



## Provision Line Cards

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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:

- [Cisco NCS 1014 Line Cards](#)
- [Cisco NCS 1010 Line Cards](#)
- [Cisco NCS 1004 Line Cards](#)
  
- [Open the Card View, on page 1](#)
- [Add a Card Mode, on page 2](#)
- [Change Admin State for Card Ports, on page 3](#)
- [Provision Trail Trace Monitoring, on page 4](#)
- [Provision ODU Interfaces, on page 5](#)
- [Provision OTU Interfaces , on page 6](#)
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- [Provision Optical Channels, on page 10](#)
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- [Enabling Attention LED, on page 17](#)

## Open the Card View

Use this task to open the card view.

### **Before you begin**

[Log into Cisco Optical Site Manager](#)

## Procedure

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- 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.
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# Add a Card Mode

*Table 1: Feature History*

Feature Name	Release Information	Description
Card Configuration Wizard Enhancements	Cisco IOS XR Release 24.1.1	The <b>Card Configuration Wizard</b> is updated to select the <b>MXP-1K</b> muxponder mode supported by the new NCS1K14-2.4T-X-K9 card.

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](#)
- [Open the Card View, on page 1](#)

## Procedure

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- 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:
- Select the port from the **From** drop-down list.
  - Select the **Chassis**, **UID**, **Slot** and **Port** from the **To** drop-down lists.
  - Click **Add**.
  - (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.
  - Click **Next**.
- Step 9** In the **Trunk Details** window, perform the following steps:
- Select the trunk port from the **Select trunk for configure the interfaces** drop-down list.
  - 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.
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# 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](#)
- [Open the Card View, on page 1](#)

## Procedure

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- 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

- [Log into Cisco Optical Site Manager](#)
- [Open the Card View, on page 1](#)

### 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 2: 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.	<ul style="list-style-type: none"> <li>• True</li> <li>• False</li> </ul>

Parameter	Description	Options
Detect Mode	Sets the mode for detecting the discrepancy between the expected and received trace.	<ul style="list-style-type: none"> <li>• Disabled</li> <li>• Enabled</li> <li>• SAPI</li> <li>• DAPI</li> <li>• SAPI-and-DAPI</li> </ul>

**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 1](#)

### 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 3: 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).	<ul style="list-style-type: none"> <li>• 1E-5</li> <li>• 1E-6</li> <li>• 1E-7</li> <li>• 1E-8</li> <li>• 1E-9</li> </ul>

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.	<ul style="list-style-type: none"> <li>• Squelch</li> <li>• AIS</li> </ul>
SquelchHold Off Time	Sets the period in milliseconds that the client interface waits for resolution of issues on the trunk side. The client squelching starts after this period.	<ul style="list-style-type: none"> <li>• Disable</li> <li>• 50 ms</li> <li>• 100 ms</li> <li>• 250 ms</li> <li>• 500 ms</li> </ul>
Service State	Displays the service state.	—
Rate	Displays the rate.	—

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

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## 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 1](#)

### Procedure

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- 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 4: OTU Interface Settings

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

Parameter	Description	Options
Admin SSM In	Overrides the synchronization status message (SSM) and the synchronization traceability unknown (STU) value. If the node does not receive an SSM signal, it defaults to STU.	<ul style="list-style-type: none"> <li>• G811</li> <li>• STU</li> <li>• G812T</li> <li>• G812L</li> <li>• SETS</li> <li>• DUS</li> <li>• PRS</li> <li>• ST2</li> <li>• ST3E</li> <li>• ST3</li> <li>• SMC</li> <li>• ST4</li> <li>• RES</li> <li>• STU_SDH</li> <li>• DUS_SDH</li> <li>• SSM_FAILED</li> <li>• RES_SDH</li> <li>• TNC</li> </ul>
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 1](#)



## 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 5: Card Ethernet Settings**

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

Parameter	Description	Options
Squelch Hold Off Time	Sets the period in milliseconds that the client interface waits for resolution of issues on the trunk side. The client squelching starts after this period or local fault is sent.	<ul style="list-style-type: none"> <li>• Disable</li> <li>• 50 ms</li> <li>• 100 ms</li> <li>• 250 ms</li> <li>• 500 ms</li> </ul>
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](#)
- [Open the Card View, on page 1](#)

