



# CHAPTER 14

## Turn Up a Node

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This chapter explains how to provision a single Cisco ONS 15454 dense wavelength division multiplexing (DWDM) 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 ONS 15454 platform is applicable to the Cisco ONS 15454 M2 and Cisco ONS 15454 M6 platforms, unless noted otherwise.

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**Note**

Procedures in this chapter require that you have a network plan calculated for your DWDM network with Cisco Transport Planner, Release 9.2. 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*.

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**Note**

Unless otherwise specified, in this document “ONS 15454” refers to both ANSI (ONS 15454) and ETSI (ONS 15454 SDH) shelf assemblies.

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**Note**

Cisco Transport Controller (CTC) views referenced in these procedures depend on the ONS 15454 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](#).

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## Before You Begin

This section lists the non-trouble procedures (NTPs) needed to turn up a DWDM node. Turn to an NTP for applicable detail-level procedures (DLPs), known as tasks.

1. [NTP-G139 Verify Cisco Transport Planner Reports and Files, page 14-3](#)—Complete this procedure first.
2. [NTP-G22 Verify Common Card Installation, page 14-4](#)—Complete this procedure next.

3. [NTP-G250 Verify Digital Image Signing \(DIS\) Information, page 14-6](#)—Complete this procedure to retrieve the software signature information and version of the digitally signed software. You can also retrieve the public keys installed on the node using this procedure.
4. [NTP-G144 Provision a Multishelf Node, page 14-8](#)—Complete this procedure as needed.
5. [NTP-G23 Create Users and Assign Security, page 14-10](#)—Complete this procedure to create CTC users and assign their security levels.
6. [NTP-G24 Set Up Name, Date, Time, and Contact Information, page 14-13](#)—Continue with this procedure to set the node name, date, time, location, and contact information.
7. [NTP-G25 Set Battery Power Monitor Thresholds, page 14-15](#)—Continue with this procedure to set the node battery power thresholds.
8. [NTP-G26 Set Up CTC Network Access, page 14-16](#)—Continue with this procedure to provision the IP address, default router, subnet mask, and other network configuration settings.
9. [NTP-G194 Set Up EMS Secure Access to the ONS 15454, page 14-31](#)—Continue with this procedure to connect the CTC in secure mode.
10. [NTP-G341 Set Up Secure Access to the ONS 15454 TL1, page 14-31](#)—Continue with this procedure to enable secure access to TL1.
11. [NTP-G27 Set Up the ONS 15454 for Firewall Access, page 14-32](#)—Continue with this procedure if the ONS 15454 will be accessed behind firewalls.
12. [NTP-G28 Create FTP Host, page 14-33](#)—Continue with this procedure if to create FTP host for ENE database backup.
13. [NTP-G132 Provision OSI, page 14-36](#)—Continue with this procedure if the ONS 15454 will be installed in networks with third-party, Open Systems Interconnection (OSI)-based network elements (NEs).
14. [NTP-G29 Set Up SNMP, page 14-45](#)—Complete this procedure if Simple Network Management Protocol (SNMP) will be used for network monitoring.
15. [“NTP-G143 Import the Cisco Transport Planner NE Update Configuration File” procedure on page 14-47](#)—Complete this procedure to preprovision the ONS 15454 slots and install the card and automatic node setup (ANS) parameters.
16. [NTP-G328 Add, Modify, or Delete ANS Parameters, page 14-59](#)—Complete this procedure, as needed, to add or delete ANS parameters.
17. [NTP-G30 Install the DWDM Cards, page 14-64](#)—Complete this procedure to install the DWDM cards, including the OSCM, OSC-CSM, 32WSS, 32WSS-L, 40-WSS-C, 40-WSS-CE, 40-WXC-C, 80-WXC-C, 40-SMR1-C, 40-SMR2-C, 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-PRE, 32MUX-O, 40-MUX-C, 32DMX-O, 32DMX, 32DMX-L, 40-DMX-C, 40-DMX-CE, 4MD-xx.x, AD-1C-xx.x, AD-2C-xx.x, AD-4C-xx.x, AD-1B-xx.x, AD-4B-xx.x, MMU, PSM, TDC-CC and TDC-FC.
18. [NTP-G31 Install the DWDM Dispersion Compensating Units, page 14-68](#)—Complete this procedure, as needed, to install a dispersion compensating unit (DCU).
19. [NTP-G179 Install the TXP, MXP, AR\\_MXP, AR\\_XP, GE\\_XP, 10GE\\_XP, GE\\_XPE, 10GE\\_XPE, ADM-10G, and OTU2\\_XP Cards, page 14-69](#)—Complete this procedure, as needed, to install transponder (TXP), muxponder (MXP), GE\_XP, 10GE\_XP, GE\_XPE, or 10GE\_XPE, ADM-10G, or OTU2\_XP cards.
20. [NTP-G123 Install the Filler Cards, page 14-75](#)—Complete this procedure, as needed, to install ONS 15454 filler cards.

21. [NTP-G239 Add and Delete Passive Units, page 14-76](#)—Complete this procedure, as needed, to add or delete passive units.
22. [NTP-G34 Install Fiber-Optic Cables on DWDM Cards and DCUs, page 14-78](#)—Complete this procedure, as needed, to install the fiber-optic cables on the DWDM cards.
23. [NTP-G140 Install Fiber-Optic Cables Between Terminal, Hub, or ROADM Nodes, page 14-82](#)—Complete this procedure, as needed, to connect TXP, MXP, GE\_XP, 10GE\_XP, GE\_XPE, or 10GE\_XPE, ADM-10G, or OTU2\_XP cards to DWDM cards in a terminal, hub, or reconfigurable optical add-drop multiplexer (ROADM) node through the patch panel.
24. [NTP-G185 Install Fiber-Optic Cables between Mesh Nodes, page 14-101](#)—Complete this procedure, as needed, to connect 40-WXC-C or 80-WXC-C cards in a mesh node to the 4-degree or 8-degree patch panel.
25. [NTP-G141 Install Fiber-Optic Cables for Y-Cable Protection Modules, page 14-108](#)—Complete this procedure, as needed, to connect fiber-optic cables to Y-cable modules from client TXP, MXP, GE\_XP, 10GE\_XP, GE\_XPE, or 10GE\_XPE cards.
26. [NTP-G152 Create and Verify Internal Patchcords, page 14-113](#)—Complete this procedure to calculate the DWDM cable connections.
27. [NTP-G209 Create, Edit, and Delete Optical Sides, page 14-123](#)—Complete this procedure to create, edit, and delete an optical side.
28. [NTP-G38 Provision OSC Terminations, page 14-126](#)—Complete this procedure next.
29. [NTP-G37 Run Automatic Node Setup, page 14-128](#)—Complete this procedure next.
30. [NTP-G39 Verify OSCM Transmit Power, page 14-129](#)—Complete this procedure next.
31. [NTP-G163 Upgrade Nodes in Single-Shelf Mode to Multishelf Mode, page 14-131](#)—Complete this procedure as needed.
32. [NTP-G210 Provision Node for SNMPv3, page 14-134](#)—Complete this procedure if Simple Network Management Protocol version 3(SNMPv3) will be used for network monitoring.

## NTP-G139 Verify Cisco Transport Planner Reports and Files

<b>Purpose</b>	This procedure verifies that you have the Cisco Transport Planner reports and files needed to turn up the node.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	Chapter 1, “Install the Cisco ONS 15454, ONS 15454 M2, and ONS 15454 M6 Shelf” in the <a href="#">Cisco ONS 15454 Hardware Installation Guide</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Retrieve or higher

- Step 1** Verify that you have the Cisco Transport Planner reports and files shown in [Table 14-1](#) for the node that you will provision. The reports and files can be provided in one of the following ways:
- If you have Cisco Transport Planner, verify that you have the electronic network design plan from which you can generate the reports in Cisco Transport Planner. For information about generating the reports, refer to the [Cisco Transport Planner DWDM Operations Guide](#).

- If you do not have Cisco Transport Planner, you must have printouts of all reports listed in [Table 14-1](#) except the Assisted Configuration Setup file. Assisted Configuration Setup is an electronic file that will be imported into CTC. You must be able to access it from the CTC computer used to provision the node
- If you not do not have all the reports and files listed in [Table 14-1](#), do not continue. See your site planner or network planner for the required information and files.

**Table 14-1 Cisco Transport Planner Node Setup Information and Files**

Source	Format	Description
Shelf layout	JPG file	Cisco Transport Planner provides a shelf layout showing the cards that should be installed in each ONS 15454, ONS 15454 M2, and ONS 15454 M6 slot. Cisco Transport Planner can export each of these cards as a JPG file with a user-defined name.
Installation Parameters	Table	Provides the target reference values for the variable optical attenuators (VOAs), output power, optical thresholds, and amplifier configuration parameters.
Internal Connections	Table	Identifies the patchcords that must be installed within the shelf.
NE Update Configuration file	XML file	The Cisco Transport Planner NE Update configuration file is an electronic file with an XML extension and a name assigned by the network designer for the network you are provisioning. The file is imported into CTC where it preprovisions internal patchcords, optical sides and card parameters for optical cards, transponders, and passive units (DCUs and patch panels). It configures the ANS parameters based on the network calculated by Cisco Transport Planner.
Traffic Matrix	Table	Shows the traffic flow within the node. During node turn-up, this report is used to identify the location of Y-cable protection groups.
Cable list	Table or list	A list of cables needed to provision the node. The list can be derived from the Internal Connections Report or from the Bill of Materials report prepared by Cisco Transport Planner.

**Step 2** Print [Table 14-1](#) for reference. You will need information from the reports during node turn-up.

**Stop. You have completed this procedure.**

## NTP-G22 Verify Common Card Installation

### Purpose

This procedure verifies that the Cisco ONS 15454 shelf has two TCC2/ TCC2P/TCC3 cards installed. This procedure also verifies that the Cisco ONS 15454 M6 and the Cisco ONS 15454 M2 shelves have TNC/TNCE/TSC/TSCE cards installed. It also verifies the installation of the AIC-I and MS-ISC-100T cards, if they are installed.

### Tools/Equipment

None

<b>Prerequisite Procedures</b>	Chapter 1, “Install the Cisco ONS 15454, ONS 15454 M2, and ONS 15454 M6 Shelf” in the <a href="#">Cisco ONS 15454 Hardware Installation Guide</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Retrieve or higher

- Step 1** Verify the following:
- TCC2/TCC2P/TCC3 cards are installed in Slots 7 and 11 on the ONS 15454 shelf.
  - Two TNC/TNCE/TSC/TSCE cards are installed in Slots 1 and 8 on the ONS 15454 M6 shelf.
  - A stand-alone TNC/TNCE/TSC/TSCE card is installed in Slot 1 on the ONS 15454 M2 shelf.

- Step 2** Verify that the FAIL LED is off on both TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE cards.

- Step 3** Verify that the green ACT (active) LED is illuminated on one TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE card and that the amber STBY (standby) LED is illuminated on the other TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE card.



**Note** If the TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE cards are not installed, or if their LEDs are not operating as described, do not continue. Complete the “DLP-G33 Install the TCC2, TCC2P, or TCC3 Card” or “DLP-G604 Install the TNC TNCE, TSC, or TSCE Card” task in the [Cisco ONS 15454 Hardware Installation Guide](#) or refer to the *Cisco ONS 15454 DWDM Troubleshooting Guide* to resolve installation problems before proceeding to [Step 4](#).

- Step 4** (On 15454-DWDM shelf) If the AIC-I card is installed, verify that it is installed in Slot 9 and that its ACT (active) LED displays a solid green light.



**Note** If the AIC-I card is not installed and the card is required by the Cisco Transport Planner shelf layout, or if it is installed and its LEDs are not operating as described, do not continue. Complete the “DLP-G34 Install the AIC-I Card” task in the [Cisco ONS 15454 Hardware Installation Guide](#) or refer to the *Cisco ONS 15454 DWDM Troubleshooting Guide* to resolve installation problems before proceeding to [Step 5](#).

