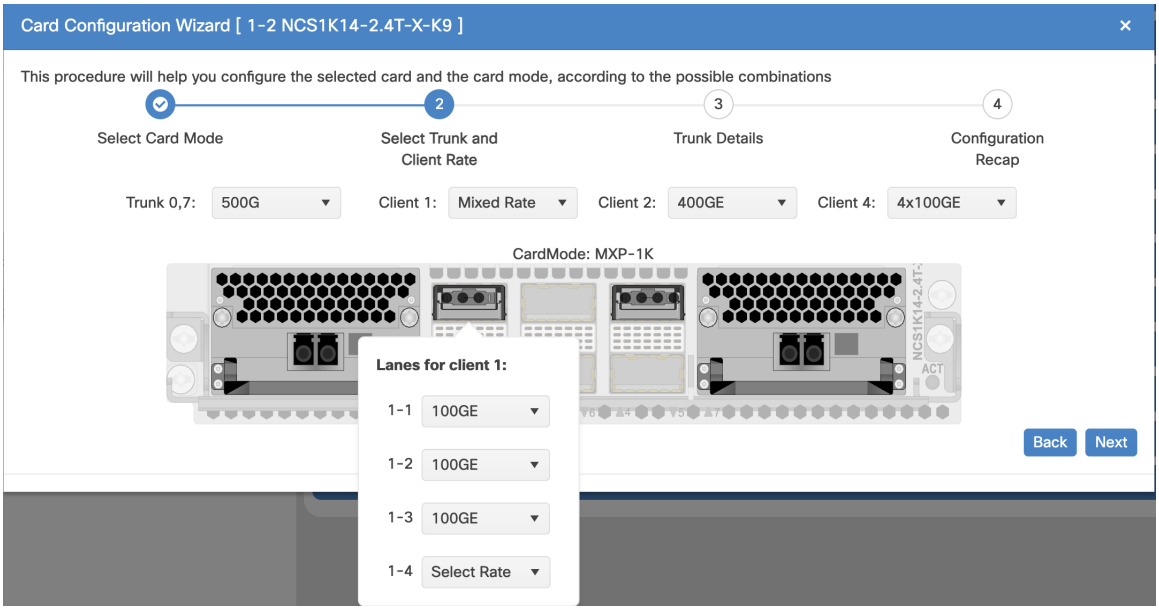
What to do next

Select the Trunk and Client Data Rates.

Select Trunk and Client Data Rate

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

Figure 3: Select Trunk and Client Data Rate



Before you begin

- Select Card Mode, on page 6

Procedure

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

Step 2 Select the client data rates.

Table 4: Client Data Rate Options

To configure	Perform these steps
Mixed client data rate for client ports	**a.** From the **Client** drop-down lists, select **Mixed Rate**. **Mixed rate configuration** information message is displayed. **b.** Close the message box. **c.** Right-click the lane in the line card image and select the data rate from the available drop-down lists.
Same client data rate for all client ports	From the **Client** drop-down lists, select the same data rate for each client port.

Step 3 Click **Next**.

What to do next

- If optical type is configured as *txp*, see Add Trunk Details, on page 10.
- If optical type is configured as *roadm*, see Add Internal Patch Cords, on page 9.

