



Turning Up a Node

This chapter explains how to provision a single Cisco NCS node and turn it up for service, including assigning the node name, date, and time; provisioning timing references; provisioning network attributes such as IP address and default router; setting up users and user security; installing cards; and creating DWDM connections.



Note The procedures and tasks described in this chapter for the Cisco NCS platform is applicable to the Cisco NCS 2002 and Cisco NCS 2006 platforms, unless noted otherwise.



Note Procedures in this chapter require that you have a network plan calculated for your DWDM network with Cisco Transport Planner. Cisco Transport Planner is a DWDM planning tool that is available from your Cisco account representative. Cisco Transport Planner prepares a shelf plan for each network node and calculates the power and attenuation levels for the DWDM cards installed in the node. For information about Cisco Transport Planner, contact your Cisco account representative. For instructions on using Cisco Transport Planner, refer to the *Cisco Transport Planner DWDM Operations Guide*.



Note Cisco Transport Controller (CTC) views referenced in these procedures depend on the mode. In single-shelf mode, the views are network, node, and card. In multishelf mode, the views are network, multishelf, shelf, and card. For more information about CTC views, refer to [CTC Enhancements, Operations, and Shortcuts](#).



Note In this chapter, “100G-LC-C card” refers to the 15454-M-100G-LC-C card. “10x10G-LC” refers to the 15454-M-10x10G-LC card. “CFP-LC” refers to the 15454-M-CFP-LC card.

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NTP-G341 Setting Up Secure Access to TL1

Purpose	This procedure provisions the nodes for secure access to TL1.
Tools/Equipment	None
Prerequisite Procedures	NTP-G26 Set Up CTC Network Access
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Superuser

Procedure

Step 1 In the node view, click the **Provisioning > Security > Access** pane.

Step 2 Under the TL1 Access area, change the Access State to **Secure**.

Step 3 Click **Apply**.

Existing non-secure TL1 sessions, if any, are terminated.

Step 4 To create a secure TL1 connection, enter the following command at the UNIX or Linux prompt:

```
ssh -l username node-ip -p port-number
```

The port number for secure TL1 is 4083. The port number for non-secure TL1 is 3083.

Note EPNM-based interfaces need to be updated with the correct port details for the node.

Use any SSH client on Windows.

Stop. You have completed this procedure.

OpenSSH Version

The OpenSSH version that is currently supported is 3.5.9.1 and will be upgraded in a future release.



Note The OpenSSH has been upgraded to Cisco SSH Release 1.4.

NTP-G29 Setting Up SNMP

Purpose	This procedure provisions the SNMP parameters so that you can use SNMP management software with the Cisco NCS.
Tools/Equipment	None
Prerequisite Procedures	<ul style="list-style-type: none"> • DLP-G46 Log into CTC • NTP-G22 Verifying Common Card Installation
Required/As Needed	Required if SNMP is used at your site.
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning** > **SNMP** tabs.
- Step 2** In the Trap Destinations area, click **Create**.
- Step 3** Complete the following in the Create SNMP Trap Destination dialog box.
- **Destination IP Address**—Type the IP address of your network management system (NMS). If the node you are logged into is an ENE, set the destination address to the GNE.

Note You can configure IPv6 addresses for SNMPv2/v3 trap destinations and SNMPv3 proxy targets, in addition to IPv4 addresses.
 - **Community**—Type the SNMP community name. For a description of SNMP community names, refer to the [SNMP](#) document.

Note The community name is a form of authentication and access control. The community name assigned to the NCS is case-sensitive and must match the community name of the NMS.
 - **UDP Port**—The default User Datagram Protocol (UDP) port for SNMP is 162.
 - **Trap version**—Choose either SNMPv1 or SNMPv2. Refer to your NMS documentation to determine which version to use.

- Click **OK**. The node IP address of the node where you provisioned the new trap destination appears in the Trap Destinations area.

Step 4 Click the node IP address in the Trap Destinations area. Verify the SNMP information that appears in the Selected Destination list.

Step 5 If you want the SNMP agent to accept SNMP SET requests on certain MIBs, click the **Allow SNMP Sets** check box. If this box is not checked, SET requests are rejected.

Step 6 If you want to set up the SNMP proxy feature to allow network management, message reporting, and performance statistic retrieval across firewalls, click the Allow SNMP Proxy check box located on the SNMP tab.

Note Using the firewall proxy feature effectively breaches the firewall to exchange management information.

For more information about the SNMP proxy feature, refer to [SNMP](#).

Step 7 Click **Apply**.

Step 8 If you are setting up SNMP proxies, you can set up to three relays that send SNMP trap error counts back to the NE for each trap destination address:

- Click the first trap destination IP address. The address and its community name appear in the Destination fields.
- Enter up to three SNMP Proxy relay addresses and community names in the fields for Relay A, Relay B, and Relay C.

Note The community names specified for each relay node must match one of the provisioned SNMP community names in the NE.

Note The SNMP proxy directs SNMP traps from this node through Relay A to Relay B to Relay C to the trap destination. Ensure that you enter the IP addresses in the correct order so that this sequence runs correctly.

Step 9 Click **Apply**.

Stop. You have completed this procedure.

DLP-G351 Deleting a Card in CTC

Purpose	This task deletes a card from an NCS slot that is provisioned in CTC.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Superuser only



Note It is recommended that the card be physically removed from its slot after deleting it from CTC.

Procedure

Step 1 Verify that the following conditions are not present. (During node turn-up, these conditions are normally not present):

- The card is a control card.
- The card is part of a protection group.
- The card has optical channels or overhead circuits provisioned.
- The card is being used for timing.
- The card has an OSC/GCC termination.
- A port on the card is being used for a Link Management Protocol (LMP) channel or link.
- The card is part of an optical side.
- The card is assigned to DWDM patchcords.
- If a port on the card is in service.
- If a port on the card is part of a circuit.

If any of these conditions exist, do not continue. You will not be able to delete the card until the card is removed from protection groups; circuits, DCC, and GCCs are deleted; a different timing source is provisioned, and the LMP link or channel is deleted.

-
- To delete optical channels see the [DLP-G347 Deleting Optical Channel Client Connections](#) and the [DLP-G106 Deleting Optical Channel Network Connections](#); to delete overhead circuits, see the [DLP-G112 Deleting Overhead Circuits](#).
- To remove the card as a timing source, see the [NTP-G87 Change Node Timing Parameters](#) procedure.
- To remove OSC or GCC terminations, see the [NTP-G85 Modify or Delete OSC Terminations, GCC Terminations, and Provisionable Patchcords](#) procedure.
- To delete LMP channels or links, see [NTP-G164 Configure Link Management Protocol](#).
- To remove a DWDM patchcord, see the [DLP-G355 Deleting an Internal Patchcord](#) .
- To remove an optical side, see the [DLP-G480 Deleting an Optical Side](#) .

Step 2 On the shelf graphic in CTC, right-click the card that you want to remove and choose **Delete Card**.

Step 3 Return to your originating procedure (NTP).

DLP-G353 Pre-provisioning a Slot

Purpose	This task pre-provisions a NCS slot in CTC. Pre-provisioning of all the slots in the shelf is normally performed when you complete the NTP-G143 Importing the Cisco Transport Planner NE Update Configuration File procedure. Use this task if you need to manually pre-provision a slot. All slot pre-provisioning must be based on the Cisco Transport Planner shelf layout prepared for your site.
Tools/Equipment	Cisco Transport Planner shelf layout table or JPG file.
Prerequisite Procedures	<ul style="list-style-type: none"> • NTP-G139 Verifying Cisco Transport Planner Reports and Files • DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

-
- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), right-click an empty slot where you want to install a card.
- Step 2** From the Add Card shortcut menu, choose the card type that will be installed based on the Cisco Transport Planner shelf layout. Only cards that can be installed in the slot appear in the Add Card shortcut menu. The following table shows the Add Card shortcut menu, submenu, card groups, and menu options or cards that they reference.

Table 1: CTC Add Card Shortcut Menu for DWDM Cards

Menu Item	Submenu Category	Card Group	Submenu Item 1	Submenu Item 2	Cards
DWDM nXP Transponder and Muxponder			—	10GE_XP	10GE_XP
			—	10GE_XPE	10GE_XPE
			—	OTU2_XP	OTU2_XP
			—	ADM-10G	ADM-10G
			—	GE_XP	GE_XP
			—	GE_XPE	GE_XPE
			—	MXPP_MR_2.5G	MXPP_MR_2.5G
			—	MXP_2.5G_10E	MXP_2.5G_10E MXP_2.5G_10E MXP_2.5G_10E MXP_2.5G_10E
			—	MXP_2.5G_10G	MXP_2.5G_10G
			—	MXP_MR_10DME	MXP_MR_10DM MXP_MR_10DM MXP_MR_10DM
			—	MXP_MR_2.5G	MXP_MR_2.5G
			—	TXPP_MR_2.5G	TXPP_MR_2.5G
			—	TXP_MR_10E	TXP_MR_10E TXP_MR_10E_C TXP_MR_10E_D TXP_MR_10EX
			—	TXP_MR_10G	TXP_MR_10G
			—	TXP_MR_2.5G	TXP_MR_2.5G
			—	40G-MXP-C	40G-MXP-C
			—	40E-MXP-C	40E-MXP-C 40M
			—	40E-TXP-C	40E-TXP-C 40M
			—	AR_MXP	AR_MXP
			—	AR_XP	AR_XP

Menu Item	Submenu Category	Card Group	Submenu Item 1	Submenu Item 2	Cards
			—	AR_XPE	AR_XPE
			—	100G-LC-C	100G-LC-C
			—	10x10G-LC	10x10G-LC
			—	CFP-LC	CFP-LC
			—	100G-CK-C	100G-CK-C
			—	100GS-CK-LC	100GS-CK-LC
			—	200G-CK-LC	200G-CK-LC
			—	WSE	WSE

Menu Item	Submenu Category	Card Group	Submenu Item 1	Submenu Item 2	Cards	
DWDM	MD	Multiplexer and Demultiplexer	C Band	32 DMXO	32DMX-O	
				40 WSS	40-WSS-C or 40-	
				32 WSS	32WSS	
				4MD	4MD-xx.x	
				40-MUX-C	40-MUX-C	
				40-DMX-C, or 40-DMX-CE	40-DMX-C, or 40-	
			L Band	32 WSS L	32WSS-L	
				32 DMXL	32DMX-L	
	MESH	—	—	C Band	40 WXC	40-WXC-C
					80 WXC	80-WXC-C
					40 SMR1 C	40-SMR1-C
					40 SMR2 C	40-SMR2-C
	OSC	Optical Service Channel	—	—	MMU	MMU
					OSC-CSM	OSC-CSM
	Ampli	Optical Amplifier	—	C Band	OPT-BST E	OPT-BST-E
					OPT-AMP-17	OPT-AMP-17-C
					OPT-RAMP-C	OPT-RAMP-C
					OPT-RAMP-CE	OPT-RAMP-CE
					OPT-AMP C	OPT-AMP-C
					OPT-BST	OPT-BST
OPT-PRE					OPT-PRE	
OPT-EDFA-17					OPT-EDFA-17	
OPT-EDFA-24					OPT-EDFA-24	
OTHER	—	—	—	PSM	PSM	
Ethernet	—	—	—	MS-ISC-100T	MS-ISC-100T	
				G1000	G1000	
OSCM	—	—	—	—	OSCM (Slots 8 a	

Menu Item	Submenu Category	Card Group	Submenu Item 1	Submenu Item 2	Cards
TNC TSC	—	Control Cards	—	—	TNC, TNCE, TSC, TNCNCS/TNCS-O

Note Choose the menu option TNC for TNC, TNCE, or TNCNCS/TNCS-O pre-provision. The CTC displays the TNC, TNCE, or TNCNCS/TNCS-O card name according to the inserted card. Same applies for TSC card also.

Note When you pre-provision a slot, the card appears purple in the CTC shelf graphic (the card appears as white when a card is installed in the slot). NP on the card graphic indicates that the card is not physically installed.

Step 3 Repeat [Step 2](#) until all the cards shown in the Cisco Transport Planner shelf layout are provisioned in CTC.

Stop. You have completed this procedure.

DLP-G693 Configuring the Amplifier Card

Purpose	This task configures the optical parameters and threshold values of the amplifier card.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

- Step 1** Display the amplifier card in card view.
- Step 2** Click the **Provisioning > Card** tabs.
- Step 3** Select the working mode from the Card Working Mode drop-down list.
- Step 4** Change to node view (single-shelf mode) or multishelf view (multishelf mode), then click the **Provisioning > WDM-ANS > Provisioning** tabs.
- Step 5** From the Selector area, select the amplifier slot. If the default parameters are present, continue with [Step 6](#). If not, click Add to add the Channel LOS Threshold, Amplifier Tilt, Power, and Amplifier Working Mode parameters. To add the ANS parameters, see the [DLP-G541 Adding an ANS Parameter, on page 13](#) task for instructions.
- Step 6** Click the value of the ANS parameter that you want to modify and enter the new value specified in the following table. To modify the ANS parameters, see the [DLP-G681 Modifying an ANS Parameter, on page 14](#) task for instructions.

Table 2: Values for the ANS Parameters (amplifier)

Port	ANS Parameter	Value
Slot 16 (OPT-AMP C).Port COM-RX	Channel LOS Threshold	35.0 dBm
Slot 16 (OPT-AMP C).Port LINE-TX	Amplifier Working Mode	Control Gain
Slot 16 (OPT-AMP C).Port LINE-TX	Amplifier Tilt	0.0 dB
Slot 16 (OPT-AMP C).Port LINE-TX	Power	1.0 dBm

- Step 7** Click **Apply**.
- Step 8** Click the **Provisioning > WDM-ANS > Port Status** tabs.
- Step 9** Click **Launch ANS**.
- Step 10** In the Apply Launch ANS dialog box, click **Yes**.
- Step 11** In the Launch ANS confirmation dialog box, click **OK**.
- Step 12** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Provisioning** tabs.
- Step 13** Verify the following in the Results column:
- Success - Changed —The parameter has been successfully changed with the ports in IS.
- Step 14** Verify that the Set By column displays the value “ANS” or “APC” as the application that sets the ANS parameter.
- Step 15** Return to your originating procedure (NTP).

DLP-G694 Configuring the PSM Card

Purpose	This task configures the PSM behavior.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Provisioning** tabs.

- Step 2** From the Selector area, select the PSM slot. If the default parameters are present, continue with [Step 3](#). If not, click Add to add the Channel LOS Threshold and VOA Attenuation parameters. To add the ANS parameters, see the [DLP-G541 Adding an ANS Parameter, on page 13](#) for instructions.
- Step 3** Click the value of the ANS parameter that you want to modify and enter the new value specified in the following table. To modify the ANS parameters, see the [DLP-G681 Modifying an ANS Parameter, on page 14](#) for instructions.

Table 3: Values for the ANS Parameters (PSM)

Port	ANS Parameter	Value
Slot 14(PSM).Port W-RX	VOA Attenuation	3.0 dB
Slot 14(PSM).Port W-RX	Channel LOS Threshold	15.0 dB
Slot 14(PSM).Port P-RX	VOA Attenuation	10.0 dB
Slot 14(PSM).Port P-RX	Channel LOS Threshold	20.0 dB

- Step 4** Click **Apply**.
- Step 5** Click the **Provisioning > WDM-ANS > Port Status** tabs.
- Step 6** Click **Launch ANS**.
- Step 7** In the Apply Launch ANS dialog box, click **Yes**.
- Step 8** In the Launch ANS confirmation dialog box, click **OK**.
- Step 9** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Provisioning** tabs.
- Step 10** Verify the following in the Results column:
- Success - Changed —The parameter has been successfully changed with the ports in IS.
- Step 11** Verify that the Set By column displays the value “ANS” or “APC” as the application that sets the ANS parameter.
- Step 12** Return to your originating procedure (NTP).

NTP-G328 Adding, Modifying, or Deleting ANS Parameters

Purpose	This procedure allows you to add, modify, or delete ANS parameters for a DWDM node.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher



Note It is recommended that you use the Cisco Transport Planner XML configuration file to provision the ANS parameters instead of manually adding all the parameters in CTC. ANS provisioning parameters must be manually changed only by Cisco qualified personnel. Provisioning the ANS parameters incorrectly (either as preamplifier or booster input power thresholds) may impact traffic.

Procedure

As needed, complete the following tasks:

- Complete the [DLP-G541 Adding an ANS Parameter](#), on page 13.
- Complete the [DLP-G681 Modifying an ANS Parameter](#), on page 14.
- Complete the [DLP-G542 Deleting an ANS Parameter](#), on page 16.

Stop. You have completed this procedure.

DLP-G541 Adding an ANS Parameter

Purpose	This task adds an ANS parameter.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning** > **WDM-ANS** > **Provisioning** tabs.
- Step 2** Click **Add**. The Add ANS Parameter dialog box appears.
- Step 3** Select the ANS parameter from the Parameter drop-down list.
- Step 4** In the Port Selection area, complete the following fields:
- Type—Displays the card type.
 - Shelf—Choose the shelf from the drop-down list.
 - Slot—Choose the card from the Slot drop-down list. The drop-down list lists all the cards that support the ANS parameter selected in Step 3.

- Port—Choose the port from the Port drop-down list. The drop-down list lists all the ports for the card selected in Step 4 that support the ANS parameter selected in Step 3.

Step 5 Choose the granularity as OTS or OCH from the Granularity drop-down list.

Note Granularity can be set only for the ANS parameters applied to the LINE-RX, LINE-TX, COM-RX, or COM-TX ports.

Step 6 Type or choose the value for the ANS parameter in the Value field.

Step 7 Click OK.

Step 8 Return to your originating procedure (NTP).

DLP-G681 Modifying an ANS Parameter

Purpose	This task modifies ANS parameters.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher



Note Do not begin this procedure until the Cisco Transport Planner NE Update file is created for the node. You must import the new NE Update file and run ANS to recalculate the ANS parameters for the node.



Caution Modifying ANS parameters on one node requires ANS upgrades on all the other nodes within the network. Do not begin this procedure until you are prepared to complete the upgrade on all the network nodes.



Caution This procedure will affect the service of unprotected circuits that pass through the node.

Procedure

Step 1 In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning** > **WDM-ANS** > **Provisioning** tabs.

Step 2 Click the value of the ANS parameter that you want to modify and enter the new value.

Note If the new or updated value is not within the default range specified in the following table, an error message is displayed.

Note When you modify the parameter value in the Value field, the active value is updated with the modified value after you run ANS.