- Step 5** Verify that the software release shown on the LCD matches the software release required for your network. On the LCD, the software release is shown under the platform (SONET or SDH) and date/temperature. If the release does not match, perform one of the following procedures:
- Perform a software upgrade using a ONS 15454 software CD or ONS 15454 SDH software CD. Refer to the release-specific software upgrade document.
  - On ONS 15454, replace the TCC2/TCC2P/TCC3 cards with cards containing the correct release.
  - On ONS 15454 M6, replace the LCD and TNC/TNCE/TSC/TSCE cards with cards containing the correct release.
  - On ONS 15454 M2, replace the power module and TNC/TNCE/TSC/TSCE cards with cards containing the correct release.
- Step 6** (On ONS 15454 shelf) If the node will be configured as a multishelf node, verify that redundant MS-ISC-100T cards are installed (Slots 6 and 12 are recommended) and that the green ACT (active) LED is illuminated on both cards.



**Note** If the MS-ISC-100T card is not installed and the card is required by the Cisco Transport Planner shelf layout, or if the card's LEDs are not operating as described, do not continue. Complete the “DLP-G309 Install the MS-ISC-100T Card” task in the [Cisco ONS 15454 Hardware Installation Guide](#) or refer to the [Cisco ONS 15454 DWDM Troubleshooting Guide](#) to resolve installation problems before proceeding to the next procedure.

**Stop. You have completed this procedure.**

## NTP-G250 Verify Digital Image Signing (DIS) Information

<b>Purpose</b>	This procedure retrieves the following information on the ONS 15454 M2 and ONS 15454 M6 platforms: <ul style="list-style-type: none"> <li>• Software signature information</li> <li>• Version of the digitally signed software</li> <li>• Public keys installed</li> </ul> <p><b>Note</b> In a hybrid multi-shelf configuration involving ONS 15454 and ONS 15454 M6 shelf assemblies, DIS information is available for the ONS 15454 M6 shelf only.</p>
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">“NTP-G22 Verify Common Card Installation” task on page 14-4</a>
<b>Required/As Needed</b>	As Needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Retrieve user



**Note** The DIS information is applicable for TNC/TNCE/TSC/TSCE cards in the ONS 15454 M2 and ONS 15454 M6 platforms.

- Step 1** Complete the [DLP-G46 Log into CTC](#) task at the node where you want to verify the DIS information.
- Step 2** Do the following as applicable:
- To retrieve the digitally signed software version, go to [Step 3](#).
  - To retrieve the software signature information, go to [Step 4](#).
  - To retrieve the public keys installed on the node, go to [Step 5](#).
- Step 3** In node view (single-shelf mode) or multishelf view (multishelf mode), click **Maintenance > Software** tab to retrieve the digitally signed software version. The following columns appear in the pane:
- Node—Displays the node name or IP address.
  - Type—Displays the node type.
  - Node Status—Displays the node status, which is based on the highest alarm level at the node.
  - Working Version—Displays the working ONS node software version (the general software release number [n.n.n] followed by the specific software release identification number). For example, 9.2.0 (09.20-X10E-02.06).

- **Protect Version**—Displays the protect ONS node software version (the general software release number [n.n.n] followed by the specific software release identification number). For example, 9.2.0 (09.20-X10E-02.06).
- **Download Status**—Displays the status of any in-progress network software downloads.

**Step 4** In node view (single-shelf mode) or shelf view (multishelf view), click **Maintenance > DIS > Info > Retrieve Signature Information** tab to retrieve signature information. The following information is displayed in the pane:

- **Attribute**—The following information is displayed:
  - **Organization Name**—Displays the owner of the software image.
  - **Organization Unit**—Displays the business unit within Cisco.
  - **Serial Number**—Displays the serial number of the certificate with the digital signature.
  - **Common Name**—Displays the name of the platform.
  - **Hash Algorithm**—Displays the hashing algorithm used.
  - **Image Type**—Shows the type of the image-Development or Production.
  - **Key Version**—Indicates the key version used to digitally sign the image. A key version is identified with an alphabetical character that ranges from A to Z.
  - **Sign Algorithm**—Refers to the RSA algorithm.
- **Working Software Information**—Displays the signature information of the working software.
- **Protect Software Information**—Displays the signature information of the protect software.



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**Note** To refresh the signature information, click **Refresh Signature Information**.

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**Step 5** In node view (single-shelf mode) or shelf view (multishelf mode), click **Maintenance > DIS > Available Keys > Retrieve All Keys** tabs to retrieve public key information. The following information is displayed in the pane:

- **Key Type**—Displays the public key available on the system for verification:
  - **Release Key**—Verifies release images.
  - **Development Key**—Verifies the development images.
- **Public Key Algorithm**—Displays the name of the algorithm used for public key cryptography.
- **Exponent**—Displays the exponent of the public key algorithm—release or development keys.
- **Key Version**—Displays the key version used for verification.
- **Modulus**—Displays the modulus of the public key algorithm with a size of 2048 bits.



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**Note** To refresh the public key information, click **Refresh All Keys**.

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**Stop. You have completed this procedure.**

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# NTP-G144 Provision a Multishelf Node

<b>Purpose</b>	This procedure provisions a multishelf node from CTC. A multishelf node consists of a control node and subtending shelves that are configured to operate as a single node.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<ul style="list-style-type: none"> <li>• <a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a></li> <li>• <a href="#">Cisco ONS 15454 Hardware Installation Guide:</a> <ul style="list-style-type: none"> <li>– “NTP-G301 Connect the ONS 15454 Multishelf Node and Subtending Shelves to an MS-ISC-100T Card”</li> <li>– “NTP-G302 Connect the ONS 15454 Multishelf Node and Subtending Shelves to a Catalyst 2950”</li> <li>– “NTP-G295 Connect the ONS 15454 Multishelf Node and Subtending Shelves to a Catalyst 3560”</li> <li>– “NTP-G296 Upgrade the ONS 15454 Multishelf with MS-ISC Card Configuration Using the Catalyst 3560”</li> <li>– “NTP-G297 Upgrade the ONS 15454 Multishelf with Catalyst 2950 Configuration Using the Catalyst 3560”</li> <li>– “NTP-G308 Connect the ONS 15454 M6 Multishelf Node and the ONS 15454 M6 Subtending Shelves”</li> <li>– “NTP-G309 Connect the ONS 15454 M6 and the ONS 15454 in a Mixed Multishelf Configuration”</li> <li>– NTP-G310 Upgrade the ONS 15454 Multishelf Configuration using the ONS 15454 M6</li> </ul> </li> </ul>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only



## Caution

An optical shelf in a multishelf configuration must be provisioned as the node controller shelf and not as a subtending shelf. Otherwise, traffic will be dropped. If there are no slots available on the optical shelf to install the MS-ISC-100T cards (needed for a node controller shelf), install and configure the Cisco Catalyst 2950 or Cisco Catalyst 3560. See the “NTP-G302 Connect the ONS 15454 Multishelf Node and Subtending Shelves to a Catalyst 2950” procedure or the “NTP-G295 Connect the ONS 15454 Multishelf Node and Subtending Shelves to a Catalyst 3560” procedure in the [Cisco ONS 15454 Hardware Installation Guide](#). If you are using an ONS 15454 M6, then refer to the applicable procedure for connecting the ONS 15454 M6 as the node controller in the [Cisco ONS 15454 Hardware Installation Guide](#).

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- Step 1** Complete the [DLP-G46 Log into CTC](#) task at the node that you want to configure as a multishelf node.
- Step 2** If you want to set up the login node as the node controller, complete the following steps. If not, continue with [Step 3](#).
- a. In node view (single-node mode) or multishelf view (multishelf mode), click the **Provisioning > General > Multishelf Config** tabs.
  - b. Click **Enable as Node Controller**.

- c. From the LAN Config drop-down list, complete one of the following:
- Choose **Ethernet Switch** if MS-ISC-100T cards or the Catalyst 2950 or the Catalyst 3560 switches are already installed and configured. Choose the public VLAN ID and private VLAN ID for the ONS 15454 multishelf node. In case of an ONS 15454 M6, the public VLAN ID and private VLAN ID are static (1 and 2 respectively).



**Note** Public VLAN ID is used by the node controller to communicate with the external network. Private VLAN ID is used by the node controller to communicate with the subtending shelves.



**Note** If the ONS 15454 M6 shelf is used as the node controller, then you can connect the subtending shelves directly to the MSM ports on the ECU. However, a Catalyst 3560 switch can also be used along with the ONS 15454 M6 node controller to extend the number of subtending shelves.

- Choose **Stand-Alone** if MS-ISC-100T cards are not installed yet but will be included in the final layout. This option will allow a safe migration of the TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE card database when the multishelf configuration is complete.
- d. Click **Apply**.
- e. In the confirmation dialog box, click **Yes** to allow the node to reboot. The CTC view changes to network view and the node icon changes to gray. Wait for the reboot to finish. (This might take several minutes.)
- f. After the node reboots, double-click the node. The multishelf view appears.



**Note** The shelf ID of the node controller is automatically assigned as 1.

**Step 3** If you want to add a node as a subtending shelf (either ONS 15454 or ONS 15454 M6) in the multishelf configuration, complete the following steps. If not, you have completed this procedure.



**Note** A Cisco ONS 15454 node configured with TCC2P and TCC3 cards must not be added to a multishelf configuration containing either of the following configurations:

- Cisco ONS 15454 node with TCC3 as the node controller
- Cisco ONS 15454 M6 node with TNC as the node controller

- In multishelf view, right-click the white space in the rack and choose **Add Shelf** from the shortcut menu.
- Select the type of subtending shelf (ONS 15454 or ONS 15454 M6).
- In the Shelf ID Selection dialog box, choose a shelf ID (from 2 to 30) from the drop-down list.
- Click **OK**. The shelf appears in multishelf view.
- Disconnect the cross-over (CAT-5) LAN cable from the RJ-45 LAN (TCP/IP) port of the ONS 15454 subtending shelf TCC2/TCC2P/TCC3 card in Slot 11 or Slot 7, or from the EMS RJ-45 LAN (TCP/IP) on the ONS 15454 M6 subtending shelf that correspond to the TNC/TNCE/TSC/TSCE card.

- f. Connect your Windows PC or Solaris workstation network interface card (NIC) to the RJ-45 LAN (TCP/IP) port on the TCC2/TCC2P/TCC3 card in Slot 11 or Slot 7, or to the EMS RJ-45 LAN (TCP/IP) on the ONS 15454 M6 subtending shelf that correspond to the TNC/TNCE/TSC/TSCE card.
- g. Complete the [DLP-G46 Log into CTC](#) task at the subtending shelf.
- h. Click the **Provisioning > General > Multishelf Config** tabs.
  - i. Click **Enable as Subtended Shelf**.
  - j. From the Shelf ID drop-down list, choose the shelf ID that you created in Step c.
  - k. Click **Apply**.
    - l. In the confirmation dialog box, click **Yes** to reboot the shelf. The CTC view changes to network view and the node icon changes to gray. Wait for the reboot to finish. (This might take several minutes.)
- m. Disconnect your Windows PC or Solaris workstation NIC from the RJ-45 LAN (TCP/IP) port of the ONS 15454 subtending shelf TCC2/TCC2P/TCC3 card in Slot 11 or Slot 7, or from the EMS RJ-45 LAN (TCP/IP) on the ONS 15454 M6 subtending shelf that correspond to the TNC/TNCE/TSC/TSCE card.
- n. Reconnect the cross-over (CAT-5) LAN cable (disconnected in Step e) to the RJ-45 LAN (TCP/IP) port of the subtending shelf TCC2/TCC2P/TCC3 card in Slot 11 or Slot 7, or to the EMS RJ-45 LAN (TCP/IP) on the ONS 15454 M6 subtending shelf that correspond to the TNC/TNCE/TSC/TSCE card.
- o. Repeat Steps a through n to set up additional subtending shelves.

**Note**

To connect the subtending shelves to the node controller, refer to the applicable procedures in the [Cisco ONS 15454 Hardware Installation Guide](#).

**Note**

Non-LAN connected Multishelf nodes are not manageable from CTC unless SOCKS Proxy is enabled on the node.

**Stop. You have completed this procedure.**

## NTP-G23 Create Users and Assign Security

<b>Purpose</b>	This procedure creates ONS 15454 users and assigns their security levels.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only

- Step 1** Complete the [DLP-G46 Log into CTC](#) task at the node where you need to create users. If you are already logged in, continue with Step 2.