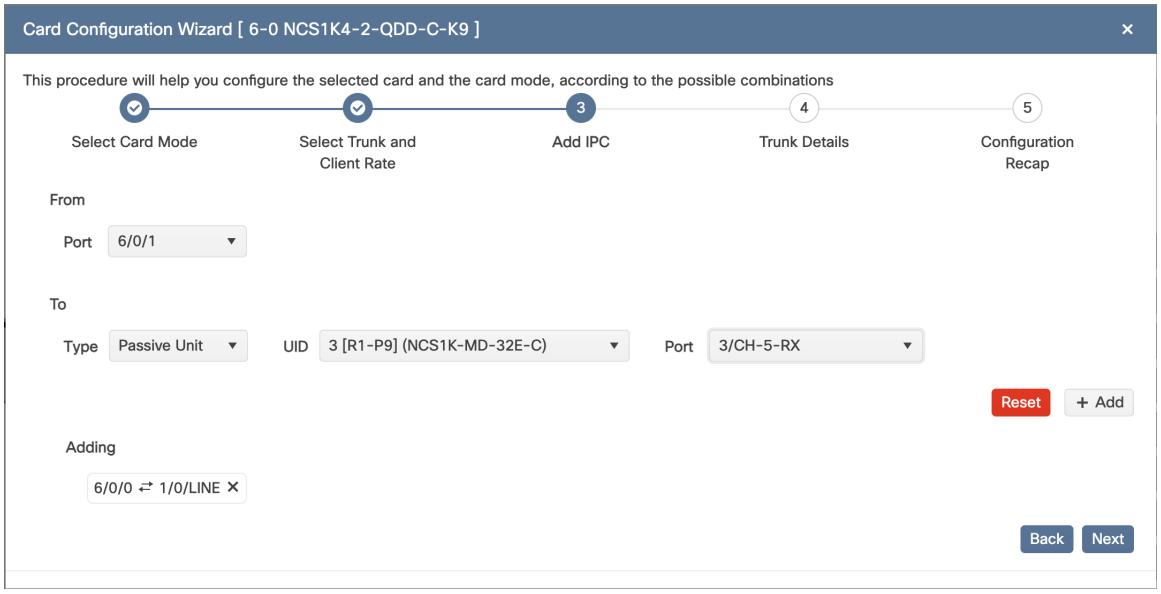
Add Internal Patch Cords

Adding Internal Patch Cords (IPC) in the **Card Configuration Wizard** establishes virtual links between network termination points, such as OSC ports, transponder or muxponder trunk ports, line ports, and passive device ports.

Use this task to add IPC in the **Card Configuration Wizard**.

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

Figure 4: Add Internal Patch Cords



Before you begin

- Select Trunk and Client Data Rate, on page 7

Procedure

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

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

Table 5: IPC Drop-down Lists Displayed Based on Device Type

To create an IPC for a	Select these drop-down lists
• **Chassis** • **Passive Chassis**	• **UID** • **Slot** • **Port**
Passive Unit	• **UID** • **Port**

Step 3 Click the **Add** button.

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

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

Step 5 Click **Next**.

What to do next

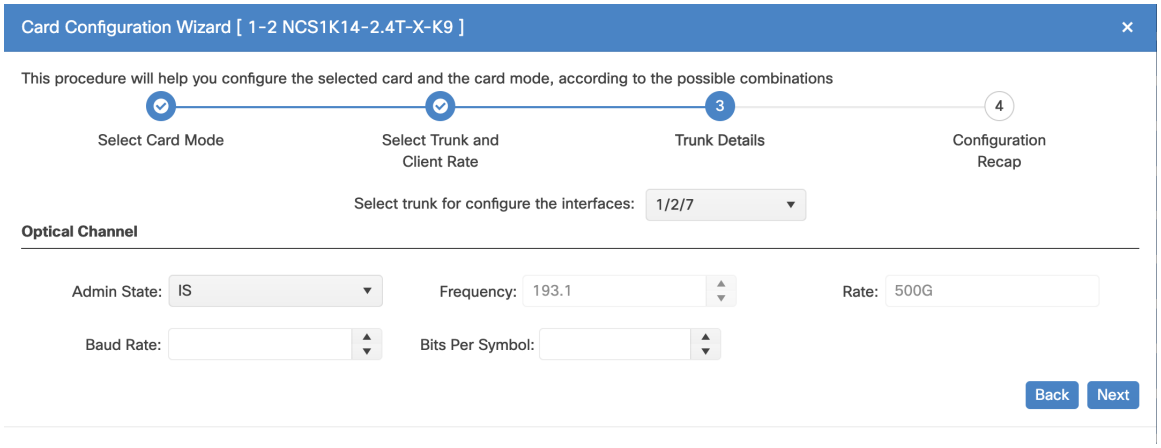
Add the Trunk Details to configure the interfaces.