Table 4: Ranges, Values, and Edit Options for the ANS Parameters

ANS Parameter	Range/Value	Editable with Port in IS
OSC LOS Threshold	-50.0 to +30.0 dBm	Yes
Channel LOS Threshold	-50.0 to +30.0 dBm Note From R11.x.x, if the user changes the Channel LOS Threshold (LINE-RX) value and clicks Launch ANS , the new value is not applied if a circuit passes through the port.	Yes
Amplifier Working Mode	Control Power, Control Gain, Fixed Gain	Yes
Amplifier Gain	0.0 to 40.0 dB	No
Amplifier Tilt	-15.0 to +15.0 dB	No
OSC Power	-24.0 to 0.0 dBm	No
Raman Ratio	0.0 to 100.0%	Yes
Raman Total Power	100 to 450 mW	Yes
Raman Expected Gain	0.0 to 12.0 dB	Yes
Power	-30.0 to +50 dBm	Yes
WXC Dithering	0 to 33	No
Min Expected Span Loss	0.0 to 60.0 dB	No
Max Expected Span Loss	0.0 to 60.0 dB	No
VOA Attenuation	0 to 30 dB	Yes

Note Per-channel power and tilt can be edited when the Amplifier Working Mode is Control Gain or Control Power and Fixed Gain when Amplifier Working Mode is Fixed Gain. The Raman Expected Gain parameter is editable only on OPT-RAMP-C and OPT-RAMP-CE cards. The APC increases or decreases power by 0.5dB till the new power setpoint is reached. The APC-OUT-OF-RANGE alarm is raised if the updated power setpoint is outside the expected range. VOA Attenuation associated with a single channel path can be edited when the working mode is Constant Power Value; VOA Attenuation associated with aggregated paths can be edited when the working mode is Constant Attenuation Value.

- Step 3** Click **Apply**.
- Step 4** Click the **Provisioning > WDM-ANS > Port Status** tabs.
- Step 5** Click **Launch ANS**.
- Step 6** In the Apply Launch ANS dialog box, click **Yes**.
- Step 7** In the Launch ANS confirmation dialog box, click **OK**.
- Step 8** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Provisioning** tabs.
- Step 9** Verify the following in the Results column:
 - Success - Changed —The parameter has been successfully changed with the ports in IS.
- Step 10** Verify that the Set By column displays the value “ANS” or “APC” as the application that sets the ANS parameter.
- Step 11** Return to your originating procedure (NTP).

DLP-G542 Deleting an ANS Parameter

Purpose	This tasks removes an ANS parameter.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Provisioning** tabs.
- Step 2** Click the ANS parameter you want to remove.

Note Only threshold related ANS parameters can be removed if the port is in service state.

- Step 3** Click **Remove**, and then **Yes**.
- Step 4** Return to your originating procedure (NTP).

NTP-G30 Installing the DWDM Cards

Purpose	This procedure describes how to install the DWDM multiplexer, demultiplexer, wavelength selective switch, wavelength cross-connect, OSC, PSM, and optical amplifier cards.
Tools/Equipment	<ul style="list-style-type: none"> • Cisco Transport Planner shelf layout • The following C-band or L-band cards, as required by your site plan: <ul style="list-style-type: none"> • C-band: OPT-PRE, OPT-BST, OPT-BST-E, 32MUX-O, 40-MUX-C, 32DMX-O, 32DMX, 40-DMX-C, 40-DMX-CE, 32WSS, 40-WSS-C, 40-WSS-CE, 40-WXC-C, 80-WXC-C, 16-WXC-FS, TDC-CC, TDC-FC, 40-SMR1-C, 40-SMR2-C, 17 SMR9 FS, 24 SMR9 FS, 34 SMR9 FS, SMR20 FS, SMR20 FS CV, OPT-AMP-17-C, OPT-AMP-C, OPT-RAMP-C, OPT-RAMP-CE, OPT-EDFA-17, OPT-EDFA-24, OPT-EDFA-35, EDRA-1-26, EDRA-1-35, EDRA-2-26, EDRA-2-35, 4MD-xx.x, OSCM, OSC-CSM, and PSM cards (as applicable) • L-band: PSM cards (as applicable) • The NCS NE defaults file if the node uses custom NE defaults
Prerequisite Procedures	<ul style="list-style-type: none"> • NTP-G313 Installing and Configuring the TNC, TNCE, TSC, or TSCE Card • NTP-G139 Verifying Cisco Transport Planner Reports and Files • NTP-G143 Importing the Cisco Transport Planner NE Update Configuration File
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher



Warning This warning symbol means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. To see translations of the warnings that appear in this publication, refer to the Regulatory Compliance and Safety Information document for the appropriate Cisco chassis. Statement 274



Warning During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself. Statement 94



Warning Class I (CDRH) and Class 1M (IEC) laser products. Statement 1055



Warning Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not view directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. Statement 1056

High-performance devices on this card can get hot during operation. To remove the card, hold it by the faceplate and bottom edge. Allow the card to cool before touching any other part of it or before placing it in an antistatic bag. Statement 201



Warning The optical Add/Drop cards and ROADMs need a maximum of 15 minutes to warm up to ambient temperature, after it is inserted into a shelf. The card configurations or settings are unavailable during this period.



Caution Always use the supplied electrostatic discharge (ESD) wristband when working with a powered NCS. For detailed instructions on how to wear the ESD wristband, refer to the *Electrostatic Discharge and Grounding Guide for Cisco NCS 2000 Series*.



Note For United States installations, complies with the United States Federal Drug Administration Code of Federal Regulations Title 21, Sections 1040.10 and 1040.11, except for deviations pursuant to Laser Notice No. 50, dated July 26, 2001.



Note If protective clips are installed on the backplane connectors of the cards, remove the clips before installing the cards.



Note If you install a card incorrectly, the FAIL LED flashes continuously.

The line cards released before R10.5 need a new bootcode to be installed in Cisco NCS 2015 chassis. These cards upgrade to a new bootcode automatically when they are installed between slots 2 and 7.

The following scenarios need to be considered while installing these cards with old bootcode between slots 8 and 16.

- The TXP/MXP cards like OTU2-XP, 40E-MXP-C, PSM, TXP-MR-10E do not boot in slots 8, 9, and 10.
- Optical amplifier line cards do not boot in slots 8, 9, and 10. These cards do not appear in the Inventory tab in CTC.
- When the TNCS/TNCS-O card is installed only in slot 1, the AR_XPE, AR_XP and AR_MXP cards do not boot in slots 8, 9, 10, 15, and 16. When the TNCS card is installed only in slot 17, these cards do not boot in slots 11, 12, 13, 15, and 16.
- When an old line card and a new card are installed in the adjacent slots simultaneously in slots between slot 2 and 7, either of the cards or both the cards do not boot.
- Old line cards do not boot in slot 15 and slot 16. An INC_BOOTCODE (Incompatible Bootcode) alarm is raised in this scenario.

The INC_BOOTCODE alarm is a transient alarm raised at the shelf. For more information on the INC_BOOTCODE alarm, see *Cisco NCS 2000 Series Troubleshooting Guide, Release 10.x.x*.

Workaround:

1. Remove the card that did not install correctly from the slot.
2. Install the card in any slots between slot 2 and 7. This upgrades the bootcode for the card. The line cards supported in Cisco NCS 2015 can now be installed in any slots between slot 2 and 16.



Note The INC_BOOTCODE alarm is not supported on the following SCL cards -

- OTU2XP
 - 40E-MXP-C
 - PSM
 - TXP-MR-10E
-

For instructions on proper handling of the 80-WXC-C card, see [80-WXC-C Card Handling](#).

Procedure

Step 1 If the node requires a custom NE default settings to be installed on the node, complete the [NTP-G136 Importing Network Element Defaults](#). If not, continue with [Step 2](#).

Caution If custom NE defaults are required, they must be installed before you install the DWDM cards.

Step 2 Verify that you have one of the following guides for the DWDM card installation:

- The slots that were preprovisioned when you completed the [NTP-G143 Importing the Cisco Transport Planner NE Update Configuration File](#) procedure.

- The Cisco Transport Planner shelf layout report.

Step 3 If the slots are preprovisioned, continue with [Step 4](#).

Step 4 Remove a DWDM card from its packaging, then remove the protective caps from the backplane connectors. (Safety caps are typically yellow.)

Step 5 Open the card latches/ejectors.

Step 6 Use the latches/ejectors to firmly slide the card along the slot guide rails until the card plugs into the receptacle at the back of the slot. The correct slot is designated by the Cisco Transport Planner shelf layout.

Step 7 Verify that the card is inserted correctly. Simultaneously close the latches/ejectors on the card.

Note It is possible to close the latches/ejectors when the card is not completely plugged in. Ensure that you cannot insert the card any further.

After installing the card, the following LED activity will occur:

- The card's LEDs will go through a sequence of activities (turn on, turn off, blinking.) This will take 2 to 3 minutes.
- The ACT LED turns on.
- The signal fail (SF) LED might persist until all card ports connect to their far-end counterparts and a signal is present.

Step 8 If the card does not boot up properly or the LED activity is not similar to the activity in [Step 7](#), check the following:

- When a physical card type does not match the type of card provisioned for that slot in CTC, the card might not boot. If a DWDM card does not boot, open CTC and ensure that the slot is not provisioned for a different card type before assuming that the card is faulty.
- When the NCS 2006 shelf is powered by the 15454-M6-DC20 power module, the power consumption is limited to 960 W. During the boot up process, if a new line card causes the power consumption of the shelf to exceed 960 W that line card will not boot up. The PWR-CON-LMT alarm is raised in the Alarms tab in CTC when the installation or pre-provisioning of a card causes the power consumption to exceed the limit of 960 W. The card due to which the PWR-CON-LMT alarm is raised must be immediately removed from the shelf and de-provisioned in CTC. The calculated power consumption of the shelf can be viewed in CTC under the Provisioning > Power Monitor tab. For details about power calculation, see the "Power Calculation" section in the *Cisco NCS 2000 Series Hardware Installation Guide*.
- If the red FAIL LED does not turn on, check the power.
- If you insert a card into a slot provisioned for a different card, all LEDs turn off and a minor equipment mismatch alarm appears on the CTC Alarms tab.
- If the red FAIL LED is on continuously or the LEDs behave erratically, the card is not installed.

If any of conditions are present, remove the card and repeat [Steps 4 to 7](#). If the card does not boot up properly the second time, it might be defective. Contact your next level of support.

Step 9 Repeat [Steps 5 through 8](#) until all the DWDM cards are installed in the node.

Step 10 If an OPT-PRE card (or OPT-AMP-17-C, OPT-AMP-C, OPT-EDFA-17, OPT-EDFA-24, or OPT-EDFA-35 card in OPT-PRE card mode) is installed, complete one of the following steps for each OPT-PRE card based on the Cisco Transport Planner shelf layout. If an OPT-PRE is not installed, you have completed this procedure.

- If the Cisco Transport Planner shelf layout does not include DCUs, install a patchcord and 4-dB attenuator with a tolerance of +/-1 dB between the OPT-PRE TX and RX ports for each OPT-PRE card installed in the shelf.
- If the shelf layout includes DCUs, complete the “NTP-G31 Install the DWDM Dispersion Compensating Units” procedure for each side of the shelf that requires a DCU.

Stop. You have completed this procedure.

NTP-G179 Installing the Transponder and Muxponder Cards

Purpose	This procedure describes how to install the NCS transponder and muxponder cards.
Tools/Equipment	TXP_MR_10G, TXP_MR_10E, TXP_MR_10E_C, TXP_MR_10E_L, TXP_MR_10EX_C, TXP_MR_2.5G, TXPP_MR_2.5G, 40E-TXP-C, 40ME-TXP-C, MXP_2.5G_10G, MXPP_2.5G_10G, MXP_2.5G_10E, MXP_2.5G_10E_C, MXP_2.5G_10E_L, MXP_2.5G_10EX_C, MXP_MR_2.5G, MXP_MR_10DME_C, MXP_MR_10DME_L, MXP_MR_10DMEX_C, 40G-MXP-C, 40E-MXP-C, 40ME-MXP-C, AR_MXP, AR_XP, AR_XPE, 100G-LC-C, 10x10G-LC, CFP-LC, 100G-CK-C, 100G-ME-C, 100ME-CKC, 100GS-CK-LC, 200G-CK-LC, WSE, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP cards (as applicable)
Prerequisite Procedures	<ul style="list-style-type: none"> • NTP-G313 Installing and Configuring the TNC, TNCE, TSC, TSCE, or TNCS/TNCS-O Card • “NTP-G14 Install DWDM Equipment” in the Cisco ONS 15454 Hardware Installation Guide • NTP-G139 Verifying Cisco Transport Planner Reports and Files
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	None



Warning During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself. Statement 94



Warning Class 1 laser product. Statement 1008



Warning Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not view directly with optical instruments. Viewing the laser output with certain optical instruments (for example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. Statement 1056



Warning Class I (CDRH) and Class 1M (IEC) laser products. Statement 1055



Caution Always use the supplied ESD wristband when working with a powered NCS. For detailed instructions on how to wear the ESD wristband, see the *Electrostatic Discharge and Grounding Guide for Cisco NCS 2000 Series*.



Caution A fan-tray assembly (15454E-CC-FTA for the ETSI shelf or 15454-CC-FTA for the ANSI shelf) must be installed in a shelf where a GE, ADM-10G, or OTU2_XP card is installed.



Caution The fan-tray assembly 15454-M6-FTA2 (for the M6 chassis) or 15454-M2-FTA2 (for the M2 chassis) must be installed in the shelf where a 100G-LC-C, 10x10G-LC, or 100G-CK-C card is installed. The fan-tray assembly 15454-M6-FTA2 (for the M6 chassis) must be installed in the shelf where a CFP-LC card is installed.



Note The 100G-LC-C, 100G-CK-C, 10x10G-LC, or CFP-LC cards can be installed on the NCS 2002 or NCS 2006 chassis mounted with either of the following:

- Standard brackets on a 19-inch or 23-inch ANSI rack configuration or on an ETSI rack configuration.
- Inlet air deflectors on a 23-inch ANSI rack configuration or on an ETSI rack configuration. The exhaust air deflectors cannot be used.



Note

- An M6 chassis with AC power supply can be equipped with a maximum of four cards (a combination of 100G-LC-C and 10x10G-LC cards). The remaining two slots in the M6 chassis must be left empty.
- An M2 chassis with AC power supply can be equipped with a maximum of one 100G-LC-C or 10x10G-LC card. The remaining slot can be equipped with a card that has a maximum power of 90 W.



Note For US installations, complies with the US Federal Drug Administration Code of Federal Regulations Title 21, Sections 1040.10 and 1040.11, except for deviations pursuant to Laser Notice No. 50, dated July 26, 2001.



Note If protective clips are installed on the backplane connectors of the cards, remove the clips before installing the cards.



Note If you install a card incorrectly, the FAIL LED flashes continuously.

Procedure

- Step 1** Display the Cisco Transport Planner shelf layout for the node where you will install the card.
- Step 2** Remove the card from its packaging, then remove the protective clips from the backplane connectors.
- Step 3** Open the card latches/ejectors.
- Step 4** Use the latches/ejectors to firmly slide the card along the guide rails until the card plugs into the receptacle at the back of the slot designated by the Cisco Transport Planner shelf layout.
- Step 5** Verify that the card is inserted correctly and simultaneously close the latches/ejectors on the card.
- Note** It is possible to close the latches and ejectors when the card is not completely plugged into the backplane. Ensure that you cannot insert the card any further.
- Note** If you install the card in the wrong slot, CTC will raise a MEA (EQPT) alarm. To clear this alarm, open the latches, slide the card out, then insert it in the correct slot.
- After you install the card, the FAIL, ACT, and SF LEDs will go through a sequence of activities. They will turn on, turn off, and blink at different points. After approximately 2 to 3 minutes, the ACT or ACT/STBY LED turns on. The SF LED might persist until all card ports connect to their far-end counterparts and a signal is present.
- Note** Until a card is provisioned, the card is in the standby condition and the ACT/STBY LED remains amber in color.
- Step 6** If the card does not boot up properly or the LEDs do not progress through the activities described in [Step 5](#), check the following:
- When a physical card type does not match the type of card provisioned for that slot in CTC, the card might not boot and CTC will show a MEA (EQPT) alarm. If the card does not boot, open CTC and ensure that the slot is not provisioned for a different card type before assuming that the card is faulty.
 - If the red FAIL LED does not turn on, check the power.
 - If you insert a card into a slot provisioned for a different card, all LEDs turn off.
 - If the red FAIL LED is on continuously or the LEDs behave erratically, the card is not installed properly.
- If any of these conditions are present, remove the card and repeat Steps 3 to 5. If the card does not boot up properly the second time, contact your next level of support.
- Step 7** If the card requires a Small Form-factor Pluggable (SFP, SFP+, XFP, CXP, or CPAK) or a C Form -factor Pluggable (CFP) connector, complete one of the following tasks:

- [DLP-G723 Install PPM on a Line Card](#)—Complete this task to install the physical SFP, SFP+, XFP, CXP, CFP, or CPAK into the TXP, MXP, 100G-LC-C, 10x10G-LC, 100G-CK-C, CFP-LC, WSE, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP card.
- [DLP-G725 Preprovisioning PPM Slot](#)—(Optional) Complete this task if you do not have the physical SFP, SFP+, XFP, CXP, CFP, or CPAK and need to preprovision the SFP, SFP+, XFP, CXP, CFP, or CPAK slot.

Note SFP, SFP+, XFP, CXP, CFP, and CPAK modules are hot-swappable input/output devices that plug into a TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, OTU2_XP, 100G-LC-C, 10x10G-LC, CFP-LC, 100G-CK-C, or WSE line card port, to link the port with the fiber-optic network. For more information, see the [Hardware Specifications](#) and the [Installing the GBIC, SFP, SFP+, XFP, CXP, CFP and CPAK Optical Modules in Cisco NCS Platforms](#) documents.

Note PPM provisioning determines how the SFP, SFP+, XFP, CXP, CPAK, and CFP modules are used in CTC. PPM provisioning procedures are provided in the "Provision Transponder and Muxponder Cards" chapter.

Step 8 If you need to remove an SFP, SFP+, XFP, CXP, CFP, or CPAK, complete the [DLP-G728 Remove PPM from the Line Card](#) task.

Note You must provision the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP cards after you complete all node turn-up procedures. TXP and MXP provisioning procedures are provided in Provision Transponder and Muxponder Cards.

Note Until a card is provisioned, the card is in the standby condition and the ACT/STBY LED remains amber in color.

Stop. You have completed this procedure.

NTP-G123 Installing the Filler Cards

Purpose	This procedure explains how to install the filler cards (blank faceplates). The filler card aids in maintaining proper air flow and electro-magnetic interference (EMI) requirements.
Tools/Equipment	Filler cards
Prerequisite Procedures	NTP-G30 Installing the DWDM cards NTP-G31 Installing the DWDM Dispersion Compensating Units NTP-G179 Installing the Transponder and Muxponder Cards
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	None



Warning Blank faceplates (filler panels) serve three important functions: they prevent exposure to hazardous voltages and currents inside the chassis; they contain electromagnetic interference (EMI) that might disrupt other equipment; and they direct the flow of cooling air through the chassis. Do not operate the system unless all cards and faceplates are in place. Statement 156



Caution Always use the supplied ESD wristband when working with a powered NCS. For detailed instructions on how to wear the ESD wristband, refer to the *Electrostatic Discharge and Grounding Guide for Cisco NCS 2000 Series*.



Note In a NCS 2006 shelf assembly, the line card fillers (15454-M-FILLER) can be installed in any unused line card slots (Slots 1 through 7), and a control card filler (15454-MT-FILLER) can be installed in any unused control card slot (Slot 1 or Slot 8). In an NCS 2002 shelf assembly, the line card filler (15454-M-FILLER) can be installed in any unused line card slots (Slot 2 or Slot 3).