**Note** You must log in as a Superuser to create additional users. The CISCO15 user provided with each ONS 15454 can be used to set up other ONS 15454 users. You can add up to 500 users to one ONS 15454.

**Step 2** Complete the “[DLP-G54 Create a New User on a Single Node](#)” task on page 14-11 or the “[DLP-G55 Create a New User on Multiple Nodes](#)” task on page 14-12 as needed.



**Note** You must add the same user name and password to each node that a user will access.

**Step 3** If you want to modify the security policy settings, including password aging and idle user timeout policies, complete the [NTP-G88 Modify Users and Change Security](#) procedure.

**Stop. You have completed this procedure.**

## DLP-G54 Create a New User on a Single Node

<b>Purpose</b>	This task creates a new user for one ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only

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

**Step 2** In the Users window, click **Create**.

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

- **Name**—Type the user name. The name must be a minimum of six and a maximum of 20 alphanumeric (a-z, A-Z, 0-9) characters. For Transaction Language One (TL1) compatibility, the user name must be 6 to 10 characters.
- **Password**—Type the user password. The password length, by default, is set to a minimum of six and a maximum of 20 characters. You can configure the default values in node view using the Provisioning > NE Defaults > Node > security > passwordComplexity tabs. The minimum length can be set to eight, ten or twelve characters, and the maximum length to 80 characters. The password must be a combination of alphanumeric (a-z, A-Z, 0-9) and special (+, #, %) characters, where at least two characters are not alphabetic and at least one character is a special character. For TL1 compatibility, the password must be six to ten characters.



**Note** The password must not contain the user name.

- **Confirm Password**—Type the password again to confirm it.

- Security Level—Choose a security level for the user: **RETRIEVE**, **MAINTENANCE**, **PROVISIONING**, or **SUPERUSER**.



**Note** Each security level has a different idle time. The idle time is the length of time that CTC can remain idle before the password must be reentered. The defaults are: Retrieve user = unlimited, Maintenance user = 60 minutes, Provisioning user = 30 minutes, and Superuser = 15 minutes. To change the idle times, see the [NTP-G88 Modify Users and Change Security](#) procedure.

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

## DLP-G55 Create a New User on Multiple Nodes

<b>Purpose</b>	This task adds a new user to multiple ONS 15454 nodes.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only



**Note** All nodes where you want to add users must be accessible in network view.

- Step 1** From the View menu, choose **Go to Network View**.
- Step 2** Click the **Provisioning > Security > Users** tabs.
- Step 3** In the Users window, click **Create**.
- Step 4** In the Create User dialog box, enter the following:
- Name—Type the user name. The name must be a minimum of six and a maximum of 20 alphanumeric (a-z, A-Z, 0-9) characters. For TL1 compatibility, the user name must be 6 to 10 characters.
  - Password—Type the user password. The password length, by default, is set to a minimum of six and a maximum of 20 characters. You can configure the default values in node view through Provisioning > NE Defaults > Node > security > passwordComplexity. The minimum length can be set to eight, ten or twelve characters, and the maximum length to 80 characters. The password must be a combination of alphanumeric (a-z, A-Z, 0-9) and special (+, #, %) characters, where at least two characters are not alphabetic and at least one character is a special character. For TL1 compatibility, the password must be six to ten characters. The password must not contain the user name.
  - Confirm Password—Type the password again to confirm it.
  - Security Level—Choose a security level for the user: **RETRIEVE**, **MAINTENANCE**, **PROVISIONING**, or **SUPERUSER**.

**Note**

Each security level has a different idle time. The idle time is the length of time that CTC can remain idle before it locks up and the password must be reentered. The defaults are: Retrieve user = unlimited, Maintenance user = 60 minutes, Provisioning user = 30 minutes, and Superuser = 15 minutes. To change the idle times, refer to the [NTP-G88 Modify Users and Change Security](#) procedure.

- Step 5** In the Select Applicable Nodes area, deselect any nodes where you do not want to add the user (all network nodes are selected by default).
- Step 6** Click **OK**.
- Step 7** In the User Creation Results dialog box, verify that the user was added to all the nodes chosen in [Step 5](#). If not, click **OK** and repeat Steps 2 through 6. If the user was added to all nodes, click **OK** and continue with the next step.
- Step 8** Return to your originating procedure (NTP).

## NTP-G24 Set Up Name, Date, Time, and Contact Information

<b>Purpose</b>	This procedure provisions identification information for the node, including the node name, a contact name and phone number, the location of the node, and the date, time, and time zone.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation</a> , page 14-4
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

- Step 1** Complete the [DLP-G46 Log into CTC](#) task for the node you will turn up. If you are already logged in, continue with Step 2.
- Step 2** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > General > General** tabs.
- Step 3** In the Node Name/TID field, type a name for the node. For TL1 compliance, names must begin with an alpha character and have no more than 20 alphanumeric (a-z, A-Z, 0-9) characters.

**Note**

To avoid errors when you import the Cisco Transport Planner configuration file using the [“NTP-G143 Import the Cisco Transport Planner NE Update Configuration File”](#) procedure on page 14-47, the CTC node name and the Cisco Transport Planner site name should be the same (or at least easy to identify).

- Step 4** (Optional) In the Contact field, type the name of the node contact person and the phone number, up to 255 characters.
- Step 5** (Optional) In the Latitude field, enter the node latitude: N (north) or S (south), degrees, and minutes.
- Step 6** (Optional) In the Longitude field, enter the node longitude: E (east) or W (west), degrees, and minutes.




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**Note** The latitude and longitude values only indicate the geographical position of the nodes in the actual network and not the CTC node position.

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- Step 7** (Optional) In the Description field, type a description of the node. The description can be a maximum of 255 characters.
- Step 8** (Optional) Check the Use NTP/SNTP Server check box if you want CTC to use a Network Time Protocol (NTP) or Simple Network Time Protocol (SNTP) server to set the date and time of the node. Using an NTP or SNTP server ensures that all ONS 15454 network nodes use the same date and time reference. The server synchronizes the node's time after power outages or software upgrades.
- a.** If you check the Use NTP/SNTP Server check box, complete the following fields:
- Use NTP/SNTP Server—Type the IP address of the primary NTP/SNTP server connected to the ONS 15454 or of another ONS 15454/15600/15310-CL/15310-MA as GNE with NTP/SNTP enabled that is connected to the ONS 15454 ENE.
  - Backup NTP/SNTP Server—Type the IP address of the secondary NTP/SNTP server connected to the ONS 15454 or of another ONS 15454/15600/15310-CL/15310-MA as GNE with NTP/SNTP enabled that is connected to the ONS 15454 ENE.

When the primary NTP/SNTP server fails or is not reachable, the node uses the secondary NTP/SNTP server to synchronize its date and time. If both the primary and secondary NTP/SNTP servers fail or are not reachable, an SNTP-FAIL alarm is raised. The node checks for the availability of the primary or secondary NTP/SNTP server at regular intervals until it can get the time from any one of the NTP/SNTP servers. After the node gets the time from any one server, it synchronizes its date and time with the server's date and time and the SNTP-FAIL alarm is cleared. For each retry and resynchronization, the node checks the availability of the primary NTP/SNTP server first, followed by the secondary NTP/SNTP server. The node synchronizes its date and time every hour.




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**Note** You will not be able to identify which NTP/SNTP server is being used for synchronization.

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**Note** If you plan to check gateway network element (GNE) for the ONS 15454 SOCKS proxy server (see [“DLP-G56 Provision IP Settings” task on page 14-17](#)), external ONS 15454 nodes must reference the gateway ONS 15454 for NTP/SNTP timing. For more information about the ONS 15454 gateway settings, refer to [Chapter 22, “Manage Network Connectivity.”](#)

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**Caution**


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If you reference another ONS 15454 for the NTP/SNTP server, make sure that the second ONS 15454 references an NTP/SNTP server and not the first ONS 15454 (that is, do not create an NTP/SNTP timing loop by having two ONS 15454 nodes reference each other).

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- b.** If you do not check Use SNTP/NTP Server, complete the Date and Time fields. The ONS 15454 will use these fields for alarm dates and times. By default, CTC displays all alarms in the CTC computer time zone for consistency. To change the display to the node time zone, complete the [DLP-G118 Display Alarms and Conditions Using Time Zone](#) task.

- **Date**—Type the current date in the format m/d/yyyy, for example, September 24, 2002 is 9/24/2002.
- **Time**—Type the current time in the format hh:mm:ss, for example, 11:24:58. The ONS 15454 uses a 24-hour clock, so 10:00 PM is entered as 22:00:00.

- Step 9** Click the Time Zone field and choose a city within your time zone from the drop-down list. The list displays the 80 World Time Zones from –11 through 0 (GMT) to +14. Continental United States time zones are GMT-05:00 (Eastern), GMT-06:00 (Central), GMT-07:00 (Mountain), and GMT-08:00 (Pacific).
- Step 10** Check the Use Daylight Savings Time check box if the time zone that you chose uses Daylight Savings Time.

**Note**

The Insert AIS-V on STS-1 SD-P and SD-P BER field are not used in DWDM networks.

- Step 11** Click **Apply**.
- Step 12** In the confirmation dialog box, click **Yes**.
- Step 13** Review the node information. If you need to make corrections, repeat Steps 3 through 12 to enter the corrections. If the information is correct, continue with the [“NTP-G25 Set Battery Power Monitor Thresholds” procedure on page 14-15](#).

**Stop. You have completed this procedure.**

## NTP-G25 Set Battery Power Monitor Thresholds

<b>Purpose</b>	This procedure provisions extreme high, low, and extreme low input battery power thresholds within a –48 VDC environment.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

**Caution**

The default battery power thresholds are normally not changed. Threshold changes should only be performed at the direction of your site administrator.

**Note**

When the thresholds are crossed, the TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE card generates warning alarms in CTC. For ONS 15454 power specifications, see the [Hardware Specifications](#).

- Step 1** Complete the [DLP-G46 Log into CTC](#) task for the node that you will set up. If you are already logged in, continue with Step 2.
- Step 2** In node view (single-shelf mode) or shelf view (multishelf mode), click the **Provisioning > General > Power Monitor** tabs.



**Note** In multishelf mode, power monitor thresholds must be provisioned separately for each shelf within the multishelf including the node controller and all subtending shelves.

- Step 3** To change the extreme low battery voltage threshold in 0.5 VDC increments, choose a voltage from the ELWBATVGVdc drop-down list.
- Step 4** To change the low battery voltage threshold in 0.5 VDC increments, choose a voltage from the LWBATVGVdc drop-down list.
- Step 5** To change the high battery voltage threshold in 0.5 VDC increments, choose a voltage from the HIBATVGVdc drop-down list.
- Step 6** To change the extreme high battery voltage threshold in 0.5 VDC increments, choose a voltage from the EHIBATVGVdc drop-down list.
- Step 7** Click **Apply**.

**Stop. You have completed this procedure.**

## NTP-G26 Set Up CTC Network Access

<b>Purpose</b>	This procedure provisions network access for a node, including its subnet mask, default router, Dynamic Host Configuration Protocol (DHCP) server, Internet Inter-Orb Protocol (IIOP) listener port, gateway settings, static routes, Open Shortest Path First (OSPF) protocol, Routing Information Protocol (RIP), and designated SOCKS servers.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only

- Step 1** Complete the [DLP-G46 Log into CTC](#) task. If you are already logged in, continue with [Step 2](#).
- Step 2** Complete the “[DLP-G56 Provision IP Settings](#)” task on [page 14-17](#) to provision the ONS 15454 IP address, subnet mask, default router, DHCP server, IIOP listener port, and SOCKS proxy server settings.



**Tip** If you cannot log into the node, you can change its IP address, default router, and network mask by using the LCD on the ONS 15454 fan-tray assembly (unless LCD provisioning is suppressed). See the “[DLP-G57 Set the IP Address, Default Router, and Network Mask Using the LCD](#)” task on [page 14-22](#) for instructions. However, you cannot use the LCD to provision any other network settings. In an ONS 15454 M2 shelf assembly, the LCD is on the fan-tray assembly. In an ONS 15454 M6 shelf assembly, the LCD is a separate unit installed above the external connection unit (ECU).