Add Trunk Details

Adding trunk details in the **Card Configuration Wizard** specifies the parameters and configurations necessary for establishing trunk connections.

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

Figure 5: Add Trunk Details



Before you begin

- If optical type is configured as *roadm*, make sure to Add Internal Patch Cords, on page 9
- If optical type is configured as *txp*, make sure to Select Trunk and Client Data Rate, on page 7

Procedure

Step 1 Select the trunk port from the **Select trunk for configure the interfaces** drop-down list.

Step 2 In the **Optical Channel** section, select the following from their corresponding drop-down lists:

- **Admin State**
- **Frequency**
- **Baud Rate**
- **Bits Per Symbol**
- **Rate**

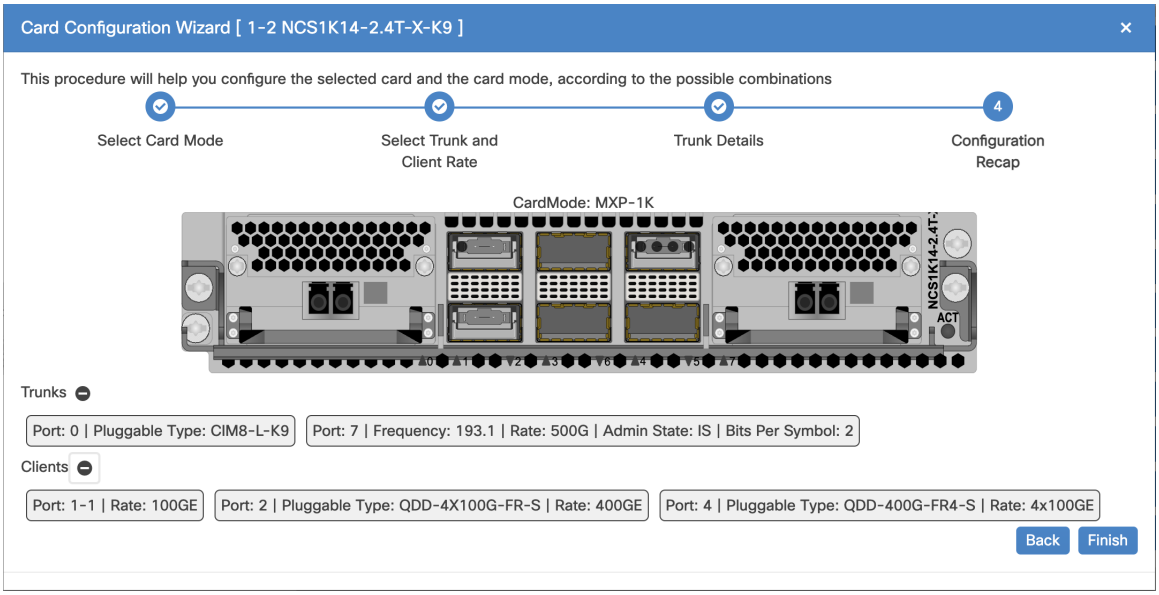
What to do next

Verify Configuration Details, on page 11

Verify Configuration Details

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

Figure 6: Verify Configuration Details



Before you begin

Add Trunk Details, on page 10

Procedure

Step 1 Click to expand the *Trunk* and *Client* sections to verify the configured details.

Step 2 Click **Finish** to add the card mode.

Edit Card Mode for NCS 1000 Cards

Use this task to edit the trunk and client port data rates for a card mode configured on a for a NCS 1000 line card.

Before you begin

- Log into Cisco Optical Site Manager

Procedure

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

- To open the **Card Configuration Wizard** from Rack view, perform these steps:
  - **a.** Right-click a line card in the Rack, Chassis or Card view.

b. Click **Card Mode**.

c. Select **Edit**.