Procedure

- Step 1** Open the card ejectors.
- Step 2** Slide the card along the guide rails into the correct slot.
- Step 3** Close the ejectors.
- Step 4** Repeat for any remaining unused card slots.

Stop. You have completed this procedure.

NTP-G34 Installing Fiber-Optic Cables on DWDM Cards and DCUs

Purpose	This procedure attaches fiber-optic cables on the DWDM cards and DCUs.
Tools/Equipment	Fiber-optic cables Cisco Transport Planner Internal Connections Report
Prerequisite Procedures	<ul style="list-style-type: none"> • NTP-G30 Installing the DWDM cards • NTP-G31 Installing the DWDM Dispersion Compensating Units • NTP-G139 Verifying Cisco Transport Planner Reports and Files
Required/As Needed	As needed

Onsite/Remote	Onsite
Security Level	None



Warning Class I (CDRH) and Class 1M (IEC) laser products. Statement 1055



Caution To comply with the Telcordia GR-1089 NEBS, Issue 5 standard, do not use optical fibers with exposed metallic ferrules. Exposed metallic ferrules may result in ESD damage to the system and can be service affecting.



Note For US installations, complies with the US Federal Drug Administration Code of Federal Regulations Title 21, Sections 1040.10 and 1040.11, except for deviations pursuant to Laser Notice No. 50, dated July 26, 2001.



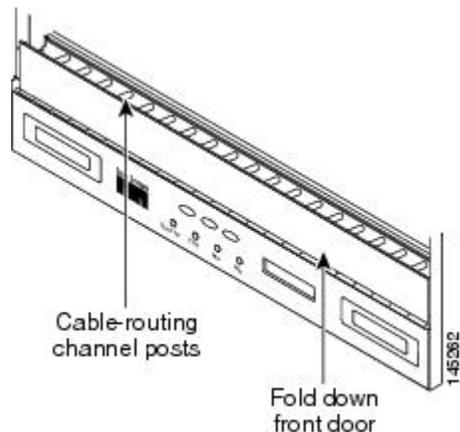
Note In this procedure, you will generally connect fibers in an Side B-to-Side A or Side B-to-Side B pattern only. “Side A” refers to cards and ports in Slots 1 through 8. “Side B” refers to cards and ports installed in Slots 10 through 17.



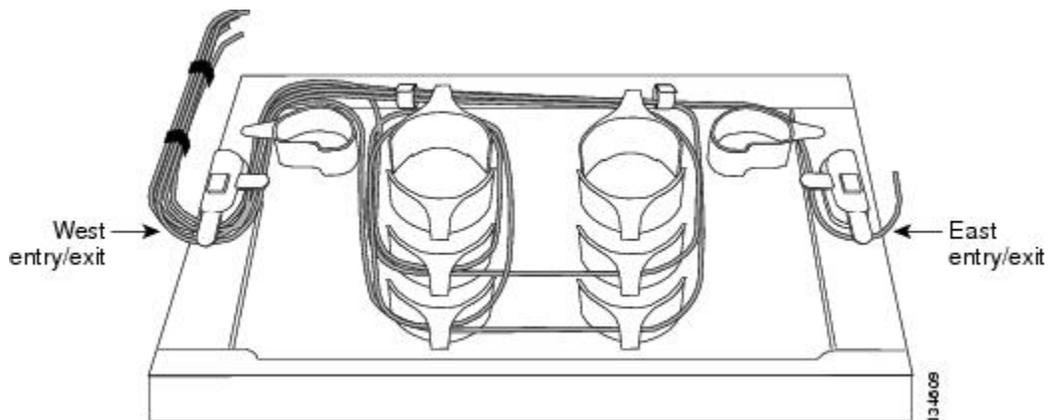
Note You will install fiber-optic cables on TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, and OTU2_XP cards later in the chapter during the [NTP-G140 Installing Fiber-Optic Cables Between Terminal, Hub, or ROADM Nodes](#), on page 29.

Procedure

- Step 1** Refer to the [DLP-G349 Using the Cisco Transport Planner Internal Connections Report](#), on page 28 to install cables to the DWDM cards.
- Step 2** Verify that the appropriate fiber optic cables are available to complete the connections shown in the Cisco Transport Planner Internal Connections report:
 - a) Count the number of connections listed in the Internal Connections and verify that you have the same number of cables.
 - b) Measure the distance between Origination Position and Destination Position for each connection, then verify that the fiber lengths will fit each one.
- Step 3** Complete the for all fiber connections, even new fiber. Dust particles can degrade performance. Put caps on any fiber connectors that are not used.
- Step 4** On the front of the fiber-storage tray (usually installed below the node you are fiberizing), push the tabs on the left and right sides inward to release the lock on the tray.
- Step 5** Pull the fiber-storage tray away from the shelf until it is fully opened.
- Step 6** Open the fold-down door that at the bottom of the shelf assembly to expose the cable-routing channel.

Figure 1: Managing Cables on the Front Panel

- Step 7** Using the Cisco Transport Planner Internal Connections Report, connect one end of the fiber cable plug into the Origination Position.
- Step 8** Route the fiber cable on the card faceplate through the fiber clip on the faceplate, if provided. (Fiber clips are factory-attached to the faceplates of 32DMX, OSCM, OSC-CSM, OPT-PRE, OPT-BST, OPT-BST-E, OPT-BST-L, OPT-AMP-L, OPT-AMP-17-C, OPT-AMP-C, OPT-RAMP-C, OPT-RAMP-CE, OPT-EDFA-17, OPT-EDFA-24, and OPT-EDFA-35 cards.)
- Step 9** Route the fiber cable through the cable-routing channel and cutout on the appropriate side of the shelf assembly, as necessary.
- Step 10** As needed, route slack fiber-optic cable around the round cable retainers in the fiber-storage tray.

Figure 2: Fiber-Storage Tray

Caution When you close the fiber-storage tray, the cables must not be pinched, and the cable bend radius must be equal to or greater than the minimum radius that is recommended in your site specifications. As you route each cable through the fiber-storage tray, make sure that adequate cable slack remains.

- Step 11** Route the fiber cable out either side of the fiber-storage tray as necessary.
- Step 12** Plug the other end of the cable into the Destination position.

Note Cards display an SF LED after the OSC terminations are created if transmit and receive fibers are not connected correctly. For example, an RX port is connected to another RX port or a TX port is connected to another TX port.

Step 13 Repeat Steps 4 through 12 until you have connected the intra-shelf fibers according to the Cisco Transport Planner Internal Connections report.

Step 14 To close the fiber-storage tray, push the tray back toward the rack until it locks into place.

Stop. You have completed this procedure.

DLP-G349 Using the Cisco Transport Planner Internal Connections Report

Purpose	This task describes how to use the Cisco Transport Planner Internal Connections report to install cables on the DWDM cards.
Tools/Equipment	None
Prerequisite Procedures	NTP-G31 Installing the DWDM Dispersion Compensating Units
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Procedure

Step 1 Display the Cisco Transport Planner Internal Connections report for the node that you are provisioning. The Internal Connections report is presented in two views, a patchcord installation view and a software provisioning view. The **Patchcord installation view** lists all the patchcord connections that the installer has to mechanically cable within the site between the different ports of the DWDM cards. The **SW Provisioning view** contains all the connections to be manually set or removed via CTC with respect to the default connections that are automatically generated by the system software running on the node.

The tables identify the patchcords that you must cable by their endpoints. Starting from the left side of report, Position identifies the fiber origination point. The location shown in the next Position to right is the destination point for the fiber connection. The patchcord endpoints are identified by site, assembly shelf, slot, and port number. Information provided by the Internal Connections Software report includes:

- **Name**—Displays the name of the site. On the SW provisioning view, this column indicates whether the connection was automatically set, or should be manually set or removed via CTC.
- **Position**—The cable origination in the format is Rack.Shelf.Slot. For example, Rack#1.Shelf Assembly 1.Slot 2 refers to Slot 2 in shelf assembly 1(DWDM) shelf of Rack 1. Refer to the Cisco Transport Planner Site Dialog box for rack and shelf names and locations.
- **Unit**—The DWDM card (unit) that is installed in the Position's slot. This is where the patchcord originates.
- **Port Number**—The port number where the patchcord connection originates.

- Port ID—(Software provisioning view only) The port identifier shown in TL1 for the Position-1 connection.
- Port Label—The name of the physical port printed on the DWDM card’s front panel and shown in CTC card view.
- Attenuator—If attenuation is required, the product ID (PID) of the bulk fixed attenuator is shown. “Att-Lpbk-4dB” indicates that the DC TX and DC RX ports on an OPT-PRE (or OPT-AMP-17-C, or OPT-AMP-C card provisioned in OPT-PRE card mode) card are to be connected with an attenuated loopback that is shipped with the OPT-PRE card. This parameter also indicates when an internal attenuator must be placed between the OPT-PRE DC-TX and DC-RX ports on the when a DCU is equipped.

Note If the Attenuator field is blank, no attenuation is needed.

- Position—The cable termination in the format is Rack.Shelf.Slot.
- Unit—The DWDM card that is installed in the Position’s slot. This is where the cabling terminates.
- Port—The port number where the patchcord connection terminates.
- Port ID—(Software provisioning view only) The port identifier shown in TL1 for the Position-2 connection.
- Port Label—The name of the physical port printed on the DWDM card’s front panel and shown in CTC card view.
- P/F—Indicates whether you must create the connection manually in CTC. A Yes appearing in this column means that you must create the connection manually.

Caution Failure to create the required manual connections will prevent the node from turning up properly

Step 2 Return to your originating procedure (NTP).

NTP-G140 Installing Fiber-Optic Cables Between Terminal, Hub, or ROADM Nodes

Purpose	This procedure routes fiber-optic cables from the DWDM optical cards in a terminal, hub, or ROADM node to the patch panel, and from the patch panel to TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, or ADM-10G cards.
Tools/Equipment	<ul style="list-style-type: none"> • See Step 1 for a list of equipment specific to each node type. • All node types require fiber-optic cables, terminated with a single LC-type connector on each end. • Cisco Transport Planner Internal Connections Report
Prerequisite Procedures	<ul style="list-style-type: none"> • NTP-G34 Installing Fiber-Optic Cables on DWDM Cards and DCUs, on page 25 • DLP-G348 Using the Cisco Transport Planner Shelf Layout Report

Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	None

Procedure

Step 1 Determine which type of node you are fiberizing.

The following node types require the listed equipment. The cards and patch panels should already be installed before you begin this procedure.

- Terminal node:
 - One of 32WSS card and 32DMX card, and one standard or deep patch panel tray
 - One of 40-WSS-C or 40-WSS-CE card and 40-DMX-C or 40-DMX-CE card, and one standard or deep patch panel tray
 - One of 40-MUX-C card and 40-DMX-C or 40-DMX-CE card, and one standard or deep patch panel tray
 - One 40-SMR1-C card and one 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD (15216 40 or 48-channel mux/demux) patch panel
 - One 40-SMR2-C card and one 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD (15216 40 or 48-channel mux/demux) patch panel
 - One 80-WXC-C card, one 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD unit, and one 15216-MD-40-EVEN, 15216-EF-40-EVEN, or 15216-MD-48-EVEN unit, and one 15216-MD-ID-50 or 15216-MD-48-CM unit
 - One 16-WXC-FS card, one 15216-MD-48-ODD unit, 15216-MD-48-EVEN unit, and one EDRA-2
- Hub node:
 - Two of 32WSS cards and 32DMX cards, and two standard or deep patch panel trays
 - Two of 40-WSS-C or 40-WSS-CE cards and 40-DMX-C or 40DMX-CE cards, and two standard or deep patch panel trays
 - Two 40-SMR1-C cards and two 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD patch panels
 - Two 40-SMR2-C cards and two 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD patch panels
- ROADM node:
 - Two 32WSS cards, optionally, two 32DMX cards, and two standard or deep patch panel trays
 - Two 40-WSS-C or 40-WSS-CE cards, optionally, two 40-DMX-C or 40-DMX-CE cards, and two standard or deep patch panel trays

- Two 40-SMR1-C cards and two 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD patch panels
 - Two 40-SMR2-C cards and two 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD patch panels
 - Two 80-WXC-C cards and two 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD units and 15216-MD-40-EVEN, 15216-EF-40-EVEN, or 15216-MD-48-EVEN units and two 15216-MD-ID-50 or 15216-MD-48-CM units
 - One 16-WXC-FS card, one 15216-MD-48-ODD unit, 15216-MD-48-EVEN unit, and one EDRA-2
- Expanded ROADM node:
 - Two of 40-WSS-C/40-WSS-CE cards and 40-DMX-C/40-DMX-CE cards, and two 40-channel patch panel trays, preinstalled with MPO-LC cables
- Note** If you are using standard patch panels, you will also need eight multifiber push-on (MPO) cables per standard patch panel. MPO cables are fiber-optic cables terminated on one end with one MPO connector and with eight LC-type connectors on the other end. Deep patch panel trays come preinstalled with MPO cables.

Step 2 On the front of the patch panel tray, push the tabs on the left and right sides inward to release the lock on the tray.

Step 3 Pull the patch panel tray away from the shelf until it is fully opened.

Note The red latch inside the patch panel tray at the top left corner will automatically click and lock the tray in the open position when you have fully opened the tray.

Step 4 Depending on the type of patch panel tray you are using:

- Standard patch panel tray:
 - Complete the [DLP-G315 Installing Fiber-Optic Cables From the 32WSS/32DMX Cards to the Standard Patch Panel Tray](#).
 - Complete the [DLP-G316 Installing Fiber-Optic Cables from TXP, MXP Cards to the Standard Patch Panel Tray](#).
- Deep patch panel tray:
 - Complete the [DLP-G356 Installing Fiber-Optic Cables from the 32WSS/32DMX Cards to the Deep Patch Panel Tray](#).
 - Complete the [DLP-G357 Installing Fiber-Optic Cables from the TXP, MXP Cards to the Deep Patch Panel Tray or 40-Channel Patch Panel Tray](#).
- 40-channel patch panel tray:
 - As needed, complete the [DLP-G427 Rerouting Fiber-Optic Cables in the 40-Channel Patch Panel Tray](#) to route the MPO cables out of the right side of the tray so they can be easily connected to cards installed on the right side of the shelf (Slots 12 through 17).
 - Complete the [DLP-G428 Installing Fiber-Optic Cables from the 40-WSS-C/40-WSS-CE and 40-DMX-C/40-DMX-CE Cards to the 40-Channel Patch Panel Tray](#), on page 41 task.

- 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD patch panel:
 - Complete the [#unique_157](#) task.

Step 5 To close the patch panel tray, unlock it by pressing the red latch in the top left corner, and then push the tray back toward the rack until it locks into place.

Caution When you close the patch panel tray, the cables must not be pinched, and the cable bend radius must be equal to or greater than the minimum radius that is recommended in your site specifications. As you route each cable through the patch panel tray, make sure that adequate cable slack remains.

Stop. You have completed this procedure.

DLP-G315 Installing Fiber-Optic Cables From the 32WSS/32DMX Cards to the Standard Patch Panel Tray

Purpose	This task describes how to route fiber-optic cables from 32WSS, and 32DMX cards in a terminal, hub, or ROADM node to the standard patch panel.
Tools/Equipment	<p>The following node types require the following equipment. The cards and patch panels should already be installed before you begin this procedure.</p> <p>Terminal node:</p> <ul style="list-style-type: none"> • One standard patch panel tray • Eight fiber-optic MPO cables: each MPO cable is terminated on one end with one MPO connector and on the other end with eight LC-type connectors <p>Hub node:</p> <ul style="list-style-type: none"> • Two standard patch panel trays • Sixteen fiber-optic MPO cables: each MPO cable is terminated on one end with one MPO connector and on the other end with eight LC-type connectors <p>ROADM node:</p> <ul style="list-style-type: none"> • Two 32WSS cards • Two 32DMX cards • Two standard patch panel trays • Sixteen fiber-optic MPO cables: each MPO cable is terminated on one end with one MPO connector and on the other end with eight LC-type connectors

Prerequisite Procedures	NTP-G34 Installing Fiber-Optic Cables on DWDM Cards and DCUs, on page 25
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	None



Note For a ROADM or hub node, two patch panels will be used, one for Side B side and one for Side A. The Side B 32WSS/32DMX card will connect to the Side B patch panel. The Side A 32WSS/32DMX card will connect to the Side A patch panel.

Procedure

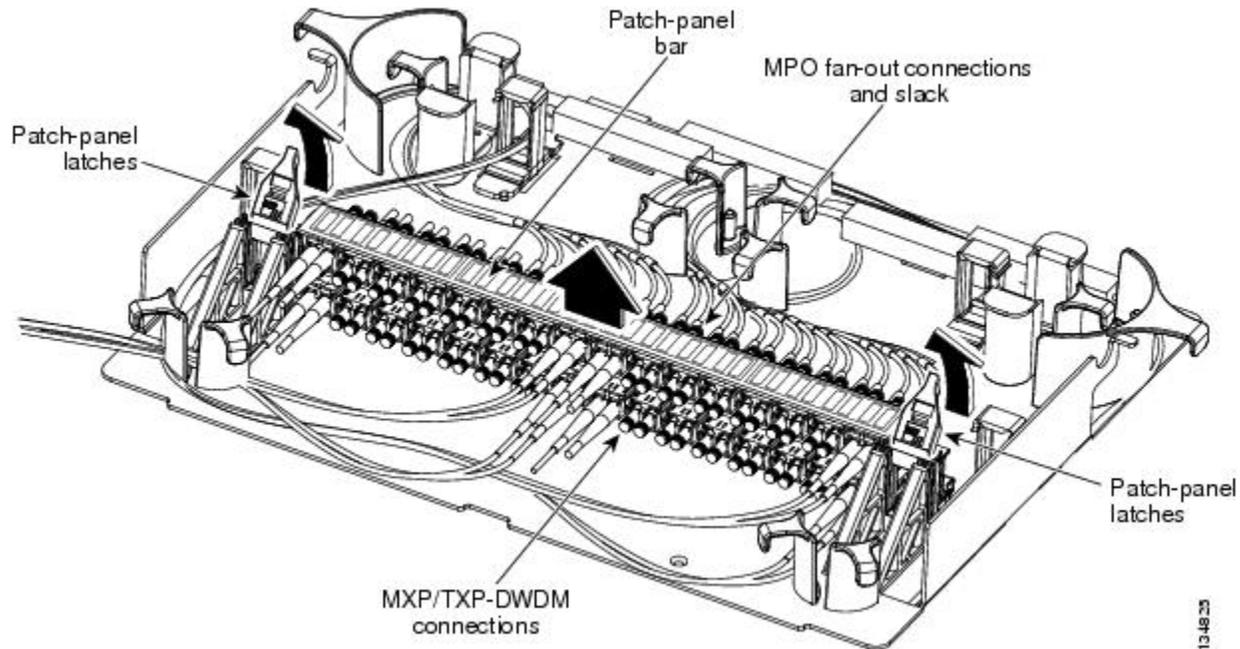
Step 1

Choose either the Side B or Side A to cable the 32WSS and 32DMX cards for a ROADM node

Step 2

On the patch panel, pull up firmly on the two latches and use them to slide the patch panel up until it snaps in place above the tray.