**Note**

When accessing CTC from a machine running Windows XP operating system, CTC may sometimes fail to reconnect to a GNE when the GNE proxies for several ENE nodes (approximately 15 ENE nodes). This can happen when there is a side switch or when the LAN is enabled/disabled. This is due to the Windows XP operating system limiting the number of simultaneous TCP/IP connection attempts. As a workaround, close the existing CTC session and relaunch CTC on the GNE node. You can configure a designated socks server list on the CTC to mitigate the problem.

- Step 3** If TCC2P/TCC3/TNC/TNCE/TSC/TSCE cards are installed and you want to turn on the ONS 15454 secure mode, which allows two IP addresses to be provisioned for the node, complete the “[DLP-G264 Enable Node Security Mode](#)” task on page 14-24. Secure mode is not available if TCC2 cards are installed.
- Step 4** If static routes are needed, complete the “[DLP-G58 Create a Static Route](#)” task on page 14-26. For more information about static routes, refer to [Chapter 22, “Manage Network Connectivity.”](#)
- Step 5** If the ONS 15454 is connected to a LAN or WAN that uses OSPF and you want to share routing information between the LAN or WAN and the ONS network, complete the “[DLP-G59 Set Up or Change Open Shortest Path First Protocol](#)” task on page 14-27.
- Step 6** If the ONS 15454 is connected to a LAN or WAN that uses RIP, complete the “[DLP-G60 Set Up or Change Routing Information Protocol](#)” task on page 14-30.
- Step 7** Complete the “[DLP-G439 Provision the Designated SOCKS Servers](#)” task on page 14-21 after the network is provisioned and one or more of the following conditions exist:
- SOCKS proxy is enabled.
  - The ratio of ENes to GNEs is greater than eight to one.
  - Most ENes do not have LAN connectivity.

**Stop. You have completed this procedure.**

## DLP-G56 Provision IP Settings

<b>Purpose</b>	This task provisions IP settings, which includes the IP address, IP address version, default router, DHCP access, firewall access, and SOCKS proxy server settings for an ONS 15454 node.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only

**Caution**

All network changes should be approved by your network (or LAN) administrator.

**Caution**

Verify that the IPv4 or IPv6 addresses assigned to the node are unique in the network. Duplicate IP addresses in the same network cause loss of visibility.

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

**Step 2** Complete the following information in the fields listed:

- IP Address—Type the IP address assigned to the ONS 15454 node.



**Note** If TCC2P/TCC3/TNC/TNCE/TSC/TSCE cards are installed, dual IP addressing is available using the secure mode. When secure mode is off (sometimes called repeater mode), the IP address entered in the IP Address field applies to the backplane LAN port (ONS 15454), EMS RJ-45 port or Craft port on the ECU (ONS 15454 M6), EMS RJ-45 port on the power module (ONS 15454 M2), and the TCC2P/TCC3/TNC/TNCE/TSC/TSCE TCP/IP (LAN) port. When secure mode is on, the IP Address field shows the address assigned to the TCC2P/TCC3/TNC/TNCE/TSC/TSCE TCP/IP (LAN) port and the Superuser can enable or disable display of the backplane IP address. See the “[DLP-G264 Enable Node Security Mode](#)” task on page 14-24 as needed. Refer to [Chapter 22, “Manage Network Connectivity,”](#) for more information about secure mode.

- Net/Subnet Mask Length—Type the subnet mask length (decimal number representing the subnet mask length in bits) or click the arrows to adjust the subnet mask length. The subnet mask length is the same for all ONS 15454 nodes in the same subnet.
- MAC Address—(Display only) Displays the ONS 15454 IEEE 802 MAC address.



**Note** In secure mode, the front and back TCP/IP (LAN) ports are assigned different MAC addresses, and the backplane information can be hidden or revealed by a Superuser.

- Default Router—If the ONS 15454 is connected to a LAN, enter the IP address of the default router. The default router forwards packets to network devices that the ONS 15454 cannot directly access. This field is ignored if any of the following are true:
  - The ONS 15454 is not connected to a LAN.
  - The SOCKS proxy server is enabled and the ONS 15454 is provisioned as an end network element (ENE).
  - OSPF is enabled on both the ONS 15454 and the LAN where the ONS 15454 is connected. (OSPF is provisioned in the “[DLP-G59 Set Up or Change Open Shortest Path First Protocol](#)” task on page 14-27.)
- LCD IP Setting—Choose one of the following:
  - **Allow Configuration**—Displays the node IP address on the LCD and allows users to change the IP settings using the LCD. This option enables the “[DLP-G57 Set the IP Address, Default Router, and Network Mask Using the LCD](#)” task on page 14-22.
  - **Display Only**—Displays the node IP address on the LCD but does not allow users to change the IP settings using the LCD.
  - **Suppress Display**—Suppresses the node IP address display on the LCD.
- Suppress CTC IP Display—Check this check box if you want to prevent the node IP address from appearing in CTC to users with Provisioning, Maintenance, or Retrieve security levels. (The IP address suppression is not applied to users with Superuser security level.)



**Note** IP address suppression is not applied to users with Superuser security level. However, in secure mode the backplane IP address visibility can be restricted to only a locally connected Superuser viewing the routing table. In this case, the backplane IP address is not revealed to any user at any other NE, either on the routing table or in autonomous messages (such as the TL1 REPT DBCHG message, alarms, and performance monitoring [PM] reporting).

- IPv6 Configuration—Allows provisioning of IPv6 addresses. After you provision an IPv6 address, you can access the device using the IPv6 address. Configure these settings only if you want to enable IPv6 on the node. IPv6 cannot be configured using the LCD push buttons.
  - Enable IPv6—Select this check box to assign an IPv6 address to the node. The IPv6 Address, Prefix Length, and IPv6 Default Router fields are enabled only if this check box is selected. The check box is disabled by default.



**Note** Enable SOCKS Proxy on Port check box is enabled when you enable IPv6 and can be disabled only when IPv6 is disabled.



**Note** By default, when IPv6 is enabled, the node processes both IPv4 and IPv6 packets on the LAN interface. If you want the node to process only IPv6 packets, you need to disable IPv4 on the node. For more information, see [DLP-G317 Change Node Access and PM Clearing Privilege](#).

- IPv6 Address—Enter the IPv6 address that you want to assign to the node. This IP address is the global unicast IPv6 address. This field is disabled if the Enable IPv6 check box is not selected.
- Prefix Length—Enter the prefix length of the IPv6 address. This field is disabled if the Enable IPv6 check box is not selected.
- IPv6 Default Router—Enter the IPv6 address of the default router of the IPv6 NE. This is optional. This field is disabled if the Enable IPv6 check box is not selected.



**Note** The ONS 15454 DWDM uses NAT-PT internally to support native IPv6. NAT-PT uses the IPv4 address range 128.0.0.0 to 128.0.1.254 for packet translation. Do not use this address range when you enable IPv6 feature.



**Note** You can provision IPv6 in secure or nonsecure mode. To enable secure mode, see [“DLP-G264 Enable Node Security Mode” task on page 14-24](#).

- Forward DHCP Request To—Check this check box to enable DHCP. Also, enter the DHCP server IP address in the Request To field. Unchecked is the default. If you will enable any of the gateway settings to implement the ONS 15454 SOCKS proxy server features, do not check this check box.



**Note** If you enable DHCP, computers connected to an ONS 15454 node can obtain temporary IP addresses from an external DHCP server. The ONS 15454 only forwards DHCP requests; it does not act as a DHCP server.

- **Gateway Settings**—Provisions the ONS 15454 SOCKS proxy server features. (SOCKS is a standard proxy protocol for IP-based applications.) Do not change these options until you review Scenario 7 “Provisioning the ONS 15454 Proxy Server” in [Chapter 22, “Manage Network Connectivity.”](#) In SOCKS proxy server networks, the ONS 15454 is either an ENE, a GNE, or a proxy-only server. Provisioning must be consistent for each NE type.
- **Enable SOCKS proxy server on port**—If checked, the ONS 15454 serves as a proxy for connections between CTC clients and ONS 15454 nodes that are connected by data communications channels (DCCs) to the proxy ONS 15454. The CTC client establishes connections to DCC-connected nodes through the proxy node. The CTC client does not require IP connectivity to the DCC-connected nodes; it only requires IP connectivity to the proxy ONS 15454. If the Enable SOCKS proxy server on port check box is unchecked, the node does not proxy for any CTC clients. When this box is checked, you can provision one of the following options:
  - **External Network Element (ENE)**—Choose this option when the ONS 15454 is not connected to a LAN but has DCC connections to other ONS nodes. A CTC computer connected to the ENE through the TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE card TCP/IP (craft) port can manage nodes that have DCC connections to the ENE. However, the CTC computer does not have direct IP connectivity to these nodes or to any LAN or WAN that those nodes might be connected to.
  - **Gateway Network Element (GNE)**—Choose this option when the ONS 15454 is connected to a LAN and has DCC connections to other nodes. A CTC computer connected to the LAN can manage all nodes that have DCC connections to the GNE, but the CTC computer does not have direct IP connectivity to them. The GNE option isolates the LAN from the DCC network so that IP traffic originating from the DCC-connected nodes and any CTC computers connected to them is prevented from reaching the LAN.
  - **SOCKS proxy only**—Choose this option when the ONS 15454 is connected to a LAN and the LAN is separated from the node by a firewall. The SOCKS proxy only option is the same as the GNE option, except that the SOCKS proxy only option does not isolate the DCC network from the LAN.




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**Note** If a node is provisioned in secure mode, it is automatically provisioned as a GNE with SOCKS proxy enabled. However, this provisioning can be overridden, and the secure node can be changed to an ENE. In secure mode, SOCKS cannot be disabled. For information about provisioning, including GNE and ENE status, see the [“DLP-G264 Enable Node Security Mode” task on page 14-24.](#)

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**Step 3** Click **Apply**.

**Step 4** Click **Yes** in the confirmation dialog box.

The TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE cards reboot one at a time if changes were made to the IP address, subnet mask, or gateway settings. During this time (approximately 5 to 6 minutes), the active and standby TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE card LEDs will blink, turn on, and turn off at different intervals. Eventually, a “Lost node connection, switching to network view” message appears.

**Step 5** Click **OK**. The network view appears. The node icon appears in gray, during which time you cannot access the node.

**Step 6** Double-click the node icon when it becomes green.

**Step 7** Return to your originating procedure (NTP).

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## DLP-G439 Provision the Designated SOCKS Servers

<b>Purpose</b>	This task identifies the ONS 15454 SOCKS servers in SOCKS-proxy-enabled networks. Identifying the SOCKS servers reduces the amount of time required to log into a node and have all NEs appear in network view (NE discovery time). The task is recommended when the combined CTC login and NE discovery time is greater than five minutes in networks with SOCKS proxy enabled. Long (or failed) login and NE discovery times can occur in networks that have a high ENE-to-GNE ratio and a low number of ENEs with LAN connectivity.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only


**Note**

To complete this task, you must have either the IP addresses or DNS names of all ONS 15454s in the network with LAN access that have SOCKS proxy enabled.


**Note**

SOCKS proxy servers can be any accessible ONS network nodes that have LAN access, including the ONS 15310-MA, ONS 15310-CL, ONS 15454, ONS 15454 SDH, ONS 15600, ONS 15600 SDH, ONS 15454 M6, and ONS 15454 M2 nodes.


**Note**

You must repeat this task any time that changes to SOCKS proxy server nodes occur, for example, whenever LAN connectivity is added to or removed from a node, or when nodes are added or removed from the network.


**Note**

If you cannot log into a network node, complete the [DLP-G46 Log into CTC](#) task choosing the Disable Network Discovery option. Complete this task, then login again with network discovery enabled.