### 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 6: Optical Channel Settings**

Parameter	Description	Options
Port	(Display only) Displays the port name.	—
Reach	Indicates the distance from one node to another node.	<ul style="list-style-type: none"> <li>• Auto Provision</li> <li>• List of reach values</li> </ul>
SD FEC	Indicates the standard FEC.	<ul style="list-style-type: none"> <li>• SD_FEC_15_DE_OFF</li> <li>• SD_FEC_15_DE_ON</li> <li>• SD_FEC_20</li> <li>• SD_FEC_25_DE_OFF</li> <li>• SD_FEC_25_DE_ON</li> <li>• SD_FEC_7</li> </ul>

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.	<ul style="list-style-type: none"> <li>• NA</li> <li>• Enable</li> <li>• Disable</li> </ul>
Frequency (THz)	Sets the frequency in THz	-
Wavelength (nm)	(Display only) Wavelength is set based on the frequency.	-
Tx Shutdown	(Display only)	<ul style="list-style-type: none"> <li>• true</li> <li>• false</li> </ul>
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.	<ul style="list-style-type: none"> <li>• Unlocked (ETSI)/ IS (ANSI)</li> <li>• Locked, disabled (ETSI)/ OOS, DSBLD (ANSI)</li> <li>• Locked, maintenance (ETSI)/ OOS, MT (ANSI)</li> <li>• Unlocked, automaticInService (ETSI)/ IS, AINS (ANSI)</li> </ul>
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](#)
- [Open the Card View, on page 1](#)

**Procedure**

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- 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.
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## 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 1](#)

**Procedure**

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- 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 7: 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 1](#)

### 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.
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## 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 1](#)

### Procedure

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- 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**.
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# Provision Loopback

Use this task to provision loopback on the card.



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**Caution** This task is traffic-affecting.

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## Before you begin

- [Log into Cisco Optical Site Manager](#)
- [Open the Card View, on page 1](#)
- 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 10](#).

## Procedure

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- 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**.
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# 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 1](#)

## Procedure

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- 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 8: Optical Safety Parameters for Cards

Parameter	Description	Options
Interface	(Display only) Displays the port name, port type, and direction.	—
Supported Safety	(Display only) Displays the supported safety mechanism.	<ul style="list-style-type: none"> <li>• ALS for line cards and control cards.</li> <li>• ALS-OSRI for amplifier cards.</li> </ul>
ALS Mode	Automatic laser shutdown mode. The ALS mode is disabled for RX ALS interfaces.	<p>From the drop-down list, choose one of the following:</p> <ul style="list-style-type: none"> <li>• ALS-Disabled—Deactivates ALS.</li> <li>• 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.</li> <li>• Manual Restart</li> </ul>
OSRI	<p>Optical safety remote interlock. The default value is OSRI-OFF. When set to OSRI-ON, the TX output power is shut down.</p> <p><b>Note</b> OSRI configuration is not supported on the transponder and muxponder cards.</p>	<p>From the drop-down list, choose one of the following:</p> <ul style="list-style-type: none"> <li>• OSRI-OFF</li> <li>• OSRI-ON</li> </ul>
ALS Status	(Display only) ALS status of the device.	<ul style="list-style-type: none"> <li>• Working</li> <li>• Shutdown</li> </ul>
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.

## Enabling Attention LED

*Table 9: Feature History*

Feature Name	Release Information	Description
Enable Attention LED on Demand	Cisco IOS XR Release 24.1.1	You can now turn on the Attention LED by selecting <i>true</i> from the <b>Attention Led for</b> drop-down list in the <b>Provisioning</b> 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 1](#)

### Procedure

- Step 1** Click the **Provisioning** tab.
- Step 2** Click the **Attention Led** section to expand it.
- Step 3** Perform any one of the following steps:
- To turn on the Attention LED of a chassis provisioned on the rack, perform these steps:
    1. Select *true* from the **Attention Led for** drop-down list and click **Apply**.

- 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**.

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