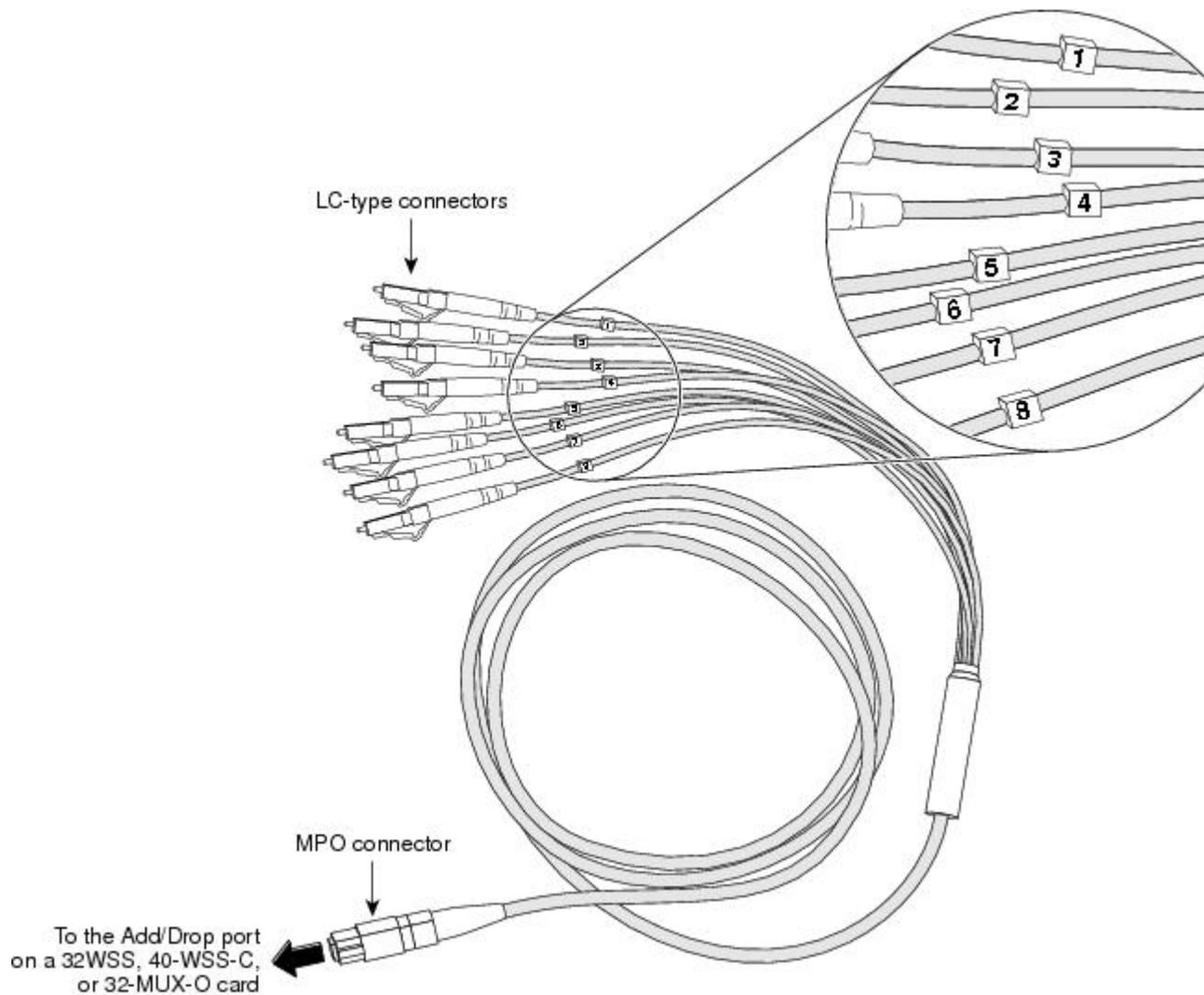
Figure 3: Using the Patch Panel Latches to Slide the Patch Panel Away from the Tray



Step 3

At the 32WSS card in the node, plug the MPO connector of an MPO cable into the top Add RX (30.3–36.6) port of the card. If you are connecting a subsequent MPO cable, plug the MPO connector into the first vacant Add RX card port below the last MPO cable that was installed.

Figure 4: MPO Cable

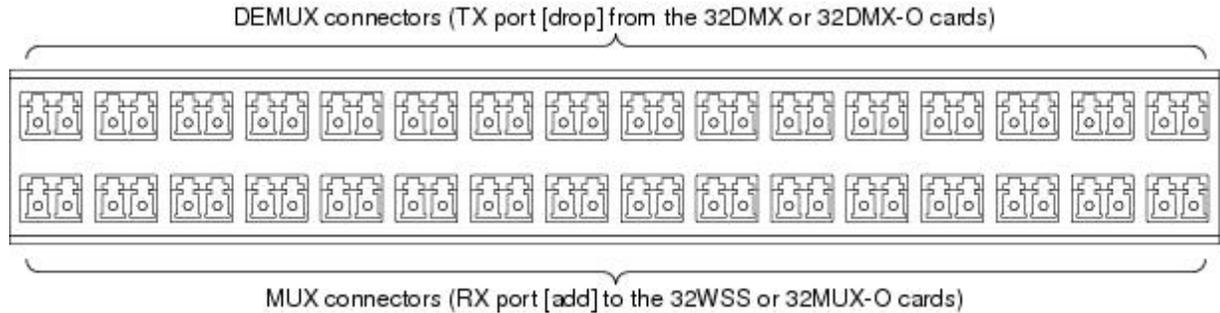


Step 4 Route the MPO cable slack through the patch panel tray as necessary.

Caution When you close the patch panel tray, the cables must not be pinched, and the cable bend radius must be equal to or greater than the minimum radius that is recommended in your site specifications. As you route each cable through the patch panel tray, make sure that adequate cable slack remains.

Step 5 While facing the front of the patch panel, at the rear side of the patch panel, plug the eight LC-connector fan-out cables on the MPO cable into their corresponding connectors on the bottom row of the patch panel. You should plug the fan-out cables from left to right (as you face the patch panel), following the numbers tagged (1 through 8) on the cables.

The following figure shows the patch panel connectors from the rear of the patch panel tray.

Figure 5: Rear View of the Patch Panel

The following figure shows the assigned wavelengths for each port on the patch panel, as indicated at the top of the patch panel bar. The numbers on the patch panel bar correspond to a wavelength on the ITU grid.

Figure 6: Top View of the Patch Panel Bar

- Step 6** As necessary, repeat Steps 3 through 5 for the remaining three Add RX ports on the 32WSS card, until all 32 LC connectors on the bottom row of the rear of the patch panel are connected.
- Step 7** At the adjacent 32DMX card in the same side of the shelf, plug the MPO connector of an MPO cable into the top Drop TX (30.3–36.6) port of the 32DMX card. If you are connecting a subsequent MPO cable, plug the MPO connector into the first vacant Drop TX card port below the last MPO cable that was installed.
- Step 8** Route the MPO cable slack through the patch panel tray as necessary.
- Caution** When you close the patch panel tray, the cables must not be pinched, and the cable bend radius must be equal to or greater than the minimum radius that is recommended in your site specifications. As you route each cable through the patch panel tray, make sure that adequate cable slack remains.
- Step 9** While facing the front of the patch panel, at the rear of the patch panel, plug the eight LC-connector fan-out cables on the MPO cable into their corresponding connectors on the top row of the patch panel. You should plug the fan-out cables from left to right (as you face the patch panel), following the numbers tagged (1 through 8) on the cables.
- Step 10** As necessary, repeat Steps 7 through 9 for the remaining three Drop TX ports on the 32DMX card, until all 32 LC connectors on the top row of the rear of the patch panel are connected.
- Step 11** For a hub or ROADM node, repeat Steps 2 through 10 to cable the other side of the shelf to the second patch panel. For a terminal node, go to Step 12.
- Step 12** Return to your originating procedure (NTP).

DLP-G316 Installing Fiber-Optic Cables from TXP, MXP Cards to the Standard Patch Panel Tray

Purpose	This task describes how to route fiber-optic cables from the patch panel to TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP cards.
Tools/Equipment	TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP card(s) Fiber-optic cable(s)
Prerequisite Procedures	NTP-G34 Installing Fiber-Optic Cables on DWDM Cards and DCUs, on page 25
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	None

Procedure

Step 1 At the appropriate TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP card, plug one end of a fiber-optic cable into the TX port of the DWDM adapter.

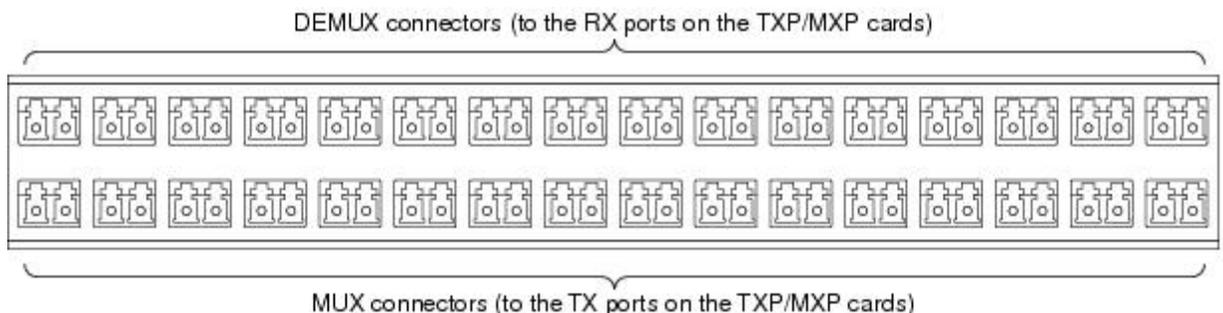
Step 2 As needed, route slack fiber-optic cable around the round cable retainers in the fiber-storage tray.

Caution When you close the fiber-storage tray, the cables must not be pinched, and the cable bend radius must be equal to or greater than the minimum radius that is recommended in your site specifications. As you route each cable through the fiber-storage tray, make sure that adequate cable slack remains.

Step 3 On the DWDM (front) side of the patch panel, plug the other end of the cable into the connector on the bottom row that corresponds to the wavelength to which the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP port is tuned.

The following figure shows the patch panel connectors from the front of the patch panel tray.

Figure 7: Front View of the Patch Panel



- Step 4** Plug one end of a fiber-optic cable into the RX port of the DWDM adapter on the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP card.
- Step 5** On the DWDM (front) side of the patch panel, plug the other end of the cable into the connector on the top row that corresponds to the wavelength to which the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP card is tuned.
- Step 6** Repeat Steps 1 through 5 for all of the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP cards that you want to connect to this patch panel.
- Step 7** Return to your originating procedure (NTP).

DLP-G356 Installing Fiber-Optic Cables from the 32WSS/32DMX Cards to the Deep Patch Panel Tray

Purpose	This task describes how to route fiber-optic cables from 32WSS, and 32DMX cards in a terminal, hub, or ROADM node to the deep patch panel tray.
Tools/Equipment	<p>The following node types require the following equipment. The cards and patch panels should already be installed before you begin this procedure.</p> <p>For terminal nodes, one of the following card sets:</p> <ul style="list-style-type: none"> • 32DMX card • One 32WSS card and one 32DMX card <p>Plus one deep patch panel tray, preinstalled with MPO cables (each MPO cable is terminated on one end with one MPO connector and on the other end with eight LC-type connectors)</p> <p>For hub nodes, one of the following card sets:</p> <ul style="list-style-type: none"> • 32DMX cards • Two 32WSS cards and two 32DMX cards <p>Plus two deep patch panel trays, preinstalled with MPO cables (each MPO cable is terminated on one end with one MPO connector and on the other end with eight LC-type connectors)</p> <p>For ROADM nodes, one of the following card sets:</p> <ul style="list-style-type: none"> • Two 32WSS cards and two 32DMX cards <p>Plus two deep patch panel trays, preinstalled with MPO cables (each MPO cable is terminated on one end with one MPO connector and on the other end with eight LC-type connectors)</p>
Prerequisite Procedures	NTP-G34 Installing Fiber-Optic Cables on DWDM Cards and DCUs, on page 25
Required/As Needed	As needed
Onsite/Remote	Onsite

Security Level	None
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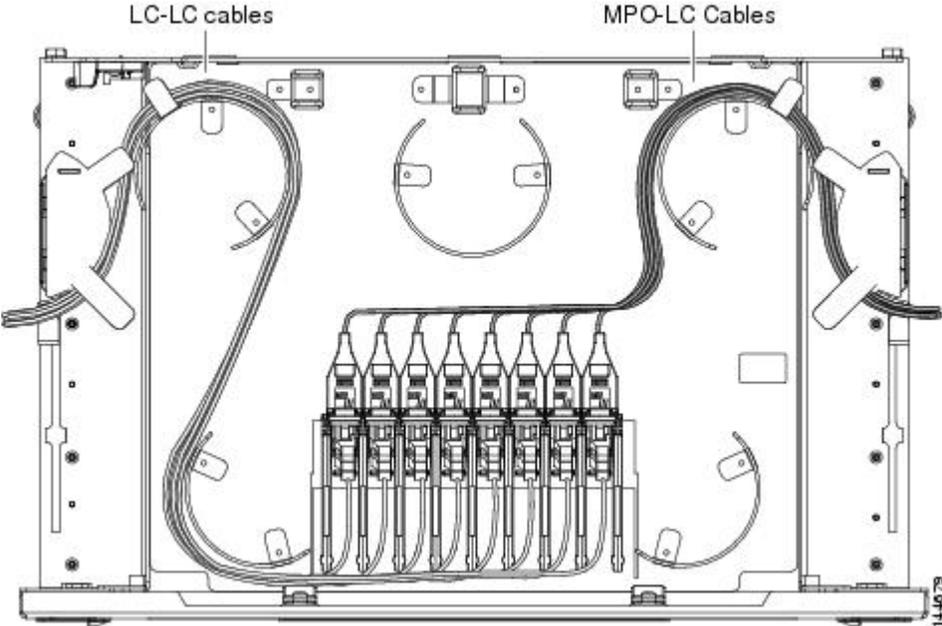


Note For a ROADM or hub node, two patch panels will be used, one for Side A (Slots 1 through 6) and one for Side B (Slots 12 through 17). The Side B 32WSS/32DMX card will connect to the Side B patch panel. The Side A 32WSS/32DMX card will connect to the Side A patch panel. The MPO cables in the patch panel are preinstalled and routed out of the right side of the patch panel tray.

Procedure

- Step 1** Choose either Side A or Side B of the shelf to cable the 32WSS and 32DMX cards for a ROADM node
- Step 2** On the patch panel, locate the MPO connectors (Figure 4: MPO Cable, on page 33).
- Step 3** Route the preinstalled MPO cables out of the tray to the right or left.

Figure 8: Deep Patch Panel Tray



Step 4 At the 32WSS card in the node, plug the MPO connector labeled 1 RX on an MPO cable (Figure 4: MPO Cable, on page 33) into the top Add RX (30.3–36.6) port of the card.

Caution When you close the patch panel tray, the cables must not be pinched, and the cable bend radius must be equal to or greater than the minimum radius that is recommended in your site specifications. As you route each cable through the patch panel tray, make sure that adequate cable slack remains.

- Step 5** Plug the MPO connector labeled 2-RX into the Add RX (38.1–44.5) port on the card.
- Step 6** Plug the MPO connector labeled 3-RX into the Add RX (46.1–52.5) port on the card.
- Step 7** Plug the MPO connector labeled 4-RX into the Add RX (54.1–60.6) port on the card.

The following figure shows the deep patch panel ports and corresponding wavelengths.

Figure 9: Deep Patch Panel Port Wavelengths

1	1532.6nm FX TX	1531.8nm FX TX	1531.1nm FX TX	1530.3nm FX TX
2	1536.6nm FX TX	1535.8nm FX TX	1535.0nm FX TX	1534.2nm FX TX
3	1540.5nm FX TX	1539.7nm FX TX	1538.9nm FX TX	1538.1nm FX TX
4	1544.5nm FX TX	1543.7nm FX TX	1542.9nm FX TX	1542.1nm FX TX
5	1548.5nm FX TX	1547.7nm FX TX	1546.9nm FX TX	1546.1nm FX TX
6	1552.5nm FX TX	1551.7nm FX TX	1550.9nm FX TX	1550.1nm FX TX
7	1556.5nm FX TX	1555.7nm FX TX	1554.9nm FX TX	1554.1nm FX TX
8	1560.6nm FX TX	1559.7nm FX TX	1558.9nm FX TX	1558.1nm FX TX

- Step 8** At the adjacent 32DMX card in the same side of the shelf, plug the MPO connector labeled 1 TX on the MPO cable ([Figure 4: MPO Cable, on page 33](#)) into the top Drop TX (30.3–36.6) port of the card ([Figure 9: Deep Patch Panel Port Wavelengths, on page 39](#)).
- Step 9** Plug the MPO connector labeled 2-TX into the Drop TX (38.1–44.5) port on the card.
- Step 10** Plug the MPO connector labeled 3-TX into the Drop TX (46.1–52.5) port on the card.
- Step 11** Plug the MPO connector labeled 4-TX into the Drop TX (54.1–60.6) port on the card.
- Caution** When you close the patch panel tray, the cables must not be pinched, and the cable bend radius must be equal to or greater than the minimum radius that is recommended in your site specifications. As you route each cable through the patch panel tray, make sure that adequate cable slack remains.
- Step 12** For a hub or ROADM node, repeat Steps 2 through 11 to cable the other side of the shelf to the second patch panel. For a terminal node, go to Step 13.
- Step 13** Return to your originating procedure (NTP).

DLP-G427 Rerouting Fiber-Optic Cables in the 40-Channel Patch Panel Tray

Purpose	This task reroutes the MPO cables that are preinstalled in the 40-channel patch panel tray. The cables exit to the left when shipped; this task reroutes the cables out of the right side of the tray. Use this task when you want to connect these MPO cables to cards installed on the right side of the shelf.
Tools/Equipment	#2 Phillips screwdriver
Prerequisite Procedures	None

Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	None

Procedure

- Step 1** Carefully unwind all of the MPO cables in the patch panel tray and gently set the cables to the side of the tray, out of the way of the internal hardware.