- Step 1** From the CTC Edit menu, choose **Preferences**.
- Step 2** In the Preferences dialog box, click the **SOCKS** tab.
- Step 3** In the Designated SOCKS Server field, type the IP address or DNS node name of the first ONS 15454 SOCKS server. The ONS 15454 that you enter must have SOCKS proxy server enabled, and it must have LAN access.
- Step 4** Click **Add**. The node is added to the SOCKS server list. If you need to remove a node on the list, click **Remove**.
- Step 5** Repeat Steps 3 and 4 to add all qualified ONS 15454s within the network. Add all ONS nodes that have SOCKS proxy enabled and are connected to the LAN.
- Step 6** Click **Check All Servers**. CTC verifies that all nodes can perform as SOCKS servers. Once verified, a check is placed next to the node IP address or node name in the SOCKS server list. An X placed next to the node indicates one or more of the following:

- The entry does not correspond to a valid DNS name.
  - The numeric IP address is invalid.
  - The node cannot be reached.
  - The node can be reached, but the SOCKS port cannot be accessed, for example, a firewall problem might exist.
- Step 7** Click **Apply**. The list of ONS 15454 nodes, including ones that received an X in [Step 6](#), are added as SOCKS servers.
- Step 8** Click **OK** to close the Preferences dialog box.
- Step 9** Return to your originating procedure (NTP).
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## DLP-G57 Set the IP Address, Default Router, and Network Mask Using the LCD

<b>Purpose</b>	This task changes the ONS 15454 IP address, default router, and network mask using the LCD on the fan-tray assembly. Use this task if you cannot log into CTC. In an ONS 15454 M2 shelf assembly, the LCD is on the fan-tray assembly. In an ONS 15454 M6 shelf assembly, the LCD is a separate unit installed above the external connection unit (ECU).
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	“DLP-G33 Install the TCC2, TCC2P, or TCC3 Card” in the <a href="#">Cisco ONS 15454 Hardware Installation Guide</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	None



### Note

You cannot perform this task if the LCD IP Display field on the node view Provisioning > Network tab is set to Display Only or Suppress Display. See the “[DLP-G56 Provision IP Settings](#)” task on [page 14-17](#) to view or change the LCD IP Display field. If the node is locked in secure mode with the LCD display disabled, you will not be able to change this provisioning unless the lock is disabled by Cisco Technical Support. Refer to [Chapter 22, “Manage Network Connectivity,”](#) for more information about secure mode.



### Note

The LCD reverts to normal display mode after 5 seconds of button inactivity.

- Step 1** On the ONS 15454 front panel, repeatedly press the **Slot** button until SHELF appears on the first line of the LCD. You are in the Shelf menu.



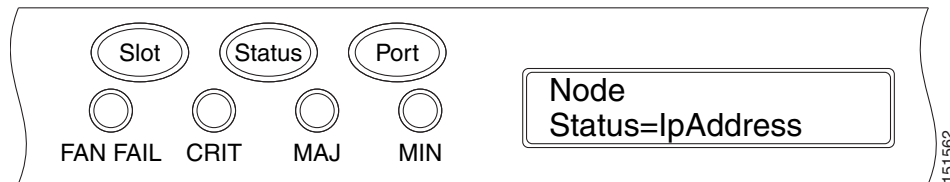
### Note

In an ONS 15454 M2 shelf assembly, the LCD panel and the **Slot**, **Port**, and **Status** buttons are present on the fan-tray assembly. In an ONS 15454 M6 shelf assembly, the LCD is a separate unit installed above the external connection unit (ECU); the **Slot**, **Port**, and **Status** buttons are present on the LCD unit.

- Step 2** Repeatedly press the **Port** button until the following information appears:

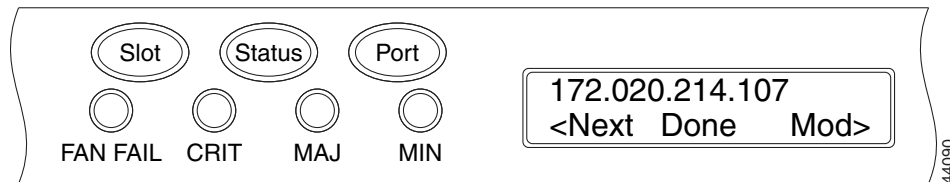
- To change the node IP address, Node Status=IpAddress (Figure 14-1)
- To change the node network mask, Node Status=Net Mask
- To change the default router IP address, Node Status=Default Rtr

**Figure 14-1** Selecting the IP Address Option—ONS 15454 Shelf Assembly



- Step 3** Press the **Status** button to display the node IP address (Figure 14-2), the node subnet mask length, or the default router IP address.

**Figure 14-2** Changing the IP Address—ONS 15454 Shelf Assembly



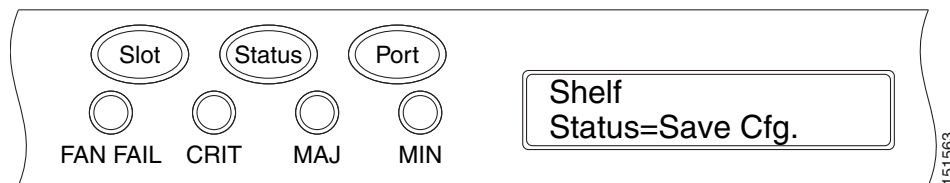
- Step 4** Push the **Slot** button to move to the digit of the IP address, subnet mask, or default router that you want to change. The selected digit flashes.



**Tip** The Slot, Status, and Port button positions correspond to the positions of the commands shown on the LCD. For example, in Figure 14-2, you press the Slot button to invoke the Next command and the Status button to invoke the Done command.

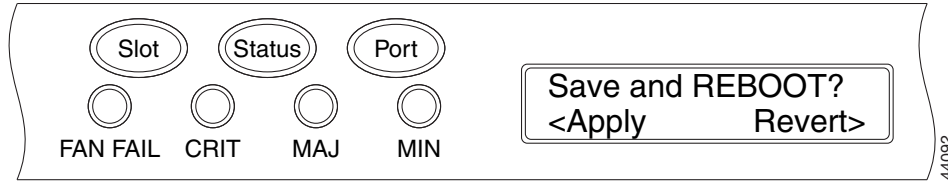
- Step 5** Press the **Port** button to cycle the IP address, subnet mask, or default router to the correct digit.
- Step 6** When the change is complete, press the **Status** button to return to the relevant Node Status menu.
- Step 7** Repeatedly press the **Port** button until the Shelf Save Configuration option appears (Figure 14-3).

**Figure 14-3** Selecting the Save Configuration Option—ONS 15454 Shelf Assembly



- Step 8** Press the **Status** button to choose the Save Configuration option.  
A Save and REBOOT message appears (Figure 14-4).

**Figure 14-4 Saving and Rebooting the TCC2/TCC2P/TCC3—ONS 15454 Shelf Assembly**



**Step 9** Press the **Slot** button to apply the new IP address, subnet mask, or default router configuration or press **Port** to cancel the configuration.



**Note** The IP address and default router must be on the same subnet. If not, you cannot apply the configuration.

**Step 10** Saving the new configuration causes the TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE cards to reboot. During the reboot, a “TCC may Reset” message appears on the LCD. The LCD returns to the normal alternating display after both TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE cards finish rebooting.

**Step 11** Return to your originating procedure (NTP).

## DLP-G264 Enable Node Security Mode

<b>Purpose</b>	This task enables the security mode. When security mode is enabled, two IP addresses are assigned to the node. One address is assigned to the backplane LAN port (ONS 15454) or to the EMS port (ONS 15454 M2 and M6). The other address is assigned to the TCC2P/TCC3/TNC/TNCE/TSC/TSCE RJ-45 TCP/IP (LAN) port. The TCC2 card does not support security mode.
<b>Tools/Equipment</b>	TCC2P/TCC3/TNC/TNCE/TSC/TSCE cards must be installed. Do not install a mix of TCC2 and TCC2P cards.
<b>Prerequisite Procedures</b>	<a href="#">NTP-G103 Back Up the Database, page 24-2</a> <a href="#">DLP-G46 Log into CTC task</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only



**Caution**

The IP address assigned to the TCC2P/TCC3/TNC/TNCE/TSC/TSCE TCP/IP (LAN) port must reside on a different subnet from the backplane LAN port (ONS 15454) and the EMS port (ONS 15454 M2 and M6). Verify that the new TCC2P/TCC3/TNC/TNCE/TSC/TSCE IP address meets this requirement.



**Note**

The node will reboot after you complete this task, causing a temporary disconnection between the CTC computer and the node.

**Note**

If an OTS-to-OTS PPC is created between nodes, it will no longer function if the node Security Mode is enabled (see [DLP-G264 Enable Node Security Mode, page 14-24](#)). The reason for this is that if the Secure mode is enabled, it is no longer possible for the DCN extension feature to use the LAN interface to extend the internal network (due to the network isolation in this configuration mode). The result is that the topology discovery on the OTS-to-OTS PPC no longer operates.

**Step 1** Click the **Provisioning > Security > Data Comm** tabs.

**Note**

The security mode options are not available in CTC if TCC2 cards or a mix of TCC2 and TCC2P cards are installed.

**Step 2** Click **Change Mode**.

**Step 3** Review the information on the Change Secure Mode page, then click **Next**.

**Step 4** On the TCC Ethernet Port page, enter the IP address and subnet mask for the TCC2P/TCC3/TNC/TNCE/TSC/TSCE TCP/IP (LAN) port. The IP address cannot reside on the same subnet as the backplane LAN port (ONS 15454) and the EMS port (ONS 15454 M2 and M6).

**Step 5** Click **Next**.

**Step 6** If needed, on the Backplane Ethernet Port page, modify the backplane IP address, subnet mask, and default router. (You normally do not modify these fields if no network changes have occurred.)

**Step 7** Click **Next**.

**Step 8** On the SOCKS Proxy Server Settings page, choose one of the following options:

- **External Network Element (ENE)**—If selected, the CTC computer is only visible to the ONS 15454 where the CTC computer is connected. The CTC computer is not visible to the nodes connected to the DCC. In addition, firewall is enabled, which means that the node prevents IP traffic from being routed between the DCC and the LAN port.
- **Gateway Network Element (GNE)**—If selected, the CTC computer is visible to other DCC-connected nodes. The node prevents IP traffic from being routed between the DCC and the LAN port.

**Note**

The SOCKS proxy server is automatically enabled when you enable secure mode.

**Step 9** Click **Finish**.

Within the next 30 to 40 seconds, the TCC2P/TCC3/TNC/TNCE/TSC/TSCE cards reboot. CTC switches to network view, and the CTC Alerts dialog box appears. In network view, the node changes to gray and a DISCONNECTED condition appears in the Alarms tab.

**Step 10** In the CTC Alerts dialog box, click **Close**. Wait for the reboot to finish. (This might take several minutes.)

**Step 11** After the DISCONNECTED condition clears, complete the following steps to suppress the backplane IP address from appearing in CTC and the LCD. If you do not want to suppress the backplane IP address display, continue with [Step 12](#).

- a. Display the node in node view (single-shelf mode) or multishelf view (multishelf mode).
- b. Click the **Provisioning > Security > Data Comm** tabs.

- c. In the LCD IP Setting field, choose **Suppress Display**. The IP address will not appear on the ONS 15454 LCD.
- d. Check the **Suppress CTC IP Address** check box. The IP address will not appear in the CTC information area or the Provisioning > Security > Data Comm tabs.
- e. Click **Apply**.



**Note** After you turn on secure mode, the TCC2P/TCC3/TNC/TNCE/TSC/TSCE IP address becomes the node IP address.

**Step 12** Return to your originating procedure (NTP).

## DLP-G58 Create a Static Route

<b>Purpose</b>	This task creates a static route to establish CTC connectivity to a computer on another network. This task is performed when one of the following conditions exists: <ul style="list-style-type: none"> <li>• CTC computers on one subnet need to connect to ONS 15454 nodes that are connected by a router to ONS 15454 nodes residing on another subnet.</li> <li>• OSPF is not enabled (the OSPF Active on LAN check box is not checked on the Provisioning &gt; Network &gt; OSPF tab) and the External Network Element (ENE) gateway setting is not checked.</li> <li>• You need to enable multiple CTC sessions among ONS 15454 nodes residing on the same subnet and the External Network Element (ENE) gateway setting is not checked.</li> </ul>
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed.
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

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

**Step 2** Click the **Static Routing** tab. Click **Create**.

**Step 3** In the Create Static Route dialog box, enter the following:

- **Destination**—Enter the IP address of the computer running CTC. To limit access to one computer, enter the full IP address and a subnet mask of 255.255.255.255. To allow access to all computers on the 192.168.1.0 subnet, enter 192.168.1.0 and a subnet mask of 255.255.255.0. You can enter a destination of 0.0.0.0 to allow access to all CTC computers that connect to the router.