- To open the **Card Configuration Wizard** from Card view, perform these steps:

a. Click the **Provisioning** tab.

b. Click the **Card Modes** section to expand it.

c. Select the check box corresponding to the card mode you want to edit and click the **Edit card mode** button.

Step 2 Select the trunk and client data rates.

For more details about selecting trunk and client data rates, see Select Trunk and Client Data Rate, on page 7.

Provision SONET or SDH Trace Monitoring

Use this task to provision the trace monitoring parameters that are supported for both the OC192 and STM64 payloads. SONET and SDH trace monitoring is supported on OTN XP card.

Before you begin

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3

Procedure

Step 1 Click the **Provisioning** tab.

Step 2 Perform one of the following steps:

- Click the **SONET Trace Monitoring** section to provision trace monitoring parameters for SONET.
- Click the **SDH Trace Monitoring** section to provision trace monitoring parameters for SDH.

Step 3 Click the **Edit** button.
The fields in the table become editable.

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

Table 6: SONET and SDH Trace Monitoring Parameters

Parameter	Description	Options
Port	Displays the port number.	—
Tx-String	Sets a new transmit string.	0–15 bytes

Parameter	Description	Options
Expected-String	Sets a new expected string.	0–15 bytes
Rx-String	(Display only) Displays the current received string.	
Detect-Mode	Sets the mode for detecting the discrepancy between the expected and received trace.	• True • False
Trace-Format	Sets the format in which the received string is displayed.	• 1BYTE • 16BYTE • 64BYTE

Step 5 Click **Apply**.

Provision Trail Trace Monitoring

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

Before you begin

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3

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 7: Trail Trace Identifier Settings

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

Parameter	Description	Options
Legacy Expected-TTI	Displays the current expected string or sets a new expected string.	0-64 bytes
Legacy Rx-TTI	(Display only) Displays the current received string.	—
Alarm Propagation	If a discrepancy is detected between the expected and received trace, it raises an alarm. If set to True, the alarm is propagated downstream to the other nodes.	• 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
- Open the Card View, on page 3

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 8: ODU Interface Settings

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

Parameter	Description	Options
SF BER	Sets the signal fail (SF) bit error rate (BER).	Only 1E-5 is allowed.
SD BER	Sets the signal degrade (SD) bit error rate (BER).	• 1E-5 • 1E-6 • 1E-7 • 1E-8 • 1E-9
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

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3

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 9: 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

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3

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 10: 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 SONET or SDH Interfaces

Use this task to provision the parameters for the SONET or SDH interfaces of a card.

Before you begin

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3

Procedure

Step 1 Click the **Provisioning** tab.

Step 2 Perform one of the following steps:

- Click the **SONET Trace Monitoring** section to provision interface parameters for SONET.
- Click the **SDH Trace Monitoring** section to provision interface parameters for SDH.

Step 3 Click the **Edit** button.
The fields in the table become editable.

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

Table 11: SONET or SDH Interface Parameters

Field	Description	Valid Values
Port	Displays the port number.	—
Description	Displays the description of the port. **Note** This parameter is not supproted for the OC192 and STM64 card modes.	—

Field	Description	Valid Values
Type	Displays the current payload for the port. OC192 is displayed for SONET systems and STM64 is displayed for SDH systems.	• OC192 • STM64
SF BER	Sets the signal fail (SF) bit error rate (BER).	• 1E-3 • 1E-4 • 1E-5
SD BER	Sets the signal degrade (SD) bit error rate (BER).	• 1E-5 • 1E-6 • 1E-7 • 1E-8 • 1E-9
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. **Note** This parameter is not supproted for the OC192 and STM64 card modes.	• Squelch • AIS
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. **Note** This parameter is not supproted for the OC192 and STM64 card modes.	• Disable • 50 ms • 100 ms • 250 ms • 500 ms
ProvidesSync	(Display only) Displays the ProvidesSync card parameter. **Note** This parameter is not supproted for the OC192 and STM64 card modes.	• true • false
Send DoNotUse	When checked, sends a “Do Not Use for Synchronization (DUS)” message on the S1 byte. **Note** This parameter is not supproted for the OC192 and STM64 card modes.	• true • false