Figure 10: 40-Channel Patch Panel Tray, Side View

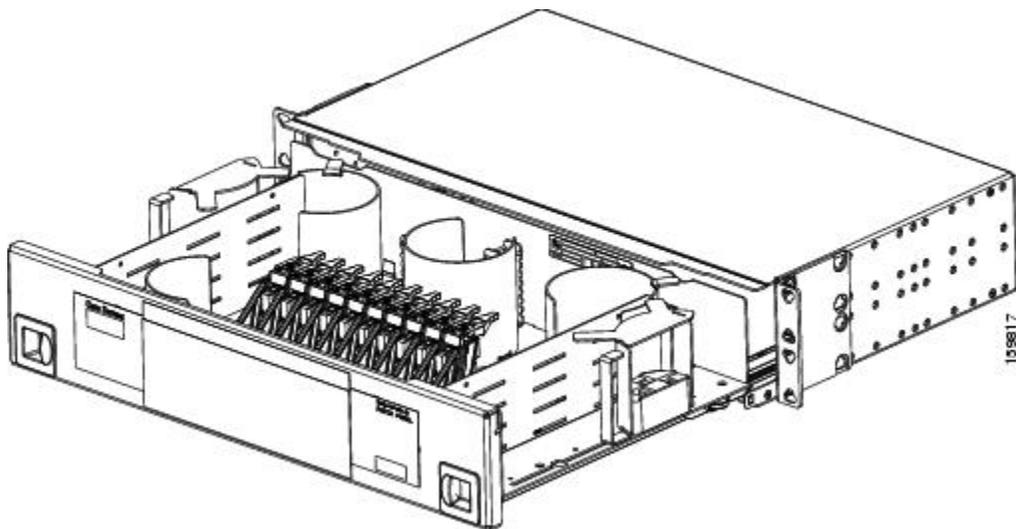
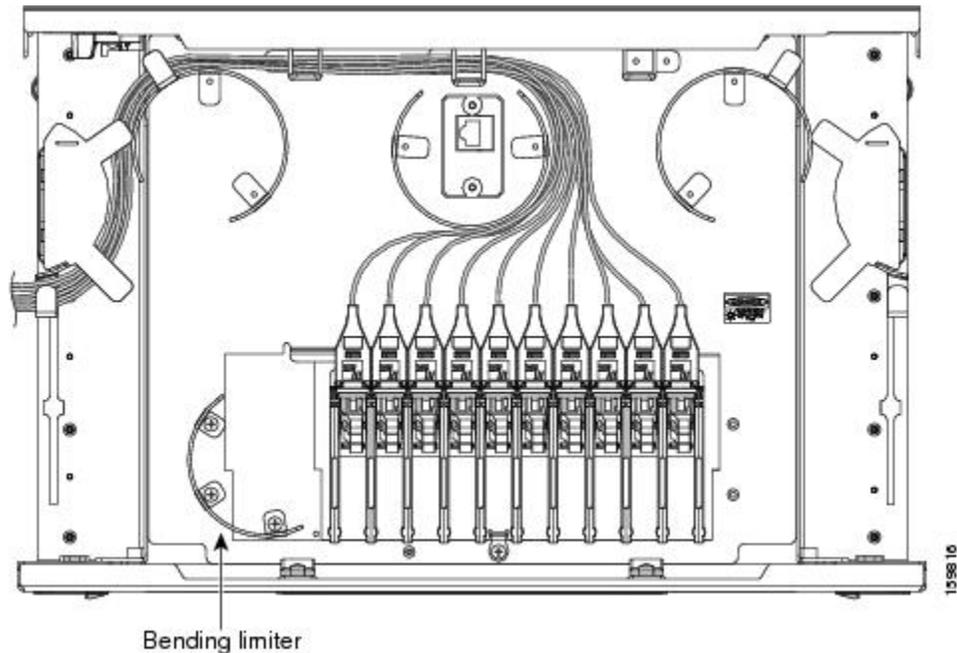


Figure 11: 40-Channel Patch Panel Tray, Top View



- Step 2** Slide each of the ten LC-port adapter packs upward.
- Step 3** Unscrew the two screws in the bottom left bending limiter and remove the bending limiter.
- Step 4** Remove the single screw below the center of the patch panel to free the patch panel hardware.
- Step 5** Slide the patch panel to the left, and reinstall the screw below the center of the patch panel.
- Step 6** Install the bending limiter to the right of the patch panel by installing the two screws.
- Step 7** Carefully route all of the MPO cables around the bending limiter and out the exit on the right side of the patch panel tray.
- Step 8** Slide each of the ten LC-port adapter packs downward.
- Step 9** Return to your originating procedure (NTP).

DLP-G428 Installing Fiber-Optic Cables from the 40-WSS-C/40-WSS-CE and 40-DMX-C/40-DMX-CE Cards to the 40-Channel Patch Panel Tray

Purpose	This task describes how to route fiber-optic cables from 40-WSS-C/40-WSS-CE and 40-DMX-C/40-DMX-CE cards in an expanded ROADM, terminal, or hub node to the 40-channel (80-port) patch panel tray (15454-PP-80).
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Tools/Equipment	<p>The following node types require the following equipment. The cards and patch panels should already be installed before you begin this procedure.</p> <p>Expanded terminal nodes:</p> <ul style="list-style-type: none"> • One 40-WSS-C or 40-WSS-CE card • One 40-DMX-C or 40-DMX-CE card <p>Plus one 40-channel patch panel tray, preinstalled with MPO cables (each MPO cable is terminated on one end with one MPO connector and on the other end with eight LC-type connectors)</p> <p>Expanded hub or ROADM nodes:</p> <ul style="list-style-type: none"> • Two 40-WSS-C or 40-WSS-CE cards • Two 40-DMX-C or 40-DMX-CE cards <p>Plus two 40-channel patch panel trays, preinstalled with MPO cables (each MPO cable is terminated on one end with one MPO connector and on the other end with eight LC-type connectors)</p>
Prerequisite Procedures	<p>NTP-G34 Installing Fiber-Optic Cables on DWDM Cards and DCUs, on page 25</p> <p>DLP-G427 Rerouting Fiber-Optic Cables in the 40-Channel Patch Panel Tray, on page 39</p>
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	None



Note For a ROADM node, two patch panels will be used, one for the Side A and one for Side B. The Side B 40-WSS-C/40-WSS-CE card will connect to the Side B patch panel. The Side A 40-WSS-C/40-WSS-CE will connect to the Side A patch panel. The MPO cables in the patch panel are preinstalled and routed out of the left side of the patch panel tray.

Procedure

Step 1

Choose either the Side A or Side B side of the shelf to cable the 40-WSS-C/40-WSS-CE and 40-DMX-C/40-DMX-CE cards.

Note If you are cabling cards on Side B of the shelf, you must first perform the [DLP-G427 Rerouting Fiber-Optic Cables in the 40-Channel Patch Panel Tray, on page 39](#) to route the MPO cables out of the right side of the patch panel tray, or route the cables through a fiber storage panel.

Step 2

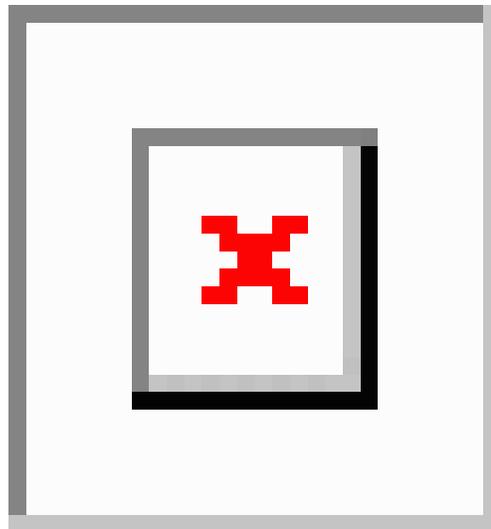
On the patch panel, locate the MPO cables and connectors.

- Step 3** At the 40-WSS-C/40-WSS-CE card in the node, plug the MPO connector labeled 1 RX on an MPO cable (Figure 4: MPO Cable, on page 33) into the top Add RX (30.3–35.8) port of the card.
- Step 4** Plug the MPO connector labeled 2-RX into the Add RX (36.6–42.1) port on the card.
- Step 5** Plug the MPO connector labeled 3-RX into the Add RX (42.9–48.5) port on the card.
- Step 6** Plug the MPO connector labeled 4-RX into the Add RX (49.3–54.9) port on the card.
- Step 7** Plug the MPO connector labeled 5-RX into the Add RX (55.7–61.4) port on the card.

Caution When you close the patch panel tray, the cables must not be pinched, and the cable bend radius must be equal to or greater than the minimum radius that is recommended in your site specifications. As you route each cable through the patch panel tray, make sure that adequate cable slack remains.

The following figure shows the 40-channel patch panel ports and corresponding wavelengths.

Figure 12: 40-Channel (15454-PP-80) Patch Panel Port Wavelengths



- Step 8** At the adjacent 40-DMX-C/40-DMX-CE card in the same side of the shelf, plug the MPO connector labeled 1 TX on the MPO cable into the top Drop TX (30.3–35.8) port of the card.
- Step 9** Plug the MPO connector labeled 2-TX into the Drop TX (36.6–42.1) port on the card.
- Step 10** Plug the MPO connector labeled 3-TX into the Drop TX (42.9–48.5) port on the card.
- Step 11** Plug the MPO connector labeled 4-TX into the Drop TX (49.3–54.9) port on the card.
- Step 12** Plug the MPO connector labeled 5-TX into the Drop TX (55.7–61.4) port on the card.

Caution When you close the patch panel tray, the cables must not be pinched, and the cable bend radius must be equal to or greater than the minimum radius that is recommended in your site specifications. As you route each cable through the patch panel tray, make sure that adequate cable slack remains.

- Step 13** Repeat Steps 2 through 12 to cable the other side of the shelf to the second patch panel.
- Step 14** Return to your originating procedure (NTP).

DLP-G357 Installing Fiber-Optic Cables from the TXP, MXP Cards to the Deep Patch Panel Tray or 40-Channel Patch Panel Tray

Purpose	This task describes how to route fiber-optic cables from the deep patch panel (32-channel) or 40-channel patch panel to TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP cards.
Tools/Equipment	TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP card(s) Deep (32-channel) patch panel tray or 40-channel patch panel tray Fiber-optic cable(s) Cisco Transport Planner Internal Connections Report
Prerequisite Procedures	NTP-G34 Installing Fiber-Optics Cables on DWDM Cards and DCUs
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	None

Procedure

-
- Step 1** Refer to the Cisco Transport Planner Internal Connections Report to connect the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP card to the proper (Side A or Side B) patch panel. At the appropriate TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP card, plug one end of a fiber-optic cable into the TX port of the DWDM adapter.
- Step 2** As needed, route slack fiber-optic cable around the round cable retainers in the fiber-storage tray.
- Caution** When you close the fiber-storage tray, the cables must not be pinched, and the cable bend radius must be equal to or greater than the minimum radius that is recommended in your site specifications. As you route each cable through the fiber-storage tray, make sure that adequate cable slack remains.
- Step 3** Plug the other end of the cable into the RX connector on the patch panel that corresponds to the wavelength to which the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP port is tuned. (See Deep Patch Panel Port Wavelengths for a view of the wavelengths assigned to the deep patch panel connectors or 40-Channel (15454-PP-80) Patch Panel Port Wavelengths for a view of the wavelengths assigned to the 40-channel patch panel connectors).
- Step 4** On the patch panel tray, slide each of the ten LC-port adapter packs upward.
- Step 5** Plug one end of a fiber-optic cable into the RX port of the DWDM adapter on the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP card.
- Step 6** Plug the other end of the cable into the TX connector on the patch panel that corresponds to the wavelength to which the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP port is tuned.
- Step 7** Repeat Steps 1 through 6 for each TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP card that you want to connect to this patch panel.

Step 8 Return to your originating procedure (NTP).

NTP-G185 Installing Fiber-Optic Cables between Mesh Nodes

Purpose	<p>This procedure describes how to install fiber-optic cables to create mesh nodes. You must route fiber-optic cables from:</p> <ul style="list-style-type: none"> • 40-MUX-C and 40-DMX-C cards in a mesh node to the 40-channel (80-port) patch panel tray (15454-PP-80) • 40-WXC-C or 80-WXC-C or 16-WXC-FS cards in a mesh node to one of the mesh patch panel trays (four-degree or eight-degree). The 16-WXC-C card uses the MF-DEG-5, MF-UPG-4 passive modules for mesh nodes. • 40-SMR2-C cards in a mesh node to the 15454-PP-4-SMR patch panel tray.
Tools/Equipment	<p>Mesh nodes require the following equipment. The cards and patch panels should already be installed before you begin this procedure.</p> <ul style="list-style-type: none"> • One 40-MUX-C card per side of the mesh node (up to 8 sides per node) • One 40-DMX-C card per side of the mesh node (up to 8 sides per node) • One 40-channel patch panel tray per side of the mesh node (up to 8 sides per node) • One 40-WXC-C card per side (up to 8 sides per node) • One 80-WXC-C card per side (up to 8 sides per node) • One 16-WXC-FS card per side (up to 8 sides per node) • One 40-SMR2-C card per side (up to 4 sides per node) • One MPO-MPO fiber-optic cable per side (up to 8 sides per node) • One LC-LC fiber-optic cable per side (up to 8 sides per node) • One PP-MESH-4 (four-degree), PP-MESH-8 (eight-degree), or 15454-PP-4-SMR (four-degree) mesh patch panel tray depending on the type of mesh node you want to install <p>Note Use the PP-MESH-4 or PP-MESH-8 mesh patch panel trays for the 40-WXC-C or 80-WXC-C cards and the 15454-PP-4-SMR mesh patch panel tray for the 40-SMR2-C card.</p>
Prerequisite Procedures	<p>NTP-G34 Installing Fiber-Optic Cables on DWDM Cards and DCUs, on page 25</p> <p>DLP-G427 Rerouting Fiber-Optic Cables in the 40-Channel Patch Panel Tray, on page 39</p>

Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	None

Procedure

- Step 1** Open the patch panel tray:
- 40-channel patch panel tray—On the front of the patch panel tray, push the tabs on the left and right sides inward to release the lock on the tray. Pull the patch panel tray away from the shelf until it is fully opened.
 - Mesh patch panel tray—On the front of the patch panel tray, push the tabs on the left and right sides inward to open the front door. Raise the plunger located to the right of the TEST ACCESS TX port and pull the tray away from the rack.
- Step 2** Complete the [DLP-G430 Installing Fiber-Optic Cables from the 40-MUX-C and 40-DMX-C Cards to the 40-Channel Patch Panel Tray, on page 46](#).
- Step 3** Complete the [DLP-G431 Installing Fiber-Optic Cables from the 40-WXC-C, or 40-SMR-C Cards to a mesh Patch Panel Tray](#).
- Step 4** Close the patch panel tray:
- 40-channel patch panel tray: Push the tray back toward the rack until it locks into place.
 - Mesh patch panel tray: Raise the plunger located on the right of the TEST ACCESS Tx port and push the tray until the plunger locks into the closed position.

Caution When you close the patch panel tray, the cables must not be pinched, and the cable bend radius must be equal to or greater than the minimum radius that is recommended in your site specifications. As you route each cable through the tray, make sure that adequate cable slack remains.

Stop. You have completed this procedure.

DLP-G430 Installing Fiber-Optic Cables from the 40-MUX-C and 40-DMX-C Cards to the 40-Channel Patch Panel Tray

Purpose	This task describes how to route fiber-optic cables from 40-MUX-C and 40-DMX-C cards in mesh node to the 40-channel (80-port) patch panel tray (15454-PP-80). In a mesh node, one 40-channel patch panel tray is required for each direction. The Side A 40-MUX-C and 40-DMX-C cards will connect to the Side A 40-channel patch panel. The Side B 40-MUX-C and 40-DMX-C cards will connect to the Side B 40-channel patch panel, and so forth, up to a maximum of an eight-degree mesh node (Sides A through H).
----------------	---

Tools/Equipment	The cards and patch panels should already be installed before you begin this procedure. <ul style="list-style-type: none"> • One 40-MUX-C card per side of the mesh node • One 40-DMX-C card per side of the mesh node • One 40-channel patch panel trays per side of the mesh node, preinstalled with MPO cables (each MPO cable is terminated on one end with one MPO connector and on the other end with eight LC-type connectors)
Prerequisite Procedures	NTP-G34 Installing Fiber-Optic Cables on DWDM Cards and DCUs, on page 25 DLP-G427 Rerouting Fiber-Optic Cables in the 40-Channel Patch Panel Tray, on page 39
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	None

Procedure

Step 1 Choose Side A of the shelf to cable the 40-MUX-C and 40-DMX-C cards.

Note If you are cabling any cards from the right side of the shelf (Slots 12 through 17), you must first perform the [DLP-G427 Rerouting Fiber-Optic Cables in the 40-Channel Patch Panel Tray, on page 39](#) to route the MPO cables out of the right side of the patch panel tray, or route the cables through a fiber storage panel.

Step 2 On the patch panel, locate the MPO cables and connectors.

Step 3 At the 40-MUX-C card in the node, plug the MPO connector labeled 1 RX on an MPO cable into the top Add RX (30.3–35.8) port of the card.

Step 4 Plug the MPO connector labeled 2-RX into the Add RX (36.6–42.1) port on the card.

Step 5 Plug the MPO connector labeled 3-RX into the Add RX (42.9–48.5) port on the card.

Step 6 Plug the MPO connector labeled 4-RX into the Add RX (49.3–54.9) port on the card.

Step 7 Plug the MPO connector labeled 5-RX into the Add RX (55.7–61.4) port on the card.

Step 8 At the adjacent 40-DMX-C card in the same side of the shelf, plug the MPO connector labeled 1 TX on the MPO cable.

Step 9 Plug the MPO connector labeled 2-TX into the Drop TX (36.6–42.1) port on the card.

Step 10 Plug the MPO connector labeled 3-TX into the Drop TX (42.9–48.5) port on the card.

Step 11 Plug the MPO connector labeled 4-TX into the Drop TX (49.3–54.9) port on the card.

Step 12 Plug the MPO connector labeled 5-TX into the Drop TX (55.7–61.4) port on the card.

Caution When you close the patch panel tray, the cables must not be pinched, and the cable bend radius must be equal to or greater than the minimum radius that is recommended in your site specifications. As you route each cable through the patch panel tray, make sure that adequate cable slack remains.

- Step 13** Repeat Steps 2 through 12 for the remaining sides of the mesh node (Sides B through H, depending on the type of mesh node you want to cable).
- Step 14** Return to your originating procedure (NTP).

NTP-G191 Installing Fiber-Optic Cables on Passthrough ROADMs Nodes

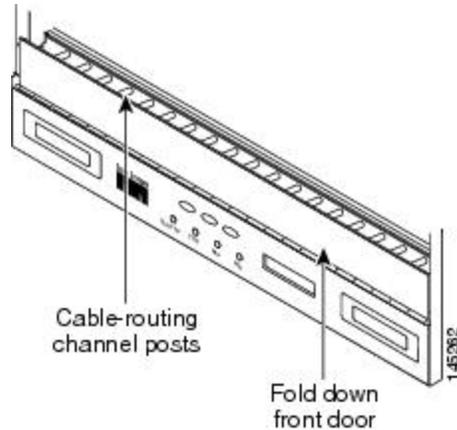
Purpose	This procedure routes fiber-optic cables from a 32WSS card in a ROADM node in one shelf to the corresponding 32WSS card in a ROADM node in another shelf. The purpose of this routing is to connect East and West intershelf ROADMs in a passthrough configuration.
Tools/Equipment	Each ROADM node requires the listed equipment. The cards and fiber-storage trays should already be installed before you begin this procedure. <ul style="list-style-type: none"> • One 32WSS card • One fiber-storage tray • Two 3-meter fiber-optic cables, each terminated with a single LC connector on each end. • Cisco Transport Planner Internal Connections Report
Prerequisite Procedures	DLP-G348 Using the Cisco Transport Planner Shelf Layout Report
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	None

Procedure

- Step 1** Choose either the East or West side of the first shelf to cable the 32WSS card for the first ROADM node.
- Step 2** Choose the corresponding West or East side of the second shelf to cable the 32WSS card for the second ROADM node.
- Step 3** On the front of the fiber-storage tray that will be used for routing the fiber-optic cable, push the tabs on the left and right sides inward to release the lock on the tray.
- Step 4** Pull the fiber-storage tray away from the shelf until it is fully opened.