- **Mask**—Enter a subnet mask. If the destination is a host route (that is, one CTC computer), enter a 32-bit subnet mask (255.255.255.255). If the destination is a subnet, adjust the subnet mask accordingly, for example, 255.255.255.0. If the destination is 0.0.0.0, CTC automatically enters a subnet mask of 0.0.0.0 to provide access to all CTC computers. You cannot change this value.
- **Next Hop**—Enter the IP address of the router port or the node IP address if the CTC computer is connected to the node directly.
- **Cost**—Enter the number of hops between the ONS 15454 and the computer.

**Step 4** Click **OK**. Verify that the static route appears in the Static Route window.



**Note** Static route networking examples are provided in the [Chapter 22, “Manage Network Connectivity.”](#)

**Step 5** Return to your originating procedure (NTP).

## DLP-G59 Set Up or Change Open Shortest Path First Protocol

<b>Purpose</b>	This task enables the OSPF routing protocol on the ONS 15454. Perform this task if you want to include the ONS 15454 in OSPF-enabled networks.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
	You will need the OSPF Area ID, Hello and Dead intervals, and authentication key (if OSPF authentication is enabled) provisioned on the router to which the ONS 15454 is connected.
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

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

**Step 2** On the top left side of the OSPF area, complete the following:

- **DCC/GCC OSPF Area ID Table**—In dotted decimal format, enter the number that identifies the ONS 15454 nodes as a unique OSPF area ID. The Area ID can be any number between 000.000.000.000 and 255.255.255.255, but must be unique to the LAN OSPF area.

### ANSI Nodes

- **SDCC Metric**—This value is normally unchanged. It sets a cost for sending packets across the Section DCC, which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. The default SDCC metric is 100.
- **LDCC Metric**—Sets a cost for sending packets across the Line DCC. This value should always be lower than the SDCC metric. The default LDCC metric is 33. It is usually not changed.

### ETSI Nodes

- **RS-DCC Metric**—This value is normally unchanged. It sets a cost for sending packets across the regenerator section DCC (RS-DCC), which is used by OSPF routers to calculate the shortest path. This value should always be higher than the LAN metric. The default RS-DCC metric is 100.
- **MS-DCC Metric**—Sets a cost for sending packets across the multiplex section DCC (MS-DCC). This value should always be lower than the SDCC metric. The default MS-DCC metric is 33. It is usually not changed.

**Step 3** In the OSPF on LAN area, complete the following:

- **OSPF active on LAN**—When checked, enables the ONS 15454 OSPF topology to be advertised to OSPF routers on the LAN. Enable this field on ONS 15454 nodes that directly connect to OSPF routers.
- **LAN Port Area ID**—Enter the OSPF area ID (dotted decimal format) for the router port where the ONS 15454 is connected. (This number is different from the DCC/GCC OSPF Area ID.)

**Step 4** By default, OSPF is set to No Authentication. If the OSPF router requires authentication, complete the following steps. If not, continue with [Step 5](#).

- Click the **No Authentication** button.
- In the Edit Authentication Key dialog box, complete the following:
  - **Type**—Choose **Simple Password**.
  - **Enter Authentication Key**—Enter the password.
  - **Confirm Authentication Key**—Enter the same password to confirm it.
- Click **OK**.

The authentication button label changes to Simple Password.

**Step 5** Provision the OSPF priority and interval settings. The OSPF priority and interval defaults are the defaults most commonly used by OSPF routers. Verify that these defaults match the ones used by the OSPF router where the ONS 15454 is connected.

- **Router Priority**—Provision the router priority, which determines the designated router for a subnet.
- **Hello Interval (sec)**—Provision the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the default.
- **Dead Interval**—Provision the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. Forty seconds is the default.
- **Transit Delay (sec)**—Provision the service speed. One second is the default.
- **Retransmit Interval (sec)**—Provision the number of seconds that will elapse before a packet is resent. Five seconds is the default.
- **LAN Metric**—Provision the cost for sending packets across the LAN. This value should always be lower than the SDCC or RS-DCC metric. Ten is the default.

**Step 6** Under OSPF Area Range Table, create an area range table if one is needed:



**Note** Area range tables consolidate the information that is outside an OSPF area border. One ONS 15454 in the ONS 15454 OSPF area is connected to the OSPF router. An area range table on this node points the router to the other nodes that reside within the ONS 15454 OSPF area.

- Click **Create**.
- In the Create Area Range dialog box, enter the following:

- Range Address—Enter the area IP address for the ONS 15454 nodes that reside within the OSPF area. For example, if the ONS 15454 OSPF area includes nodes with IP addresses 10.10.20.100, 10.10.30.150, 10.10.40.200, and 10.10.50.250, the range address would be 10.10.0.0.
- Range Area ID—Enter the OSPF area ID for the ONS 15454 nodes. This is either the ID in the DCC OSPF Area ID field or the ID in the Area ID for LAN Port field.
- Mask Length—Enter the subnet mask length. In the Range Address example, this is 16.
- Advertise—Check this box if you want to advertise the OSPF range table.

c. Click **OK**.

**Step 7** All OSPF areas must be connected to Area 0. If the ONS 15454 OSPF area is not physically connected to Area 0, use the following steps to create a virtual link table that will provide the disconnected area with a logical path to Area 0:

a. Under the OSPF Virtual Link Table, click **Create**.

b. In the Create Virtual Link dialog box, complete the following fields. OSPF settings must match OSPF settings for the ONS 15454 OSPF area:

- Neighbor—Enter the router ID of the Area 0 router.
- Transit Delay (sec)—Enter the service speed. One second is the default.
- Hello Int (sec)—Provision the number of seconds between OSPF hello packet advertisements sent by OSPF routers. Ten seconds is the default.
- Auth Type—If the router where the ONS 15454 is connected uses authentication, choose **Simple Password**. Otherwise, choose **No Authentication**.
- Retransmit Int (sec)—Provision the time that will elapse, in seconds, before a packet is resent. Five seconds is the default.
- Dead Int (sec)—Provision the number of seconds that will pass while an OSPF router's packets are not visible before its neighbors declare the router down. Forty seconds is the default.

c. Click **OK**.

**Step 8** After entering the ONS 15454 OSPF area data, click **Apply**.

If you changed the Area ID, the TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE cards reset, one at a time. The reset takes approximately 10 to 15 minutes.

**Step 9** Return to your originating procedure (NTP).

---

## DLP-G60 Set Up or Change Routing Information Protocol

<b>Purpose</b>	This task enables RIP on the ONS 15454. Perform this task if you want to include the ONS 15454 in RIP-enabled networks.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a> You need to create a static route to the router adjacent to the ONS 15454 for the ONS 15454 to communicate its routing information to non-DCC-connected nodes.
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

- 
- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > Network > RIP** tabs.
- Step 2** Check the **RIP Active** check box if you are activating RIP.
- Step 3** Choose either RIP Version 1 or RIP Version 2 from the drop-down list, depending on which version is supported in your network.
- Step 4** Set the RIP metric. The RIP metric can be set to a number between 1 and 15 and represents the number of hops.
- Step 5** By default, RIP is set to No Authentication. If the router that the ONS 15454 is connected to requires authentication, complete the following steps. If not, continue with [Step 6](#).
- Click the **No Authentication** button.
  - In the Edit Authentication Key dialog box, complete the following:
    - Type—Choose **Simple Password**.
    - Enter Authentication Key—Enter the password.
    - Confirm Authentication Key—Enter the same password to confirm it.
  - Click **OK**.
- The authentication button label changes to Simple Password.
- Step 6** If you want to complete an address summary, complete the following steps. If not, continue with [Step 7](#). Complete the address summary only if the ONS 15454 is a gateway NE with multiple external ONS 15454 NEs attached with IP addresses in different subnets.
- In the RIP Address Summary area, click **Create**.
  - In the Create Address Summary dialog box, complete the following:
    - Summary Address—Enter the summary IP address.
    - Mask Length—Enter the subnet mask length using the up and down arrows.
    - Hops—Enter the number of hops. The smaller the number of hops, the higher the priority.
  - Click **OK**.
- Step 7** Return to your originating procedure (NTP).
-

## NTP-G194 Set Up EMS Secure Access to the ONS 15454

<b>Purpose</b>	This procedure provisions ONS 15454s and CTC computers for secure access.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G26 Set Up CTC Network Access, page 14-16</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser

- 
- Step 1** In node view, click the **Provisioning > Security > Access** pane.
- Step 2** Under the **EMS Access** area, change the **Access State** to **Secure**.
- Step 3** Click **Apply**. The CTC disconnects and reconnects through a secure socket connection.
- Step 4** To create a secure connection, enter **https://node-address**.



**Note** After setting up a CTC connection in secure mode, http requests are automatically redirected to https mode.

- 
- Step 5** A first time connection is authenticated by the **Website Certification is Not Known** dialog box. Accept the certificate and click **OK**. The **Security Error: Domain Name Mismatch** dialog box appears. Click **OK** to continue.

**Stop. You have completed this procedure.**

---

## NTP-G341 Set Up Secure Access to the ONS 15454 TL1

<b>Purpose</b>	This procedure provisions ONS 15454s for secure access to TL1.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G26 Set Up CTC Network Access, page 14-16</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser

- 
- 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.



**Note** Use any SSH client on Windows.

**Stop.** You have completed this procedure.

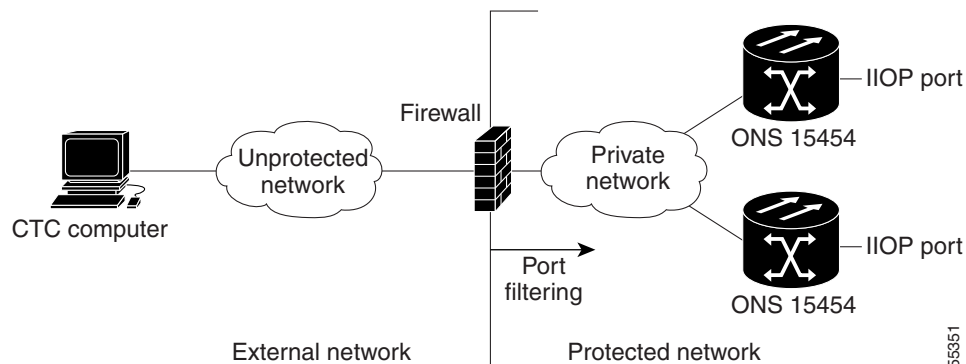
## NTP-G27 Set Up the ONS 15454 for Firewall Access

<b>Purpose</b>	This procedure provisions ONS 15454 nodes and CTC computers for access through firewalls.
<b>Tools/Equipment</b>	IIOp listener port number provided by your LAN or firewall administrator
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

- Step 1** Log into a node that is behind the firewall. See the [DLP-G46 Log into CTC](#) task for instructions. If you are already logged in, continue with Step 2.
- Step 2** If the ONS 15454 node is in a protected network and the CTC computer is in an external network, complete the “[DLP-G61 Provision the IIOp Listener Port on the ONS 15454](#)” task on page 14-34.

Figure 14-5 shows ONS 15454 nodes in a protected network and the CTC computer in an external network. For the computer to access the ONS 15454 nodes, you must provision the IIOp listener port specified by your firewall administrator on the ONS 15454.