Field	Description	Valid Values
Sync SyncMsgIn	Sets the ProvidesSync card parameter. Enables synchronization status messages, which allow the node to choose the best timing source. **Note** This parameter is not supproted for the OC192 and STM64 card modes.	• true • false
Admin SSM	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. **Note** This parameter is not supproted for the OC192 and STM64 card modes.	• DUS • PRS • RES • SMC • ST2 • ST3 • ST3E • ST4 • STU • TNC
Termination Mode	Sets the termination mode. When a session is terminated, the signal is reinitialized or is passed through without any changes. For 400G-XP, 10x10G-LC, and OTU2-XP cards it is Transparent by default. For 40E-MXP card, it is Transparent by default but can be set to the other values as required. **Note** This parameter is not supproted for the OC192 and STM64 card modes.	For SONET: • Transparent • Line • Session For SDH: • Transparent • Multiplex Section • Regeneration Section
Admin State	Sets the administrative state of the port.	—

Field	Description	Valid Values
Service State	(Display only) Identifies the autonomously generated state that gives the overall condition of the port. Service states appear in the format:PrimaryState-PrimaryState 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

Step 5 Click **Apply**.

Provision Optical Channels

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

Before you begin

Table 12: Feature History

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

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3

Procedure

Step 1 Click the **Provisioning** tab.

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

Step 3 Click the **Edit** button and modify required parameters in the table.

Step 4 Click **Apply**.

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

Table 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
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)	Displays the 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.	-

Parameter	Description	Options
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.	—
Target Power	Sets the Rx VOA target power. **Note** You cannot configure this parameter if **Fixed Ratio** is already configured.	• Valid range: -19 dBm to +3 dBm • Default value: -2.0 dBm
Fixed Ratio	Sets the Rx VOA fixed ratio. **Note** You cannot configure this parameter if **Target Power** is already configured.	• Valid value: 0.0 dBm
Rate	Displays the rate.	—

Change Trunk Port Parameters

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

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

Before you begin

- Log into Cisco Optical Site Manager

Procedure

Step 1 Right-click the trunk ports in the Rack, Chassis, or Card view and click **Change Trunk Details**.

The **Change Configuration** dialog box is displayed.

Step 2 Select the **Admin State** to change the admin status of the trunk port to Out of Service or Automatic in Service.

Step 3 Enter or select the frequency in the **Frequency** field.

The Wavelength of the trunk port is automatically selected based on the frequency configured.

Step 4 Enter or select the **Baud Rate** or **Bits Per Symbol**.

For more details about these fields, see the table Table 13: Optical Channel Settings, on page 24

Step 5 Click **Apply**.

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

Provision Optical Threshold Settings

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

Note This feature is not supported for the FX-MXP card mode of the OTN-XP card.

Before you begin

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3

Procedure

Step 1 Click the **Provisioning** tab.

Step 2 Click the **Optics Thresholds** section to expand it.

Step 3 Choose the type of threshold that you want to change, *15 Min* or *24 Hour*.

Step 4 Click **Add Optical Threshold** button.
New Optical Threshold dialog box is displayed.

Step 5 In the **New Optical Threshold** dialog box, add these details:

a) Select the **Interface** from the drop-down list.
b) Select **Granularity** from the drop-down list to set the threshold crossing alert for 15-minute or 24-hour interval.
c) Select **Location** from the drop-down list.
d) Select **Direction** from the drop-down list.
e) Select the performance monitoring type from the **PM Type** from the drop-down.
f) Select the parameter for which you want to set the threshold value from the **PM Type Extension** drop-down list.

Table 14: Performance Monitoring Parameters

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

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

Step 6 Click **Apply**.

Provision G.709 Thresholds

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

Before you begin

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3

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 15: 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

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3

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
- Open the Card View, on page 3

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.