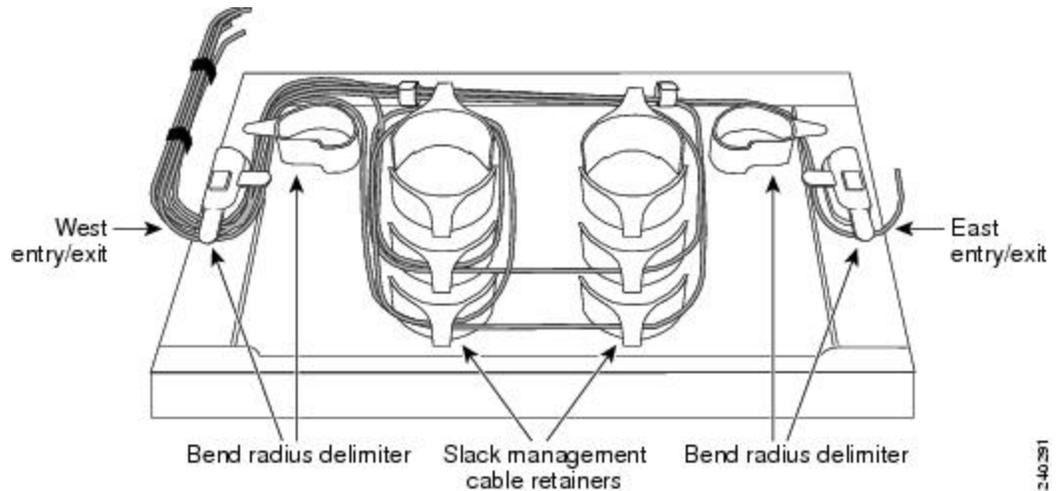
- Step 5** Open the fold-down door located at the bottom of both shelf assemblies to expose the cable-routing channels for each.

Figure 13: Managing Cables on the Front Panel



- Step 6** Plug one end of the first 3-meter fiber-optic cable into the EXP-TX connector on the first 32WSS card.
- Step 7** Route the fiber-optic cable through the shelf cable-routing channel and cutout on the appropriate side of the shelf assembly, as necessary.
- Step 8** Route the fiber-optic cable through the vertical fiber guide as needed to reach the entry to the fiber-storage tray.
- Step 9** Thread the cable into the fiber-storage tray at the appropriate side and around the first bend radius delimiter as shown in [Figure 14: Fiber-Storage Tray, on page 49](#).
- Step 10** As needed, route slack fiber-optic cable around the slack management cable retainers in the fiber-storage tray.

Figure 14: Fiber-Storage Tray



- Caution** When you close the fiber-storage tray, the cables must not be pinched, and the cable bend radius must be equal to or greater than the minimum radius that is recommended in your site specifications. As you route each cable through the fiber-storage tray, make sure that adequate cable slack remains.

- Step 11** Thread the fiber cable through the second bend delimiter and out the appropriate side of the fiber-storage tray as necessary.
- Step 12** Route the fiber-optic cable through the vertical fiber guide as needed to reach the second ROADM shelf where the second 32WSS is located.
- Step 13** Route the fiber-optic cable through the shelf cutout and through the shelf cable routing channel as needed.
- Step 14** Plug the end of the 3-meter fiber-optic cable into the EXP-RX port of the second 32WSS card.
- Step 15** Plug one end of the second 3-meter fiber-optic cable into the EXP-TX connector on the second 32WSS card.
- Step 16** Follow [Step 7](#) through [Step 14](#) to connect the EXP-TX connector of the second 32WSS card to the EXP-RX port of the first 32WSS card.
- Step 17** Close the fold-down doors located at the bottom of both shelf assemblies and slide the fiber-storage tray back into its normal locked position.

Stop. You have completed this procedure.

NTP-G141 Installing Fiber-Optic Cables for Y-Cable Protection Modules

Purpose	This procedure installs and routes fiber-optic cables from the client signal to the Y-cable protection module (single mode or multimode), and from the Y-cable module to the transponder node. Using one Y-cable protection module, you can protect one client signal with two TXP, MXP, AR_MXP, AR_XP, AR_XPE, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, or OTU2_XP cards, and two client signals with four TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, or OTU2_XP cards. You can use Y-cable protection modules that you have installed in a FleyLayer shelf, or Y-cable modules installed in a Y-cable module tray.
Tools/Equipment	Fiber-optic cables Cisco Transport Planner Internal Connections Report
Prerequisite Procedures	
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	None



Note The insertion loss of Single-Mode Y-Cable Protection Module (15454-YCM-SM-LC) is 4 dB.



Note To use Y-cable protection for GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards, the cards must be provisioned in 10GE MXP, 20GE MXP, or 10GE TXP mode. Y-cable protection cannot be used for GE_XP, 10GE_XP, GE_XPE, and 10GE_XPE cards that are provisioned in L2-over-DWDM mode.

Procedure

- Step 1** As needed, complete the [DLP-G375 Installing Fiber-Optic Cables on the Y-Cable Modules in the FlexLayer Shelf, on page 51](#).
- Step 2** As needed, complete the [DLP-G376 Installing Fiber-Optic Cables on the Y-Cable Modules in the Y-Cable Module Tray, on page 53](#).
- Stop. You have completed this procedure.**

DLP-G375 Installing Fiber-Optic Cables on the Y-Cable Modules in the FlexLayer Shelf

Purpose	This task installs fiber-optic cables from the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, AR_MXP, AR_XP, or AR_XPE cards to the Y-cable modules installed in the FlexLayer shelves, and from the Y-cable modules to the client devices.
Tools/Equipment	Fiber-optic cables Cisco Transport Planner Internal Connections Report
Prerequisite Procedures	NTP-G179 Installing the Transponder and Muxponder Cards
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	None

Procedure

- Step 1** Referring to the Cisco Transport Planner Internal Connections Report, install a fiber-optic cable between a TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, AR_MXP, AR_XP, or AR_XPE card and a Y-cable module.
- If you want to protect one client signal or protect two client signals using a single Y-cable module, connect the fiber-optic cables according to the following tables.

Table 5: Cable Connections for Y-Cable Protection of One Client Signal

From	To (Y-Cable Port Number)
Client 1 TX port	10
Client 1 RX port	5
TXP/MXP/GE_XP/GE_XPE/10GE_XP/10GE_XPE 1 TX port	1
TXP/MXP/GE_XP/GE_XPE/10GE_XP/10GE_XPE 1 RX port	2
TXP/MXP/GE_XP/GE_XPE/10GE_XP/10GE_XPE 2TX port	6
TXP/MXP/GE_XP/GE_XPE/10GE_XP/10GE_XPE2RX port	7

Table 6: Cable Connections for Y-Cable Protection of a Second Client Signal

From	To (Y-Cable Port Number)
Client 2 TX port	12
Client 2 RX port	11
TXP/MXP/GE_XP/GE_XPE/10GE_XP/10GE_XPE3 TX port	3
TXP/MXP/GE_XP/GE_XPE/10GE_XP/10GE_XPE 3 RX port	4
TXP/MXP/GE_XP/GE_XPE/10GE_XP/10GE_XPE 4 TX port	8
TXP/MXP/GE_XP/GE_XPE/10GE_XP/10GE_XPE 4 RX port	9

Step 2 As needed, route slack fiber-optic cable around the round cable retainers in the fiber-storage tray as you install cables between the Y-cable module and the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE cards ([Figure 2: Fiber-Storage Tray, on page 27](#)).

Caution When you close the fiber-storage tray, the cables must not be pinched, and the cable bend radius must be equal to or greater than the minimum radius that is recommended in your site specifications. As you route each cable through the fiber-storage tray, make sure that adequate cable slack remains.

Step 3 Install a fiber-optic cable between the client device and the Y-cable module where you just installed a fiber-optic cable to the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE card.

Step 4 Repeat Steps 1 through 3 for each Y-cable module you need to use for Y-cable protection.

Step 5 Return to your originating procedure (NTP).

DLP-G376 Installing Fiber-Optic Cables on the Y-Cable Modules in the Y-Cable Module Tray

Purpose	This task installs fiber-optic cables from the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE cards to the Y-cable modules installed in the Y-cable module tray, and from the Y-cable modules to the client devices.
Tools/Equipment	Fiber-optic cables (4-meter [13.12-foot]), single-mode or multimode as appropriate Cisco Transport Planner Internal Connections Report
Prerequisite Procedures	NTP-G179 Installing the Transponder and Muxponder Cards
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	None

Procedure

- Step 1** Open the drawer of the tray by pushing inward on the latches located at the left and right front of the tray.
- Step 2** On each Y-cable module you will connect, use the tab to slide the module up so that it is fully extended and easily accessible in the tray.
- Step 3** Referring to the Cisco Transport Planner Internal Connections Report, install a 4-meter (13.12-foot) fiber-optic cable (single-mode or multimode, as appropriate) between a TXP, MXP, GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE card and the Y-cable module installed farthest to the left. Proceed according to the port label affixed to the front of the tray to identify the ports on each installed module.

Figure 15: Y-Cable Protection Port Label

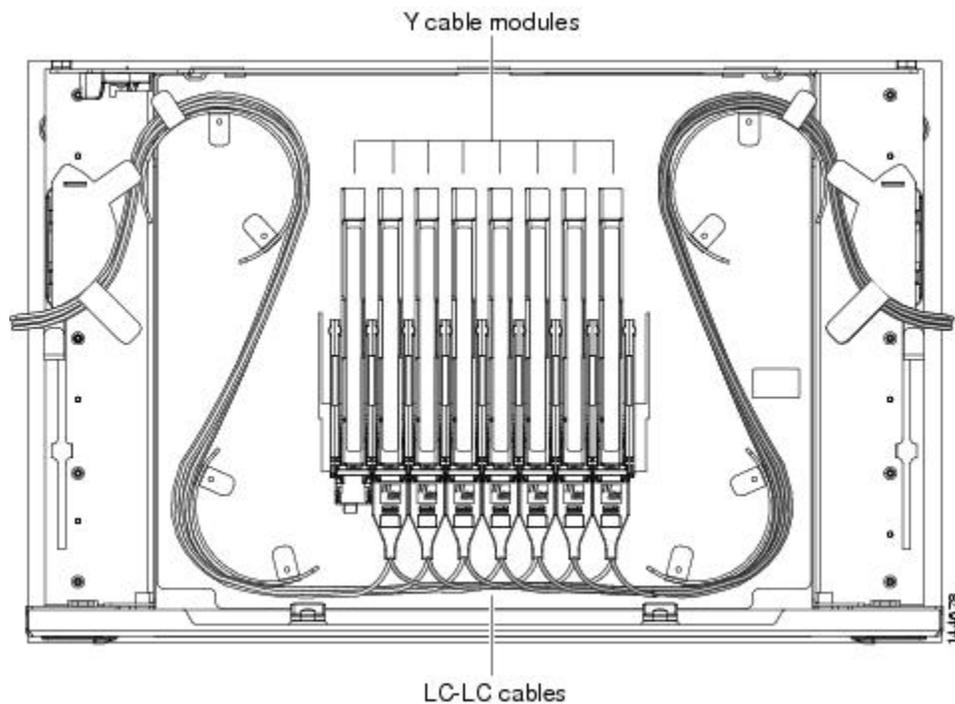
Client TX							
Client RX							
TXP W TX							
TXP W RX							
TXP P TX							
TXP P RX							
#1	#2	#3	#4	#5	#6	#7	#8

Note You can use the label shown in the above figure to take notes as to which wavelength/port you are connecting to each Y-cable module. “W” denotes the indicated Working port on the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE card. “P” denotes the indicated Protect port on the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE card.

Note Protective covers are installed over the third and fourth ports on the Y-cable modules because they are not used.

As needed, route slack fiber-optic cable around the round cable retainers in the Y-cable module tray as you install cables between the Y-cable module and the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE card as shown in the following figure.

Figure 16: Y-Cable Protection Module Tray



Caution When you close the Y-cable module tray, the cables must not be pinched, and the cable bend radius must be equal to or greater than the minimum radius that is recommended in your site specifications. As you route each cable through the tray, make sure that adequate cable slack remains.

- Step 4** Referring to the Cisco Transport Planner Internal Connections Report, install a fiber-optic cable of adequate length (single-mode or multimode, as appropriate) between the Y-cable module and the client signal that you want to protect.
- Step 5** As needed, route slack fiber-optic cable around the round cable retainers in the Y-cable module tray as you install cables between the Y-cable module and the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, or 10GE_XPE card.
- Step 6** Repeat Steps 2 to 5 for each Y-cable module you need to use for Y-cable protection.
- Step 7** To close the tray, unlock the drawer from the open position by depressing the red lock at the back left of the tray and push the tray closed.

Step 8 Return to your originating procedure (NTP).

NTP-G39 Verifying OSCM Transmit Power

Purpose	This procedure verifies that the transmit power for the ONS 15454 OSCM and the OSC-CSM cards is correct.
Tools/Equipment	None
Prerequisite Procedures	<ul style="list-style-type: none"> • DLP-G46 Log into CTC • NTP-G37 Running Automatic Node Setup
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Superuser only

Procedure

- Step 1** Disable automatic laser shutdown (ALS) on Side A or (for terminal nodes) the terminal side OSCM or OSC-CSM card:
- a) In the node view (single-shelf mode) or shelf view (multishelf mode), double-click the Side A or terminal-side OSCM or OSC-CSM card.
 - b) Click the **Maintenance > ALS** tabs.
 - c) From the ALS Mode drop-down list, choose **Disable**.
 - d) Click **Apply**. Click **Yes** in the confirmation dialog box.
- Step 2** If an OSC-CSM or OSCM card is installed on Side B, complete the following steps. If not, continue with [Step 3](#).
- a) In the node view (single-shelf mode) or shelf view (multishelf mode), double-click the Side B OSCM or OSC-CSM card.
 - b) Click the **Maintenance > ALS** tabs.
 - c) From the ALS Mode drop-down list, choose **Disable**.
 - d) Click **Apply**. Click **Yes** in the confirmation dialog box.
- Step 3** Complete the [DLP-G314 Verifying OSCM Transmit Power, on page 56](#).
- Step 4** Change ALS to Auto Restart on the Side A or (for terminal nodes) the terminal side OSCM or OSC-CSM card:
- a) In the node view (single-shelf mode) or shelf view (multishelf mode), double-click the Side A or terminal-side OSCM or OSC-CSM card.
 - b) Click the **Maintenance > ALS** tabs.
 - c) From the ALS Mode drop-down list, choose **Auto Restart**.
 - d) Click **Apply**. Click **Yes** in the confirmation dialog box.

- Step 5** If an OSC-CSM or OSCM card is installed on Side B, complete the following steps. If not, you have completed this procedure.
- In the node view (single-shelf mode) or shelf view (multishelf mode), double-click Side B OSCM or OSC-CSM card.
 - Click the **Maintenance** > **ALS** tabs.
 - From the ALS Mode drop-down list, choose **Auto Restart**.
 - Click **Apply**. Click **Yes** in the confirmation dialog box.
- Stop. You have completed this procedure.**

DLP-G314 Verifying OSCM Transmit Power

Purpose	This task verifies that the transmit power of the OSCM card is correct.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Superuser only

Procedure

- Step 1** Display the OSCM card in card view.
- Step 2** Click the **Provisioning** > **Optical Line** > **Parameters** tabs.
- Step 3** Record the Port 3 (OSC TX) Power value: _____.
- Step 4** Change to node view (single-shelf mode) or multishelf view (multishelf mode), then click the **Provisioning** > **WDM-ANS** > **Provisioning** tabs.
- Step 5** Record the OSC Power value under the OSCM card in the tree view.
- Step 6** If the power value recorded in [Step 3](#) is not within the range of +/- 0.5 dBm recorded in [Step 5](#), complete the following steps. Otherwise, continue with [Step 7](#).
- Click the **Maintenance** > **ALS** tabs. Verify that the ALS Command is set to OSRI Off. If not, choose **Off** from the drop-down list. Click **Apply**, then click **Yes**.
 - Clean the optical connections.
 - Complete the following procedures:
 - Delete the two OSC channels using the [DLP-G186 Delete an OSC Termination](#).
 - Complete the [NTP-G37 Running Automatic Node Setup](#) procedure.
 - Create the OSC channels using the [NTP-G38 Provisioning OSC Terminations](#) procedure.
 - Repeat [Step 3](#) through [Step 6](#). If the power level is still not within the specified range, contact your next level of support.

Step 7 Return to your originating procedure (NTP).

NTP-G210 Provisioning Node for SNMPv3

Purpose	This procedure provisions the node to allow SNMPv3 access.
Tools/Equipment	None
Prerequisite Procedures	<ul style="list-style-type: none"> • DLP-G46 Log into CTC • NTP-G22 Verifying Common Card Installation
Required/As Needed	Required if you want to implement SNMPv3 on your network.
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In node view, click the **Provisioning > SNMP > SNMP V3** tabs.

Step 2 Complete the following tasks as required:

- [DLP-G496 Creating an SNMPv3 User Using CTC, on page 62](#)
- [DLP-G498 Create Group Access Using CTC, on page 64](#)

Note A group named default_group is defined in the initial configuration. The default group has read and notify access to the complete MIB tree.

- [DLP-G497 Create MIB Views Using CTC, on page 63](#)

Note A view named full_view is defined in the initial configuration. It includes the complete MIB tree supported on the node.

Stop. You have completed this procedure.

NTP-G211 Provisioning Node to Send SNMPv3 Traps

Purpose	This procedure provisions a node to send SNMP v3 traps.
Tools/Equipment	None
Prerequisite Procedures	<ul style="list-style-type: none"> • DLP-G46 Log into CTC • NTP-G22 Verifying Common Card Installation

Required/As Needed	Required if you want to implement SNMPv3 on your network.
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In node view, click the **Provisioning > SNMP > SNMP V3** tabs.

Step 2 Complete the following tasks as required:

- [DLP-G496 Creating an SNMPv3 User Using CTC, on page 62](#)
- [DLP-G498 Create Group Access Using CTC, on page 64](#)
- [DLP-G497 Create MIB Views Using CTC, on page 63](#)
- [DLP-G501 Creating Notification Filters, on page 66](#)
- [DLP-G499 Configure SNMPv3 Trap Destination Using CTC, on page 65](#). When you configure an SNMPv3 trap destination, use the IP address of the NMS, and the port number on which the NMS is listening for traps.

Stop. You have completed this procedure.

NTP-G212 Manually Provisioning a GNE/ENE to Manage an ENE using SNMPv3

Purpose	This procedure describes how to manually configure a GNE/ENE to allow the NMS to manage an ENE using SNMPv3.
Tools/Equipment	None
Prerequisite Procedures	<ul style="list-style-type: none"> • DLP-G46 Log into CTC • NTP-G22 Verifying Common Card Installation
Required/As Needed	Required if you want to implement SNMPv3 on your network.
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 Go to network view.