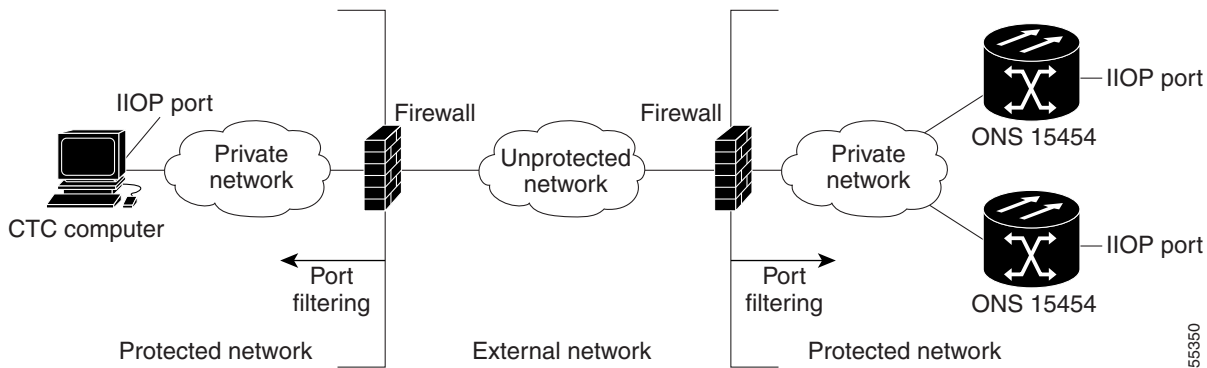
**Figure 14-5 Nodes Behind a Firewall**



- Step 3** If the CTC computer resides behind a firewall, complete the “[DLP-G62 Provision the IIOp Listener Port on the CTC Computer](#)” task on page 14-35.

Figure 14-6 shows a CTC computer and ONS 15454 behind firewalls. For the computer to access the ONS 15454, you must provision the IIOp port on the CTC computer and on the ONS 15454.

Figure 14-6 CTC Computer and ONS 15454 Nodes Residing Behind Firewalls



**Stop. You have completed this procedure.**

## NTP-G28 Create FTP Host

<b>Purpose</b>	This procedure provisions an FTP Host that you can use to perform database backup and restore or software download to an End Network Element (ENE) when proxy or firewall is enabled.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G26 Set Up CTC Network Access, page 14-16</a> <a href="#">NTP-G27 Set Up the ONS 15454 for Firewall Access, page 14-32</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser

- Step 1** Complete the [DLP-G46 Log into CTC](#) task. If you are already logged in, continue with [Step 2](#).
- Step 2** If you want to turn on the ONS 15454 secure mode, which allows two IPv4 addresses to be provisioned for the node if TCC2P/TCC3/TNC/TNCE/TSC/TSCE cards are installed, complete the “[DLP-G264 Enable Node Security Mode](#)” task on [page 14-24](#). Refer to the [Chapter 22, “Manage Network Connectivity,”](#) for information about secure mode.
- Step 3** In Node view, click the **Provisioning > Network > FTP Hosts** tabs.
- Step 4** Click **Create**.
- Step 5** Enter a valid IP address in the FTP Host Address field. A maximum of 12 host can be entered.



**Note** In ONS 15454 Software Release 9.1 and later, you can configure an IPv6 address for an FTP server, in addition to an IPv4 address.

- Step 6** The Mask is automatically set according to the Net/Subnet Mask length specified in “[DLP-G56 Provision IP Settings](#)” section on page 14-17. To change the Mask, click the Up/Down arrows on the **Length** menu.
- Step 7** Check the **FTP Relay Enable** radio button to allow FTP commands at the GNE relay. If you will enable the relay at a later time, go to [Step 9](#). Certain TL1 commands executed on an ENE require FTP access into the Data Communication Network (DCN), the FTP relay on the GNE provides this access. The FTP hosts that you have configured in CTC can be used with the TL1 COPY-RFILE (for database backup and restore or software download) or COPY-IOSCFG (for Cisco IOS Configuration File backup and restore) commands.
- Step 8** Enter the time, in minutes, that FTP Relay will be enabled. A valid entry is a number between 0 and 60. The number 0 disallows FTP command relay. After the specified time has elapsed the FTP Relay Enable flag is unset and FTP command relay is disallowed.
- Step 9** Click OK.
- Step 10** Repeat [Step 4](#) through [Step 9](#) to provision additional FTP Hosts.  
**Stop. You have completed this procedure.**

## DLP-G61 Provision the IIOP Listener Port on the ONS 15454

<b>Purpose</b>	This task sets the IIOP listener port on the ONS 15454, ONS 15454 M2, and ONS 15454 M6 which enables you to access nodes that reside behind a firewall.
<b>Tools/Equipment</b>	IIOP listener port number provided by your LAN or firewall administrator
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher



### Note

If the Enable SOCKS proxy on port 1080 check box is checked, CTC will use Port 1080 and ignore the configured IIOP port setting. If the check box is later unchecked, the configured IIOP listener port will be used.

- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > Security > Access** tabs.
- Step 2** In the TCC CORBA (IIOP) Listener Port area, choose a listener port option:
- **Default - TCC Fixed**—Uses Port 57790 to connect to ONS 15454 nodes on the same side of the firewall or if no firewall is used (default). This option can be used for access through a firewall if Port 57790 is available.
  - **Standard Constant**—Uses Port 683, the Common Object Request Broker Architecture (CORBA) default port number.
  - **Other Constant**—If Port 683 is not used, type the IIOP port specified by your firewall administrator.
- Step 3** Click **Apply**.
- Step 4** When the Change Network Configuration message appears, click **Yes**.

The TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE cards reboot, one at a time. The reboot takes approximately 15 minutes.

**Step 5** Return to your originating procedure (NTP).

---

## DLP-G62 Provision the IIOP Listener Port on the CTC Computer

<b>Purpose</b>	This task selects the IIOP listener port for CTC and must be completed if the computer running CTC resides behind a firewall.
<b>Tools/Equipment</b>	IIOP listener port number from LAN or firewall administrator
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a> <a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

---

**Step 1** From the Edit menu, choose **Preferences**.

**Step 2** In the Preferences dialog box, click the **Firewall** tab.

**Step 3** In the CTC CORBA (IIOP) Listener Port area, choose a listener port option:

- **Default - Variable**—Use to connect to ONS 15454 nodes from within a firewall or if no firewall is used (default).
- **Standard Constant**—Use Port 683, the CORBA default port number.
- **Other Constant**—If Port 683 is not used, enter the IIOP port defined by your administrator.

**Step 4** Click **Apply**. A warning appears telling you that the port change will apply during the next CTC login.

**Step 5** Click **OK**.

**Step 6** In the Preferences dialog box, click **OK**.

**Step 7** To access the ONS 15454 using the IIOP port, log out of CTC then log back in. (To log out, choose **Exit** from the File menu).

**Step 8** Return to your originating procedure (NTP).

---

# NTP-G132 Provision OSI

<b>Purpose</b>	This procedure provisions the ONS 15454 so it can be installed in networks with other vendor NEs that use the OSI protocol stack for data communications network (DCN) communications. This procedure provisions the Target Identifier Address Resolution Protocol (TARP), OSI routers, manual area addresses, subnetwork points of attachment, and IP-over-Connectionless Network Service (CLNS) tunnels.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">“NTP-G15 Install the Common Control Cards” section on page 3-34</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher



### Caution

This procedure requires an understanding of OSI protocols, parameters, and functions. Before you begin, review the OSI reference sections in [Chapter 22, “Manage Network Connectivity”](#) and ensure that you know the role of the ONS 15454 within the OSI and IP network.



### Note

This procedure requires provisioning of non-ONS equipment including routers and third party NEs. Do not begin until you have the capability to complete that provisioning.

**Step 1** Complete the [DLP-G46 Log into CTC](#) task at the node where you want to provision the OSI. If you are already logged in, continue with Step 2.

**Step 2** As needed, complete the following tasks:

- [DLP-G283 Provision OSI Routing Mode, page 14-37](#)—Complete this task first.
- [DLP-G284 Provision the TARP Operating Parameters, page 14-38](#)—Complete this task second.
- [DLP-G285 Add a Static TID-to-NSAP Entry to the TARP Data Cache, page 14-40](#)—Complete this task as needed.
- [DLP-G287 Add a TARP Manual Adjacency Table Entry, page 14-41](#)—Complete this task as needed.
- [DLP-G288 Provision OSI Routers, page 14-41](#)—Complete this task as needed.
- [DLP-G289 Provision Additional Manual Area Addresses, page 14-42](#)—Complete this task as needed.
- [DLP-G290 Enable the OSI Subnet on the LAN Interface, page 14-43](#)—Complete this task as needed.
- [DLP-G291 Create an IP-Over-CLNS Tunnel, page 14-44](#)—Complete this task as needed.

**Stop. You have completed this procedure.**

## DLP-G283 Provision OSI Routing Mode

<b>Purpose</b>	This task provisions the OSI routing mode. Complete this task when the ONS 15454 is connected to networks with third party NEs that use the OSI protocol stack for DCN communication.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	“ <a href="#">NTP-G15 Install the Common Control Cards</a> ” section on page 3-34” <a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher



### Caution

Do not complete this task until you confirm the role of the node within the network. It will be either an End System, Intermediate System Level 1, or IS Level 1/Level 2. This decision must be carefully considered. For additional information about OSI provisioning, refer to [Chapter 22, “Manage Network Connectivity.”](#)



### Caution

Link State Protocol (LSP) buffers must be the same at all NEs within the network, or loss of visibility might occur. Do not modify the LSP buffers unless you confirm that all NEs within the OSI have the same buffer size.



### Caution

LSP buffer sizes cannot be greater than the LAP-D maximum transmission unit (MTU) size within the OSI area.



### Note

For ONS 15454 nodes, three virtual routers can be provisioned. The node primary Network Service Access Point (NSAP) address is also the Router 1 primary manual area address. To edit the primary NSAP, you must edit the Router 1 primary manual area address. After you enable Router 1 on the Routers subtab, the Change Primary Area Address button is available to edit the address.

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

**Step 2** Choose a routing mode:

- **End System**—The ONS 15454 performs OSI end system (ES) functions and relies upon an intermediate system (IS) for communication with nodes that reside within its OSI area.



**Note** The End System routing mode is not available if more than one virtual router is enabled.

- **Intermediate System Level 1**—The ONS 15454 performs OSI IS functions. It communicates with IS and ES nodes that reside within its OSI area. It depends upon an IS L1/L2 node to communicate with IS and ES nodes that reside outside its OSI area.

- **Intermediate System Level 1/Level 2**—The ONS 15454 performs IS functions. It communicates with IS and ES nodes that reside within its OSI area. It also communicates with IS L1/L2 nodes that reside in other OSI areas. Before choosing this option, verify the following:
  - The node is connected to another IS Level 1/Level 2 node that resides in a different OSI area.
  - The node is connected to all nodes within its area that are provisioned as IS L1/L2.

**Step 3** If needed, change the LSP data buffers:

- **L1 LSP Buffer Size**—Adjusts the Level 1 link state protocol data unit (PDU) buffer size. The default is 512. It should not be changed.
- **L2 LSP Buffer Size**—Adjusts the Level 2 link state PDU buffer size. The default is 512. It should not be changed.

**Step 4** Return to your originating procedure (NTP).

## DLP-G284 Provision the TARP Operating Parameters

<b>Purpose</b>	This task provisions the TARP operating parameters including TARP PDU propagation, timers, and loop detection buffer (LDB).
<b>Tools/Equipment</b>	None
<b>Prerequisite procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only

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

**Step 2** Provision the following parameters, as needed:

- **TARP PDUs L1 Propagation**—If checked (default), TARP Type 1 PDUs that are received by the node and are not excluded by the LDB are propagated to other NEs within the Level 1 OSI area. (Type 1 PDUs request a protocol address that matches a target identifier [TID] within a Level 1 routing area.) The propagation does not occur if the NE is the target of the Type 1 PDU, and PDUs are not propagated to the NE from which the PDU was received.



**Note** The TARP PDUs L1 Propagation parameter is not used when the Node Routing Area (on the Provisioning > OSI > Main Setup tab) is set to End System.

- **TARP PDUs L2 Propagation**—If checked (default), TARP Type 2 PDUs that are received by the node and are not excluded by the LDB are propagated to other NEs within the Level 2 OSI areas. (Type 2 PDUs request a protocol address that matches a TID within a Level 2 routing area.) The propagation occurs if the NE is not the target of the Type 2 PDU, and PDUs are not propagated to the NE from which the PDU was received.



**Note** The TARP PDUs L2 Propagation parameter is only used when the Node Routing Area is provisioned to Intermediate System Level 1/Level 2.

- TARP PDUs Origination—If checked (default), the node performs all TARP origination functions including:
  - TID-to-NSAP resolution requests (originate TARP Type 1 and Type 2 PDUs)
  - NSAP-to-TID requests (originate Type 5 PDUs)
  - TARP address changes (originate Type 4 PDUs)



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**Note** TARP Echo and NSAP to TID are not supported.