Note This feature is not supported for the FX-MXP card mode of the OTN-XP card.

Before you begin

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3
- 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 23.

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
- Open the Card View, on page 3

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 16: 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.

Provision SONET or SDH Thresholds

Use this task to provision SONET or SDH thresholds for OC192 and STM64 payload ports on the OTN XP card. This functionality is supported on Slice-0 of the 40x10 HM configuration of the MXP-40X10G-4X100G card mode.

Before you begin

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3

Procedure

Step 1 Click the **Provisioning** tab.

Step 2 Perform one of the following steps:

- Click the **SONET Trace Monitoring** section to provision thresholds for SONET.
- Click the **SDH Trace Monitoring** section to provision thresholds for SDH.

Step 3 Select the interval of the threshold to *15 Min* or *24 Hour*.

Step 4 Click the plus icon to add a new SONET or SDH threshold.
The **New SONET/SDH Threshold** dialog is displayed.

Step 5 In the **New SONET/SDH Threshold** dialog, select these details:

Table 17: New SONET/SDH Threshold Dialog

Field	Description	Valid Values
TCA Types	Select the interface name.	—
Interface	Select the interface name.	—
Granularity	Sets the threshold for either 15-minute or 24-hour intervals.	• 15min • 24Hour

Field	Description	Valid Values
Direction	Sets the direction.	• ES • SES • UAS • EB • SEFS
Location	Sets the low threshold value.	—
PM Type	Sets the PM type.	—
PM Type Extension	Sets the PM type extension.	—
Threshold Value	Sets the threshold value.	—

Step 6 Click **Apply**.

Enable Attention LED

Table 18: Feature History

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

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

Before you begin

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3

Procedure

Step 1 Click the **Provisioning** tab.

Step 2 Click the **Attention Led** section to expand it.

Step 3 Perform any one of the following steps:

a) To turn on the Attention LED of a chassis provisioned on the rack, perform these steps:

1. Select *true* from the **Attention Led for** drop-down list and click **Apply**.

b) To turn on the Attention LED of all the ports of a line card, perform these steps:

1. Select *true* from the **Attention Led for** drop-down list and click **Apply**.

c) To turn on the Attention LED of a specific port of a line card, perform these steps:

1. Click **Edit**.
2. Select *true* corresponding to the port you want to blink the Attention LED and click **Apply**.

Step 4 To turn off the Attention LED for a chassis or port, select *false* from the drop down list and click **Apply**.

PSM card protection switching

Feature Name	Release Information	Description
Protection Switching on PSM Card	Cisco IOS XR Release 24.3.1	Protection switching provides protection mechanism against optical fiber faults or signal failure. In case a failure is detected, live traffic is automatically moved from the working path to the protection path to prevent any data loss. You can enable this feature from the **Protection** section of the **Maintenance** tab.

Cisco Optical Site Manager enables the configuration of protection switching on the PSM card, ensuring uninterrupted traffic flow by automatically switching traffic from a failed path to a working path.

Protection switching provides a mechanism to safeguard traffic in the event of a signal failure:

- The working path is the active path that typically carries traffic.
- In the event of a signal failure on the working path, traffic is immediately switched to the protection path to maintain service continuity.

Types of Protection Switching

The PSM card supports the following types of protection switching:

- **Revertive Protection Switching:** Traffic automatically returns to the working path from the protection path once the fiber issue is resolved and the Loss of Signal (LOS) alarm is cleared on the working path.

- **Non-Revertive Protection Switching:** Once traffic is switched to the protection path due to a signal failure, it remains on the protection path even after the failure on the working path is resolved.

Enable revertive protection switching

Protection switching offers a safeguard against optical fiber faults. When a failure is detected, live traffic is automatically switched from the working path to the protection path, ensuring uninterrupted data transmission.

Follow these steps to enable protection switching on the PSM card:

Before you begin

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3

Procedure

Step 1 Click the **Maintenance** tab.