- Step 2** Double-click the ENE.
- Step 3** Click **Provisioning** > **SNMP** > **SNMP V3** > **General** and note the context engine ID. The is required in [Step 7](#).
- Step 4** Double-click the GNE.
- Step 5** Complete the [DLP-G496 Creating an SNMPv3 User Using CTC, on page 62](#) to create an SNMPv3 user on the GNE.
- Step 6** Complete the following tasks as needed on the ENE:
- [DLP-G496 Creating an SNMPv3 User Using CTC, on page 62](#)
 - [DLP-G498 Create Group Access Using CTC, on page 64](#)
 - [DLP-G497 Create MIB Views Using CTC, on page 63](#)
- Step 7** Complete the [DLP-G502 Manually Configuring the SNMPv3 Proxy Forwarder Table, on page 67](#). Use the context engine ID from [Step 3](#), the local user details created in [Step 5](#), and the remote user created in [Step 6](#).
- Stop. You have completed this procedure.**

NTP-G213 Automatically Provisioning a GNE to Manage an ENE using SNMPv3

Purpose	This procedure describes how to automatically configure a GNE to allow an NMS to manage an ENE using SNMPv3.
Tools/Equipment	None
Prerequisite Procedures	<ul style="list-style-type: none"> • DLP-G46 Log into CTC • NTP-G22 Verifying Common Card Installation
Required/As Needed	Required if you want to implement SNMPv3 on your network.
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

- Step 1** Go to network view.
- Step 2** Double-click the GNE.
- Step 3** Complete the [DLP-G496 Creating an SNMPv3 User Using CTC, on page 62](#) to create an SNMPv3 user on the GNE.
- Step 4** Complete the [DLP-G503 Automatically Configuring the SNMPv3 Proxy Forwarder Table, on page 68](#). Use the GNE user that you defined in [Step 3](#) when you configure the Proxy Forwarder table.

Note When you use the automatic procedure, CTC automatically creates an ons_proxy user on the ENE, provides ENE user details for the proxy configuration, and provides the of the ENE.

Stop. You have completed this procedure.

NTP-G214 Manually Provisioning a GNE/ENE to Send SNMPv3 Traps using SNMPv3

Purpose	This procedure describes how to manually configure the GNE/ENE to allow an ENE to send SNMPv3 traps to the NMS.
Tools/Equipment	None
Prerequisite Procedures	<ul style="list-style-type: none"> • DLP-G46 Log into CTC • NTP-G22 Verifying Common Card Installation
Required/As Needed	Required if you want to implement SNMPv3 on your network.
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

- Step 1** Go to network view.
- Step 2** Double-click the GNE.
- Step 3** Complete the [DLP-G496 Creating an SNMPv3 User Using CTC, on page 62](#) to create an SNMPv3 user on the GNE.
- Step 4** On the GNE, complete the [DLP-G499 Configure SNMPv3 Trap Destination Using CTC, on page 65](#). The target IP address must be the IPv4 or IPv6 address of the NMS. For the UDP Port number, use the port number on which the NMS is listening for traps. Use the user name configured in [Step 3](#). Also, specify a target tag name.
- Step 5** Double-click the ENE.
- Step 6** Complete the [DLP-G496 Creating an SNMPv3 User Using CTC, on page 62](#) to create an SNMPv3 user on the ENE.
- Step 7** Complete the following tasks as required:
- [DLP-G498 Create Group Access Using CTC, on page 64](#) to create a group on the ENE
 - [DLP-G497 Create MIB Views Using CTC, on page 63](#) to create a MIB view on the ENE
 - [DLP-G501 Creating Notification Filters, on page 66](#)

- Step 8** On the ENE, complete the [DLP-G499 Configure SNMPv3 Trap Destination Using CTC, on page 65](#). The target IP address should be the IP address of the GNE. The UDP port number is 161. Use the user name configured in [Step 6](#).
- Step 9** From the network view, click the **Provisioning > SNMPv3** tabs.
- Step 10** Complete the [DLP-G504 Manually Configuring the SNMPv3 Proxy Trap Forwarder Table, on page 69](#). The source of the trap must be the IP address of the ENE. For the field, provide the of the ENE. Also, you need to specify the target tag defined in [Step 4](#), and the incoming user details configured in [Step 6](#).
- Stop. You have completed this procedure.**

NTP-G215 Automatically Provisioning a GNE/ENE to Send SNMPv3 Traps Using SNMPv3

Purpose	This procedure describes how to automatically configure the GNE/ENE to allow an ENE to send SNMPv3 traps to the NMS.
Tools/Equipment	None
Prerequisite Procedures	<ul style="list-style-type: none"> • DLP-G46 Log into CTC • NTP-G22 Verifying Common Card Installation
Required/As Needed	Required if you want to implement SNMPv3 on your network.
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

- Step 1** Go to Network View.
- Step 2** Double-click the GNE.
- Step 3** Complete the task [DLP-G496 Creating an SNMPv3 User Using CTC, on page 62](#) to create an SNMPv3 user on the GNE.
- Step 4** On the GNE, complete the following tasks:
- [DLP-G499 Configure SNMPv3 Trap Destination Using CTC, on page 65](#). The target IP address must be the IPv4 or IPv6 address of the NMS. For the UDP Port number, use the port number on which the NMS is listening for traps. Also, specify a target tag name.
 - [DLP-G505 Automatically Configuring the SNMPv3 Proxy Trap Forwarder Table, on page 70](#). Use the target tag configured in [Step 3](#). Use the IP address of the ENE as the source of trap. The following details are created automatically:
 - A user named ons_trap_user on the ENE

- Trap destination on the ENE with an IP address of the GNE as the target IP and 161 as the UDP port number
- Remote user details of the ENE on the GNE

Stop. You have completed this procedure.

DLP-G496 Creating an SNMPv3 User Using CTC

Purpose	This procedure creates an SNMPv3 user.
Tools/Equipment	None
Prerequisite Procedures	<ul style="list-style-type: none"> • DLP-G46 Log into CTC • "Login to CTC" in <i>System Setup and Software Installation Guide for Cisco NCS 4000 Series</i> • DLP-G498 Create Group Access Using CTC, on page 64
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Procedure

Step 1 In node view, click the **Provisioning > SNMP > SNMP V3 > SNMP > Users** tabs.

Step 2 Click **Create**.

Step 3 In the Create User dialog box, enter the following information:

- **User Name**— Specify the name of the user on the host that connects to the agent. The user name must be a minimum of 6 and a maximum of 40 characters (up to only 39 characters for the TACACS and RADIUS authentication). It includes alphanumeric (a-z, A-Z, 0-9) characters and the allowed special characters are @, "-" (hyphen), and "." (dot) . For TL1 compatibility, the user name must be of 6 to 10 characters.
- **Group Name**—Specify the group to which the user belongs.
The SNMP version and security level of the group are displayed as read-only.
- **Authentication**
 - **Protocol**—Select the authentication algorithm that you want to use. The options are NONE, MD5, and SHA.
 - **Password**—Enter a password if you select MD5 or SHA. By default, the password length is set to a minimum of eight characters.

- **Privacy**—Initiates a privacy authentication level setting session that enables the host to encrypt the contents of the message that is sent to the agent.
 - **Protocol**—Select the privacy authentication algorithm. The available options are None, DES, and AES-256-CFB.
 - **Password**—Enter a password if you select a protocol other than None.

Step 4 Click **OK** to create an SNMP user.

Step 5 Return to your originating procedure.

DLP-G497 Create MIB Views Using CTC

Purpose	This procedure creates an SNMPv3 MIB view.
Tools/Equipment	None
Prerequisite Procedures	"Login to CTC" in <i>System Setup and Software Installation Guide for Cisco NCS 4000 Series</i> <ul style="list-style-type: none"> • DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Procedure

Step 1 In node view, click the **Provisioning > SNMP > SNMP V3 > SNMP > MIB views** tabs.

Step 2 Click **Create**.

Step 3 In the Create Views dialog box, enter the following information:

- **Name**—Name of the view.
- **Subtree OID**—The MIB subtree which, when combined with the mask, defines the family of subtrees.
- **Bit Mask**—A family of view subtrees. Each bit in the bit mask corresponds to a sub-identifier of the subtree OID.
- **Type**—Select the view type. Options are Included and Excluded.
Type defines whether the family of subtrees that are defined by the subtree OID and the bit mask combination are included or excluded from the notification filter.

Step 4 Click **OK** to save the information.

Step 5 Return to your originating procedure.

DLP-G498 Create Group Access Using CTC

Purpose	This procedure creates a user group and configures the access parameters for the users in the group.
Tools/Equipment	None
Prerequisite Procedures	"Login to CTC" in <i>System Setup and Software Installation Guide for Cisco NCS 4000 Series</i> <ul style="list-style-type: none"> • DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Procedure

Step 1 In node view, click the **Provisioning > SNMP > SNMP V3 > SNMP > Group Access** tabs.

Step 2 Click **Create**.

Step 3 In the Create Group Access dialog box, enter the following information:

- **Group Name**—The name of the SNMP group, or collection of users, who share a common access policy.
- **SNMP Version**—Version of SNMP. The possible values are SNMPv1, SNMPv2, and SNMPv3.
- **Security Level**—The security level for which the access parameters are defined. You can configure the security level only when SNMPv3 is selected. Select from the following options:
 - **noAuthNoPriv**—Uses a user name match for authentication.
 - **AuthNoPriv**—Provides authentication based on the HMAC-MD5 or HMAC-SHA algorithms.
 - **AuthPriv**—Provides authentication based on the HMAC-MD5 or HMAC-SHA algorithms. Provides DES 56-bit encryption based on the CBC-DES (DES-56) standard, in addition to authentication.

If you select **authNoPriv** or **authPriv** for a group, the corresponding user must be configured with an authentication protocol and password, with privacy protocol and password, or both.
- **Views**
 - **Read View Name**—Read view name for the group.
 - **Notify View Name**—Notify view name for the group.
 - **Write View Name**—Write view name for the group.
- **Allow SNMP Sets**—Select this check box if you want the SNMP agent to accept SNMP SET requests. If this check box is not selected, SET requests are rejected.

Note SNMP SET request access is implemented for very few objects.

- Step 4** Click **OK** to save the information.
- Step 5** Return to your originating procedure .

DLP-G499 Configure SNMPv3 Trap Destination Using CTC

Purpose	This procedure configures SNMPv3 trap destination.
Tools/Equipment	None
Prerequisite Procedures	"Login to CTC" in <i>System Setup and Software Installation Guide for Cisco NCS 4000 Series</i>
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Procedure

- Step 1** In node view, click the **Provisioning > SNMP > SNMP V3 > SNMP > Trap Destinations (V3)** tabs.
- Step 2** Click **Create**.
- Step 3** In the Configure SNMPv3 Trap dialog box, enter the following information:
- **Target Address**—Target to which the traps should be sent. Use an IPv4 or an IPv6 address.
 - **UDP Port**—UDP port number that the host uses. Default value is 162.
 - **User Name**—Specify the name of the user on the host that connects to the agent.
 - **Security Level**—Select one of the following options:
 - **noAuthNoPriv**—Uses a user name match for authentication.
 - **AuthNoPriv**—Provides authentication based on the HMAC-MD5 or HMAC-SHA algorithms.
 - **AuthPriv**—Provides authentication based on the HMAC-MD5 or HMAC-SHA algorithms. Provides DES 56-bit encryption based on the CBC-DES (DES-56) standard, in addition to authentication.
 - **Filter Profile**—Select this check box and enter the filter profile name. Traps are sent only if you provide a filter profile name and create a notification filter. For more information, see [DLP-G501 Creating Notification Filters, on page 66](#).
 - **Proxy Traps Only**—If selected, forwards only proxy traps from the ENE. Traps from this node are not sent to the trap destination identified by this entry.
 - **Proxy Tags**—Specify a list of tags. The tag list is needed on a GNE only if an ENE needs to send traps to the trap destination identified by this entry, and wants to use the GNE as the proxy.
- Step 4** In the Create SNMP Trap dialog box, enter the IP address of your network management system (NMS).
- Step 5** Click **OK** to save the information.

Step 6 Return to your originating procedure .

DLP-G500 Deleting SNMPv3 Trap Destination

Purpose	This procedure deletes an SNMPv3 trap destination.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Procedure

- Step 1** In node view, click the **Provisioning > SNMP > SNMPv3 > Trap Destination** tabs.
 - Step 2** In the Trap Destinations area, select the trap you want to delete.
 - Step 3** Click **Delete**. A confirmation dialog box appears.
 - Step 4** Click **Yes**.
 - Step 5** Return to your originating procedure (NTP).
-

DLP-G501 Creating Notification Filters

Purpose	This procedure creates SNMPv3 notification filters.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Procedure

- Step 1** In node view, click the **Provisioning > SNMP > SNMP V3 > Notification Filters** tabs.
- Step 2** Click **Create**.
- Step 3** In the Create Notify dialog box, enter the following information:

- Filter Profile Name—Specify a name for the filter.
- Subtree OID—The MIB subtree which, when combined with the mask, defines the family of subtrees.
- Bit Mask—A family of view subtrees. Each bit in the bit mask corresponds to a sub-identifier of the subtree OID.
- View Type—Select the view type. Options are Include and Exclude. Type defines whether the family of subtrees that are defined by the subtree OID and the bit mask combination are included or excluded from the notification filter.

- Step 4** Click **OK** to save the information.
- Step 5** Return to your originating procedure (NTP).

DLP-G502 Manually Configuring the SNMPv3 Proxy Forwarder Table

Purpose	This procedure creates an entry in the SNMPv3 Proxy Forwarder Table.
Tools/Equipment	None
Prerequisite Procedures	Login to CTC in <i>System Setup and Software Installation Guide for Cisco NCS 4000 Series</i> .
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Procedure

- Step 1** In network view, click **Provisioning > SNMPv3**.
- Step 2** In the SNMPv3 Proxy Server area, complete the following:
- From the GNE drop-down list, choose the GNE to be used as the SNMPv3 proxy server.
 - Check the **Enable IPv6 Target/Trap** check box if the nodes and the NMS stations are on an IPv6 network.
- Step 3** In the SNMPv3 Proxy Forwarder Table area, click **Manual Create**.
- Step 4** In the Manual Configuration of SNMPv3 Proxy Forwarder dialog box, enter the following information:
- Target Address—Target to which the request should be forwarded. Use an IPv4 or an IPv6 address.
 - Context Engine ID—The context engine ID of the ENE to which the request is to be forwarded. The context engine ID should be the same as the context engine ID of the incoming request.
 - Proxy Type—Type of SNMP request that needs to be forwarded. The options are Read and Write.
 - Local User Details—The details of the local user who proxies on behalf of the ENE user.

- User Name—Specify the name of the user on the host that connects to the agent.
- Local Security Level—Select the security level of the incoming requests that are to be forwarded. The options are noAuthNoPriv, AuthNoPriv, and AuthPriv.
- Remote User Details— User to which the request is forwarded.
 - User Name—Specify the user name of the remote user.
 - Remote Security Level—Select the security level of the outgoing requests. The options are noAuthNoPriv, AuthNoPriv, and AuthPriv.
- Authentication
 - Protocol—Select the authentication algorithm you want to use. The options are None, MD5, and SHA.
 - Password—Enter the password if you select MD5 or SHA.
- Privacy—Enables the host to encrypt the contents of the message that is sent to the agent.
 - Protocol—Select NONE ,DES or AES-256-CFB as the privacy authentication algorithm.
 - Password—Enter the password if you select protocol other than None. The password should not exceed 64 characters.

Step 5 Click **OK** to save the information.

Step 6 Return to your originating procedure.

DLP-G503 Automatically Configuring the SNMPv3 Proxy Forwarder Table

Purpose	This procedure creates an entry in the SNMPv3 Proxy Forwarder Table.
Tools/Equipment	None
Prerequisite Procedures	Login to CTC in <i>System Setup and Software Installation Guide for Cisco NCS 4000 Series</i> .
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Procedure

Step 1 In network view, click **Provisioning > SNMPv3** tabs.

Step 2 In the SNMPv3 Proxy Server area, complete the following:

- From the GNE drop-down list, choose the GNE to be used as the SNMPv3 proxy server.

- Select the **Enable IPv6 Target/Trap** check box if the nodes and the NMS stations are on an IPv6 network.

Step 3 In the SNMPv3 Proxy Forwarder Table area, click **Auto Create**.

- Step 4** In the Automatic Configuration of SNMPv3 Proxy Forwarder dialog box, enter the following information:
- Proxy Type—Select the type of proxies to be forwarded. The options are Read and Write.
 - Security Level—Select the security level for the incoming requests that are to be forwarded. The options are:
 - noAuthNoPriv—Uses a username match for authentication.
 - AuthNoPriv—Provides authentication based on the HMAC-MD5 or HMAC-SHA algorithms.
 - AuthPriv—Provides authentication based on the HMAC-MD5 or HMAC-SHA algorithms. Provides DES 56-bit encryption based on the CBC-DES (DES-56) standard, in addition to authentication.
 - Target Address List—Select the proxy destination.
 - Local User Name—Select the user name from the list of users.

Note When you configure SNMPv3 Proxy Forwarder Table automatically, the default_group is used on the ENE. The default_group does not have write access. To enable write access and allow SNMP sets, you need to edit the default_group on ENE.

Step 5 Click **OK** to save the settings.

Step 6 Return to your originating procedure.

DLP-G504 Manually Configuring the SNMPv3 Proxy Trap Forwarder Table

Purpose	This procedure creates an entry in the SNMPv3 Proxy Trap Forwarder Table.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Procedure

Step 1 In network view, click **Provisioning > SNMPv3** tabs.

- Step 2** In the SNMPv3 Proxy Server area, complete the following:
- From the GNE drop-down list, choose the GNE to be used as the SNMPv3 proxy server.

- Check the **Enable IPv6 Target/Trap** check box if the nodes and the NMS stations are on an IPv6 network.

Step 3 In the SNMPv3 Proxy Trap Forwarder Table area, click **Manual Create**.

Step 4 In the Manual Configuration of SNMPv3 Proxy Trap Forwarder dialog box, enter the following information:

- Remote Trap Source—Select the IP address from which the traps are sent. If the IP address is not listed, enter the IP address manually.
- Context Engine ID—Specify the context engine ID of the ENE from which traps need to be forwarded. This field is automatically populated if the source of trap is selected. If the source of trap is not specified, you need to manually enter the context engine ID.
- Target Tag—Specify the tag name. The tag identifies the list of NMS that should receive the forwarded traps. Traps are forwarded to all GNE Trap destinations whose proxy tags list contains this tag.
- Remote User Details
 - User Name—Specify the user name.
 - Security Level—Select the security level for the user. The options are noAuthNoPriv, AuthNoPriv, and AuthPriv.
- Authentication—Select the authentication algorithm.
 - Protocol—Select the authentication algorithm you want to use. The options are NONE, MD5, and SHA. The default is None.
 - Password—Enter the password if you select MD5 or SHA.
- Privacy—Enables the host to encrypt the contents of the message that is sent to the agent.
 - Protocol—Select NONE, DES, or AES-256-CFB as the privacy authentication algorithm. Encryption is disabled if NONE is selected.
 - Password—Enter the password if you select protocol other than None. The password should not exceed 64 characters.

Step 5 Click **OK** to save the information.

Step 6 Return to your originating procedure (NTP).

DLP-G505 Automatically Configuring the SNMPv3 Proxy Trap Forwarder Table

Purpose	This procedure creates an entry in the SNMPv3 Proxy Trap Forwarder Table automatically.
Tools/Equipment	None
Prerequisite Procedures	Login to CTC in <i>System Setup and Software Installation Guide for Cisco NCS 4000 Series</i> .
Required/As Needed	As needed

Onsite/Remote	Onsite
Security Level	Provisioning or higher

Procedure

-
- Step 1** In network view, click **Provisioning > SNMPv3** tabs.
- Step 2** In the SNMPv3 Proxy Server area, complete the following:
- From the GNE drop-down list, choose the GNE to be used as the SNMPv3 proxy server.
 - Check the **Enable IPv6 Target/Trap** check box if the nodes and the NMS stations are on an IPv6 network.
- Step 3** In the **SNMPv3 Proxy Trap Forwarder Table** area, click **Auto Create**.
- Step 4** In the Automatic Configuration of SNMPv3 Proxy Trap Forwarder dialog box, enter the following information:
- Target Tag—Specify the tag name. The tag identifies the list of NMS that should receive the forwarded traps. All GNE Trap destinations that have this tag in their proxy tags list are chosen.
 - Source of Trap—The list of ENes whose traps are forwarded to the SNMPv3 Trap destinations that are identified by the Target Tag.
- Step 5** Click **OK** to save the information.
- Step 6** Return to your originating procedure.
-

DLP-G789 Enable RSVP on an Interface

Purpose	This procedure enables RSVP on an interface for OCH unnumbered tunnel creation.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Procedure

-
- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > Networking > RSVP-TE** tabs.
- Step 2** Choose the interface from the Interface drop-down list.

- Step 3** Click **Refresh**.
- Step 4** In the **Card** area, double-click the slot that you want to configure.
- Step 5** In the Slot drop-down, select the required controller.
- Step 6** Click **Apply** to save the information.
- Step 7** Return to your originating procedure (NTP).

DLP-G790 Create a Static LMP Connection

Purpose	This procedure creates a static LMP connection between NCS 4000 (UNI-C) and NCS 2000 (UNI-N) nodes for OCH unnumbered tunnel creation.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Procedure

- Step 1** In network view, click the **Provisioning > LMP** tabs.
- Step 2** Click **Create**.
- Step 3** In the **LMP Creation** pane, complete the following:
- From the Originating Node drop-down list, choose the required node or choose Add Router if the router is not yet present in the network.
 - Enter the IP address of the node in the Communication Channel field.
 - From the Mode drop-down list, choose the required mode. The options available in the Local Interfaces drop-down list changes based on the selected Mode.
 - From the Local Interfaces drop-down list, choose an interface.
 - From the Interfaces Configuration area, select the UnNumbered radio button for NCS 4000 node or Numbered radio button for Cisco CRS.
- Step 4** Click **Next**.
- Step 5** In the LMP Termination pane, complete the following:
- Enter the IP address of the interface.
 - From the Terminating node drop-down list, choose the required node.
 - In the Rx Port Selection area, choose the required port from the Unit drop-down list.
 - In the Tx Port Selection area, choose the required port from the Unit drop-down list.

- Step 6** Click **Next**.
- Step 7** In the Optical Parameters pane, enter the description, label and so on (optional) and click **Next**.
- Step 8** In the Alien Wavelength pane, complete the following:
- From the Alien Wavelength drop-down list, choose the required wavelength. Select Trunk 100G or 200G for 100GS-CK-LC and 200G-CK-LC cards.
 - From the FEC drop-down list, choose the required FEC type.
- Step 9** In the Alien wavelength pane, click **Finish**.
- Step 10** Return to your originating procedure (NTP).

NTP-G355 Provisioning OTDR

Purpose	This procedure describes how to provision OTDR for the TNCS-O and TNCS-2O cards.
Tools/Equipment	TNCS-O or TNCS-2O cards
Prerequisite Procedures	<ul style="list-style-type: none"> • DLP-G46 Log into CTC
Required/As Needed	As Needed
Onsite/Remote	Onsite/Remote
Security Level	None



Note OTDR does not support the placement of a bulk attenuator in its path. OTDR sends pulses of light and measures the reflected light. Bulk attenuator hinders this mechanism. The attenuator reduces the dynamic range of OTDR, limiting its capability. Another issue with bulk attenuator is that it has two reflective surfaces very close to each other which corrupts the OTDR pulses.

If a bulk attenuator is placed near the OTDR faceplate, the OTDR may not measure beyond the attenuator. If lumped attenuation is present beyond the attenuator, OTDR may erroneously declare that the fiber ends at that point. As per design, OTDR may exhibit this behavior with 5 dB or more, of lumped attenuation.



Note Once the OTDR port is initialized, it needs calibration every 24 hours for ORL measurement in Tx Direction. For this calibration, ORL training is triggered automatically by the OTDR module. ORL training is performed in hybrid mode and it lasts for just a few minutes. You cannot stop the trigger of this automatic ORL training.



Note When EDRA-1-xx, EDRA-2-xx, OPT-RAMP-C or OPT-RAMP-CE is placed on the line side, the direction of OSC propagation is opposite to the C-Band signal. Due to this behaviour, when representing OTDR data in CTC, correlation occurs between OTDR port and line port. Hence, the user is recommended to work on the appropriate port.

Procedure

- Step 1** Complete the [DLP-G793 Configuring Common OTDR Parameters for OTDR Scan](#), on page 74.
- Step 2** Complete the [DLP-G782 Configuring OTDR Port Values](#), on page 75.
- Step 3** Complete the [DLP-G783 Provisioning OTDR Scan Recurrence](#), on page 78.
- Step 4** Complete the [DLP-G784 Configuring Threshold Values for OTDR Scan](#), on page 80.

Stop. You have completed this procedure.

DLP-G793 Configuring Common OTDR Parameters for OTDR Scan

Purpose	(Cisco NCS 2006, NCS 2015, NCS 2002) This task lets you configure common OTDR p scan on TNCS-O and TNCS-2O cards.
Tools/Equipment	TNCS-O or TNCS-2O card
Prerequisite Procedures	<ul style="list-style-type: none"> • DLP-G46 Log into CTC • DLP-G788 Configuring Operating Mode for the TNC, TNCE, TNCS, and TNCS-O <i>NCS 2000 Series Control Card and Node Configuration Guide, Release 10.x.x</i>
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher



Note Each step of this procedure is optional and is not required for the OTDR scan.

Procedure

- Step 1** In the node view, click **Provisioning > WDM-ANS > OTDR > Node**.
- Step 2** Check the **Automatic OTDR Scan at System Start-up, Fiber Cut & Repair** check box if you want the OTDR scan to start automatically after the LOS alarm is raised and cleared.

- Step 3** In the **OTDR Start Delay (Min)** field, enter the delay (in minutes) required before the automatic OTDR scan begins. The default value is 5 mins.
- Note** OTDR scan begins automatically on a fiber span that has been repaired or on startup of an OSC channel. A fiber is considered to be repaired when the LOS on the fiber is cleared.
- Step 4** Check the **Automatic Baseline Save on Fiber Repair** check box to set an automatic OTDR scan that you configure as a baseline scan.
- Step 5** Check the **Automatic OTDR Scan on Span Loss Increase** check box to set an automatic OTDR scan on increase in span loss and enter the desired span loss threshold value (in dB) in the **Span Loss Increase Threshold** field. The default value is 2.
- OTDR scan starts automatically on the fiber if the measured span loss on the fiber is greater than the threshold value configured.
- Step 6** Check the **Automatic OTDR Scan on Excessive ORL from Span** check box to activate an automatic OTDR scan when the configured ORL threshold value in the **Baseline Thresholds** tab is less than the current ORL value.
- The scan is executed in Hybrid mode; however, the scan is downgraded to Fast mode if the OSC connection is not available.
- Step 7** Check the **Use Absolute Threshold for OTDR Alarms** check box to raise the OTDR alarms using the Absolute algorithm. The absolute threshold values will be used.
- If this check box is unchecked, the OTDR alarms are raised using the Baseline algorithm.
- In the **Insertion Loss Threshold** field, enter the desired absolute loss threshold value (in dB). The range is from 0.1 to 30 dB. The default value is 2.
 - In the **Back Reflection Threshold** field, enter the desired absolute back reflection threshold value (in dB). The range is from -50 to 0 dB. The default value is -30.
- Step 8** Check the **Prevent Circuit Creation on Span with Outstanding OTDR Alarms** check box to prevent the circuit creation or circuit reroute on a span that has OTDR alarms.
- Step 9** Check the **Prevent Circuit Creation on Span Never Scanned** check box to raise the OTDR-SCAN-NOT-COMPLETED alarm on a span that has not gone through OTDR scan in TX direction.
- Step 10** Click **Apply**.
- Step 11** Return to your originating procedure (NTP).

DLP-G782 Configuring OTDR Port Values

Purpose	(Cisco NCS 2006, NCS 2015, NCS 2002) This task configures the OTDR port values for TNCS-2O cards for each sector required for an OTDR scan.
Tools/Equipment	TNCS-O or TNCS-2O card
Prerequisite Procedures	<ul style="list-style-type: none"> • DLP-G46 Log into CTC • DLP-G788 Configuring Operating Mode for the TNC, TNCE, TNCS, and TNC <i>Cisco NCS 2000 Series Control Card and Node Configuration Guide, Release 1</i>
Required/As Needed	As needed

Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In the node view, click **Provisioning > WDM-ANS > OTDR > Side**.

Step 2 Select the port to be configured for the OTDR scan from the **OTDR Position** drop-down list.

Note The **OTDR Position** drop-down list displays two PPM port listing for each TNCS-O and TNCS-2O card in the node. The list also shows the side to which the port is connected, the shelf, the slot and port numbers of the card. The side is shown on the list, only if the port is connected to a side.

Step 3 **Equipment Insertion Loss for OTDR** (Display only) Displays the sum of insertion loss caused by the amplifiers and patchcords for OTDR port in each direction.

The insertion loss is also caused by the span loss on the fiber between the two nodes.

Step 4 In the **Config** tab, for each sector, CTC displays a table with the default values for the following columns:

- Loss Sensitivity (dB)
- Reflection Sensitivity (dB)
- Capture Start Point (km/miles)
- Capture End Point (Km/miles)
- Pulse Width (microseconds)
- Measure Time (s)
- Resolution (m)
- Scan Status (Display only)
- Recurrence (Display only)
- Fail Error Message

The OTDR measurement ranges are categorized based on the fiber spans defined for each range. The OTDR measurement sectors are:

- Zone #1 - 0 to 1 km
- Zone #2 - 0 to 25 km
- Zone #3 - 0 to 80 km
- Zone #4 - Full span
- Expert Mode
- Auto mode (System detect)

Note Only Loss Sensitivity (dB) and Reflection Sensitivity (dB) column values can be edited in the first four sectors, Zone #1 to Zone #4, and the Auto mode sector. All the columns in the table, except Scan Status and Recurrence columns, can be edited in the Expert Mode sector.

Note The Capture End Point value (length of the fiber span for OTDR scan) is defined automatically for the Auto mode sector. The other values for the scan (Pulse Width, Measure Time, and Resolution) are then configured accordingly. The length of the fiberspan is defined based on one of the following values in the given order:

- Total span loss—It is the sum of fiber span loss between two nodes and Equipment Insertion Loss for OTDR.
- Configured value in the Fiber attribute—The value of the Fiber attribute is retrieved from the facing node for the scan from LINE-RX and from the near end node for the scan towards LINE-TX direction. You can check the value of the configured Fiber attribute at **Provisioning > WDM-ANS > GMPLS/WSO > Fiber Attributes**.
- Maximum supported dynamics by OTDR is 21 dB span loss or 100 km length of fiber.

Table 7: Loss Sensitivity Value Range for Four Zones

Sector	Min (dB)	Max (dB)	Default (dB)
Zone #1	0.4	5	0.4
Zone #2	0.6	5	0.6
Zone #3	1.5	5	1.5
Zone #4	1.5	5	1.5
Auto Sector	0.4	5	1.5

Table 8: Reflection Sensitivity Value Range for Four Zones

Sector	Min (dB)	Max (dB)	Default (dB)
Zone #1	-40	-14	-30
Zone #2	-40	-14	-30
Zone #3	-40	-14	-30
Zone #4	-40	-14	-30
Auto Sector	-40	-14	-30

Table 9: Expert Mode Value Range

Parameter	Min	Max	Default
Loss Sensitivity (dB)	0.4	5	0.4
Reflection Sensitivity (dB)	-40	-14	-30
Capture Start Point (km)	0	150	0

Parameter	Min	Max	Default
Capture End Point (km)	0	150	1
Pulse Width (microsecond)	0.008	100	0.01
Measure Time (s)	0	360	30
Resolution (m)	0.4	100	0.5

Step 5 Check the **Enable ORL Continue Measurement on RX Direction** check box to enable the Optical Return Loss (ORL) measurement in the RX direction. ORL is available at port-level.

ORL represents the total reflected optical power from a complete fiber link. This includes the natural backscattered power of the fiber and the reflected power coming from optical connectors, fiber splicing, or other discontinuities along the link. ORL is expressed with a positive number and defined with the following formula:

$$ORL [dB] = P_{in} [dB] - P_{out} [dB]$$

where P_{in} is the total incident power entering the fiber link and P_{out} is the total reflected power.

Higher ORL values are desirable for the fiber because they indicate lower back reflection. For example, an ORL of 40 dB is better than 20 dB.

Step 6 Enter the refresh rate (in mins) for ORL measurement in the **Valid Refresh Rate** field.

ORL measurement in RX direction can be scheduled between 5 to 1440 minute intervals.

Step 7 Click **Apply**.

Step 8 Return to your originating procedure (NTP).

DLP-G783 Provisioning OTDR Scan Recurrence

Purpose	(Cisco NCS 2006, NCS 2015, NCS 2002) This task lets you provision OTDR scan recurrence for TNCS-20 cards.
Tools/Equipment	TNCS-O or TNCS-20 card
Prerequisite Procedures	<ul style="list-style-type: none"> • DLP-G46 Log into CTC • DLP-G788 Configuring Operating Mode for the TNC, TNCE, TNCS, and TNCS-O Cards • DLP-G782 Configuring OTDR Port Values
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

- Step 1** In the node view, click **Provisioning > WDM-ANS > OTDR > Side > Recurrence**.
- Step 2** From the **OTDR Position** drop-down list, select the port on which you want to provision a recurring scan.
- Step 3** **Equipment Insertion Loss for OTDR** (Display only) Displays the sum of insertion loss caused by the amplifiers and patchcords for OTDR port in each direction.
- Step 4** In the **Recurrence** area, choose a sector for the scan from the **Sector** drop-down list.
- Note** You can provision the recurrence schedule on any sector. Schedule conflicts are managed by queuing the OTDR scans.
- Step 5** Choose **Enable** to schedule a recurring OTDR scan on the selected port, or choose **Disable** to disable a recurring scan on the port. If you select **Enable**, go to [Step 6](#). If you select **Disable**, go to [Step 10](#).
- Note** By default, OTDR scan recurrence on a port is disabled.
- Step 6** Select the direction of the scan from the **Direction** drop-down list. The available directions for the scan are:
- **Line Tx**—Tx direction only
 - **Line Rx**—Rx direction only
 - **Line Tx & Line Rx**—Both Tx and Rx directions
- Step 7** In the **Recurrence Type** area, choose the type of scan to be performed.
- The available recurrence types are:
- **Periodic**—To schedule a weekly recurring scan, go to [Step 8](#).
 - **Delta**—To schedule a granular recurring scan, go to [Step 9](#).
- Step 8** Select the desired values from the Day, Hours, and Min drop-down lists to schedule a periodic scan.
- The **Day** drop-down lists values MON, TUE, WED, THU, FRI, SAT, SUN.
 - The **Hours** drop-down lists values from 00 to 23.
 - The **Min** drop-down lists values from 00 to 59.
- Note** Periodic scan can only be provisioned to run once each week.
- Step 9** Select the desired values from the Day, Hours, and Min drop-down lists to schedule a delta scan.
- The **Day** drop-down lists values from 0 to 365.
 - The **Hours** drop-down lists values from 00 to 23.
 - The **Min** drop-down lists values from 45 to 59.
- Note** For Delta scan, the minimum settable interval for Line Tx and Line Rx is 1 hour 30 minutes.
- Step 10** Click **Apply**.
- Step 11** Return to your originating procedure (NTP).
-

DLP-G784 Configuring Threshold Values for OTDR Scan

Purpose	(Cisco NCS 2006, NCS 2015, NCS 2002) This task configures the threshold values for OTDR scan on TNCS-20 cards.
Tools/Equipment	TNCS-O or TNCS-20 card
Prerequisite Procedures	<ul style="list-style-type: none"> • DLP-G46 Log into CTC • DLP-G788 Configuring Operating Mode for the TNC, TNCE, TNCS, and TNCS-O Cards on the 2000 Series Control Card and Node Configuration Guide, Release 10.x.x • DLP-G783 Provisioning OTDR Scan Recurrence, on page 78
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In the node view, click **Provisioning > WDM-ANS > OTDR > Side > Baseline Thresholds**.

Step 2 From the **OTDR Position** drop-down list, select the port to be configured with threshold values.

Step 3 **Equipment Insertion Loss for OTDR** (Display only) Displays the sum of insertion loss caused by the amplifiers and patchcords for OTDR port in each direction.

Step 4 Choose a sector from the **Sector** drop-down list.

The default Loss Threshold and Reflection Threshold values for the corresponding sector are displayed in CTC. You can also configure these thresholds.

Table 10: Loss Threshold Value Range

Sector	Min (dB)	Max (dB)	Default (dB)
Zone #1	0.1	5	0.1
Zone #2	0.15	5	0.15
Zone #3	0.25	5	0.25
Zone #4	0.5	5	0.5
Expert Mode	0.25	5	0.25
Auto Scan	0.25	5	0.25

Table 11: Reflection Threshold Value Range

Sector	Min (dB)	Max (dB)	Default (dB)
Zone #1	2	20	2
Zone #2	2	20	2
Zone #3	2	20	2
Zone #4	2	20	2
Expert Mode	2	20	2

Note The threshold values are used to compare events reported in the Base Scan column and Last Scan column in the table available at **Maintenance > DWDM > OTDR**. If the difference exceeds the threshold, alarms are raised.

The following alarms are raised when the scan results for Insertion Loss and Reflection Loss exceeds the threshold values:

- OTDR-BASELINE-A-EXCEEDED-TX
- OTDR-BASELINE-A-EXCEEDED-RX
- OTDR-BASELINE-R-EXCEEDED-TX
- OTDR-BASELINE-R-EXCEEDED-RX

For more information on the OTDR alarms, see *Cisco NCS 2000 Series Troubleshooting Guide, Release 10.x.x*

Step 5 Enter the absolute ORL threshold values in the TX and RX directions.

The following alarms are raised when the scan results for ORL exceeds the threshold values:

- OTDR-ORL-THRESHOLD-EXCEEDED-TX
- OTDR-ORL-THRESHOLD-EXCEEDED-RX

Step 6 Click **Apply**.

Step 7 Return to your originating procedure (NTP).