Step 2 Click the **Protection** section to expand it.

Step 3 Click the **Edit** button.
The fields in the table become editable.

Step 4 Select **true** from the drop-down list under the **Revertive** column.

Step 5 Specify the time in seconds under the **Wait to Restore** column.

Wait to Restore (WTR) is the time delay (in seconds) applied after a Loss of Signal (LOS) alarm on the working path is cleared. Once the WTR timer expires, traffic is switched back to the working path.

Step 6 Click **Apply**.
Revertive protection switching is enabled on the card.

Enable or disable non-revertive protection switching

Non-revertive protection switching ensures that, once traffic is switched to the protection path due to a signal failure, it remains there even after the failure on the working path is cleared.

Follow these steps to enable or disable non-revertive protection switching on a PSM card interface:

Before you begin

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3

Procedure

Step 1 Click the **Maintenance** tab.

Step 2 Click the **Protection** section to expand it.

Step 3 Click the check-box corresponding to the PSM switch and then click **Protection Switch** button.
The **New Switch Command** dialog box is displayed.

Step 4 Perform these steps to enable non-revertive switching:

a) Select the interface you want to lockout from the **Target Interface** drop-down list.

b) Select **Lock-Out** from the **Switch Command** drop-down list.

c) Click **Apply**.

a)

Step 5 Perform these steps to disable non-revertive switching:

a) Select **Release** from the **Switch Command** drop-down list.

b) Click **Apply**.

Perform a manual switch

If changes are required during a scheduled maintenance window on the working or protection path, you can manually switch traffic between the two paths.

Follow these steps to perform a manual switch:

Before you begin

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3

Procedure

Step 1 Click the **Maintenance** tab.

Step 2 Click the **Protection** section to expand it.

Step 3 Click the check-box corresponding to the PSM switch and then click **Protection Switch** button.
The **New Switch Command** dialog box is displayed.

Step 4 Select the interface you want to manually switch to from the **Target Interface** drop-down list.

Step 5 Select **Manual-Switch** from the **Switch Command** drop-down list.

Step 6 Click **Apply**.

The selected interface becomes active and is displayed under the **Active Interfaces** column.

View Performance Monitoring Parameters

Performance monitoring (PM) parameters are used by service providers to gather, store, set thresholds, and report performance data for early problem detection. Users can retrieve current and historical PM counters for various controllers at several intervals.

PM for optical parameters includes laser bias current, transmit and receive optical power, mean polarization mode dispersion, accumulated chromatic dispersion, and received optical signal-to-noise ratio (OSNR). These parameters facilitate troubleshooting operations and enhance the data collected directly from the equipment.

Use this task to view the current and historical PM parameters of a card.

Before you begin

- Log into Cisco Optical Site Manager
- Open the Card View, on page 3

Procedure

Step 1 Click the **Performance** tab.

Step 2 Select the interval of the threshold to *15 Min* or *24 Hour*.

Step 3 Click the plus icon to add a new SONET or SDH threshold.
The **New SONET/SDH Threshold** dialog is displayed.

Step 4 In the **New SONET/SDH Threshold** dialog, select these details:

Table 19: New SONET/SDH Threshold Dialog

Use this drop-down	To	Valid Values
Granularity	Select the threshold for either 15-minute or 24-hour intervals.	• 15min • 24Hour
Interface Type	Select the interface type of the card.	The options available are based on the selected card.
Interface	Select the port of the card.	The options available are based on the selected card.
Location	Select the location.	• nearEnd • farEnd

Step 5 Click **Get PM**.
The PM parameters are displayed on the table.

Step 6 (Optional) Click the **Excel Export** button to export the parameters to an Excel sheet.

Step 7 Perform one of the following from the **Clear PM** drop-down list to clear the current PM parameters on the table:

- Select **Clear Current** to clear the current PM parameters collected on the card.
- Select **Clear All** to clear the current PM parameters collected on the card.

Caution
Cleared event logs on a card are not recoverable.