---

- TARP Data Cache—If checked (default), the node maintains a TARP data cache (TDC). The TDC is a database of TID-to-NSAP pairs created from TARP Type 3 PDUs received by the node and modified by TARP Type 4 PDUs (TID-to-NSAP updates or corrections). TARP 3 PDUs are responses to Type 1 and Type 2 PDUs. The TDC can also be populated with static entries entered on the TARP > Static TDC tab.



---

**Note** TARP Data Cache is only used when the TARP PDUs Origination parameter is enabled.

---

- L2 TARP Data Cache—If checked (default), the TIDs and NSAPs of NEs originating Type 2 requests are added to the TDC before the node propagates the requests to other NEs.



---

**Note** The L2 TARP Data Cache parameter is designed for Intermediate System Level 1/Level 2 nodes that are connected to other Intermediate System Level 1/Level 2 nodes. Enabling the parameter for Intermediate System Level 1 nodes is not recommended.

---

- LDB—If checked (default), enables the TARP loop detection buffer. The LDB prevents TARP PDUs from being sent more than once on the same subnet.



---

**Note** The LDB parameter is not used if the Node Routing Mode is provisioned to End System or if the TARP PDUs L1 Propagation parameter is not enabled.

---

- LAN TARP Storm Suppression—If checked (default), enables TARP storm suppression. This function prevents redundant TARP PDUs from being unnecessarily propagated across the LAN network.
- Send Type 4 PDU on Startup—If checked, a TARP Type 4 PDU is originated during the initial ONS 15454 startup. Type 4 PDUs indicate that a TID or NSAP change has occurred at the NE. (The default setting is not enabled.)
- Type 4 PDU Delay—Sets the amount of time that will pass before the Type 4 PDU is generated when Send Type 4 PDU on Startup is enabled. 60 seconds is the default. The range is 0 to 255 seconds.



---

**Note** The Send Type 4 PDU on Startup and Type 4 PDU Delay parameters are not used if TARP PDUs Origination is not enabled.

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- LDB Entry—Sets the TARP loop detection buffer timer. The loop detection buffer time is assigned to each LDB entry for which the TARP sequence number (tar-seq) is zero. The default is 5 minutes. The range is 1 to 10 minutes.

- LDB Flush—Sets the frequency period for flushing the LDB. The default is 5 minutes. The range is 0 to 1440 minutes.
- T1—Sets the amount of time to wait for a response to a Type 1 PDU. Type 1 PDUs seek a specific NE TID within an OSI Level 1 area. The default is 15 seconds. The range is 0 to 3600 seconds.
- T2—Sets the amount of time to wait for a response to a Type 2 PDU. TARP Type 2 PDUs seek a specific NE TID value within OSI Level 1 and Level 2 areas. The default is 25 seconds. The range is 0 to 3600 seconds.
- T3—Sets the amount of time to wait for an address resolution request. The default is 40 seconds. The range is 0 to 3600 seconds.
- T4—Sets the amount of time to wait for an error recovery. This timer begins after the T2 timer expires without finding the requested NE TID. The default is 20 seconds. The range is 0 to 3600 seconds.



**Note** The T1, T2, and T4 timers are not used if the TARP PDUs Origination check box is not checked.

**Step 3** Click **Apply**.

**Step 4** Return to your originating procedure (NTP).

## DLP-G285 Add a Static TID-to-NSAP Entry to the TARP Data Cache

<b>Purpose</b>	This task adds a static TID-to-NSAP entry to the TDC. The static entries are required for NEs that do not support TARP and are similar to static routes. For a specific TID, you must force a specific NSAP.
<b>Tools/Equipment</b>	None
<b>Prerequisite procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioner or higher

**Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > OSI > TARP > Static TDC** tabs.

**Step 2** Click **Add Static Entry**.

**Step 3** In the Add Static Entry dialog box, enter the following:

- TID—Enter the TID of the NE. (For ONS nodes, the TID is the Node Name parameter on the node or multishelf view Provisioning > General tab.)
- NSAP—Enter the OSI NSAP address in the NSAP field or, if preferred, click **Use Mask** and enter the address in the Masked NSAP Entry dialog box.

**Step 4** Click **OK** to close the Masked NSAP Entry dialog box, if used, and then click **OK** to close the Add Static Entry dialog box.

**Step 5** Return to your originating procedure (NTP).

---

## DLP-G287 Add a TARP Manual Adjacency Table Entry

<b>Purpose</b>	This task adds an entry to the TARP manual adjacency table (MAT). Entries are added to the MAT when the ONS 15454 must communicate across routers or NEs that lack TARP capability.
<b>Tools/Equipment</b>	None
<b>Prerequisite procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

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

**Step 2** Click **Add**.

**Step 3** In the Add TARP Manual Adjacency Table Entry dialog box, enter the following:

- **Level**—Sets the TARP Type Code that will be sent:
  - **Level 1**—Indicates that the adjacency is within the same area as the current node. The entry generates Type 1 PDUs.
  - **Level 2**—Indicates that the adjacency is in a different area than the current node. The entry generates Type 2 PDUs.
- **NSAP**—Enter the OSI NSAP address in the NSAP field or, if preferred, click **Use Mask** and enter the address in the Masked NSAP Entry dialog box.

**Step 4** Click **OK** to close the Masked NSAP Entry dialog box, if used, and then click **OK** to close the Add Static Entry dialog box.

**Step 5** Return to your originating procedure (NTP).

---

## DLP-G288 Provision OSI Routers

<b>Purpose</b>	This task enables an OSI router and edits its primary manual area address.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a> <a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher



**Note** Router 1 must be enabled before you can enable and edit the primary manual area addresses for Routers 2 and 3.



**Note** The Router 1 manual area address, System ID, and Selector “00” create the node NSAP address. Changing the Router 1 manual area address changes the node NSAP address.



**Note** The System ID for Router 1 is the node MAC address. The System IDs for Routers 2 and 3 are created by adding 1 and 2 respectively to the Router 1 System ID. You cannot edit the System IDs.

- 
- Step 1** Click the **Provisioning > OSI > Routers > Setup** tabs.
- Step 2** Chose the router you want provision and click **Edit**. The OSI Router Editor dialog box appears.
- Step 3** In the OSI Router Editor dialog box:
- a. Check **Enable Router** to enable the router and make its primary area address available for editing.
  - b. Click the manual area address, then click **Edit**.
  - c. In the Edit Manual Area Address dialog box, edit the primary area address in the Area Address field. If you prefer, click **Use Mask** and enter the edits in the Masked NSAP Entry dialog box. The address (hexadecimal format) can be 8 to 24 alphanumeric characters (0–9, a–f) in length.
  - d. Click **OK** successively to close the following dialog boxes: Masked NSAP Entry (if used), Edit Manual Area Address, and OSI Router Editor.
- Step 4** Return to your originating procedure (NTP).
- 

## DLP-G289 Provision Additional Manual Area Addresses

<b>Purpose</b>	This task provisions the OSI manual area addresses. One primary area and two additional manual areas can be created for each virtual router.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a> <a href="#">DLP-G288 Provision OSI Routers, page 14-41</a> <a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

- 
- Step 1** Click the **Provisioning > OSI > Routers > Setup** tabs.
- Step 2** Chose the router where you want provision an additional manual area address and click **Edit**. The OSI Router Editor dialog box appears.

- Step 3** In the OSI Router Editor dialog box:
- Check **Enable Router** to enable the router and make its primary area address available for editing.
  - Click the manual area address, then click **Add**.
  - In the Add Manual Area Address dialog box, enter the primary area address in the Area Address field. If you prefer, click **Use Mask** and enter the address in the Masked NSAP Entry dialog box. The address (hexadecimal format) can be 2 to 24 alphanumeric characters (0–9, a–f) in length.
  - Click **OK** successively to close the following dialog boxes: Masked NSAP Entry (if used), Add Manual Area Address, and OSI Router Editor.
- Step 4** Return to your originating procedure (NTP).
- 

## DLP-G290 Enable the OSI Subnet on the LAN Interface

<b>Purpose</b>	This task enables the OSI subnetwork point of attachment on the LAN interface.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a> <a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher



### Note

When you create communication channels (optical service channel [OSC] or generic communications channel [GCC]), OSI subnetwork points of attachment are enabled on the communication channels. See the “[NTP-G38 Provision OSC Terminations](#)” procedure on page 14-126 and the “[DLP-G76 Provision DCC/GCC Terminations](#)” task on page 16-81.



### Note

The OSI subnetwork point of attachment cannot be enabled for the LAN interface if the OSI routing mode is set to ES.



### Note

If secure mode is on, the OSI subnet is enabled on the backplane LAN port, not the front TCC2P/TCC3/TNC/TNCE/TSC/TSCE TCP/IP (LAN) port.

- Step 1** Click the **Provisioning > OSI > Routers > Subnet** tabs.
- Step 2** Click **Enable LAN Subnet**.
- Step 3** In the Enable LAN Subnet dialog box, complete the following fields:
- ESH—Sets the End System Hello (ESH) propagation frequency. An ES NE transmits ESHs to inform other ESs and ISs about the NSAPs it serves. The default is 10 seconds. The range is 10 to 1000 seconds.

- **ISH**—Sets the Intermediate System Hello (ISH) PDU propagation frequency. An intermediate system NE sends ISHs to other ESs and ISs to inform them about the IS NEs it serves. The default is 10 seconds. The range is 10 to 1000 seconds.
- **IIH**—Sets the Intermediate System to Intermediate System Hello (IIH) PDU propagation frequency. The IS-IS Hello PDUs establish and maintain adjacencies between ISs. The default is 3 seconds. The range is 1 to 600 seconds.
- **IS-IS Cost**—Sets the cost for sending packets on the LAN subnet. The IS-IS protocol uses the cost to calculate the shortest routing path. The default IS-IS cost for LAN subnets is 20. It normally should not be changed.
- **DIS Priority**—Sets the designated intermediate system (DIS) priority. In IS-IS networks, one router is elected to serve as the DIS (LAN subnets only). Cisco router DIS priority is 64. For the ONS 15454 LAN subnet, the default DIS priority is 63. It normally should not be changed.

**Step 4** Click **OK**.

**Step 5** Return to your originating procedure (NTP).

---

## DLP-G291 Create an IP-Over-CLNS Tunnel

<b>Purpose</b>	This task creates an IP-over-CLNS tunnel to allow ONS 15454 nodes to communicate across equipment and networks that use the OSI protocol stack.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a> <a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher



### Caution

IP-over-CLNS tunnels require two endpoints. You will create one point on an ONS 15454. The other endpoint is generally provisioned on non-ONS equipment including routers and other vendor NEs. Before you begin, verify that you have the capability to create an OSI-over-CLNS tunnel on the other equipment location.

---

**Step 1** Click the **Provisioning > OSI > Tunnels** tabs.

**Step 2** Click **Create**.

**Step 3** In the Create IP Over CLNS Tunnel dialog box, complete the following fields:

- **Tunnel Type**—Choose a tunnel type:
  - **Cisco**—Creates the proprietary Cisco IP tunnel. Cisco IP tunnels add the CLNS header to the IP packets.
  - **GRE**—Creates a generic routing encapsulation (GRE) tunnel. GRE tunnels add the CLNS header and a GRE header to the IP packets.

The Cisco proprietary tunnel is slightly more efficient than the GRE tunnel because it does not add the GRE header to each IP packet. The two tunnel types are not compatible. Most Cisco routers support the Cisco IP tunnel, while only a few support both GRE and Cisco IP tunnels. You generally should create Cisco IP tunnels if you are tunneling between two Cisco routers or between a Cisco router and an ONS node.

**Caution**

Always verify that the IP-over-CLNS tunnel type that you choose is supported by the equipment at the other end of the tunnel.

- **IP Address**—Enter the IP address of the IP-over-CLNS tunnel destination.
- **IP Mask**—Enter the IP address subnet mask of the IP-over-CLNS destination.
- **OSPF Metric**—Enter the OSPF metric for sending packets across the IP-over-CLNS tunnel. The OSPF metric, or cost, is used by OSPF routers to calculate the shortest path. The default is 110. Normally, it is not be changed unless you are creating multiple tunnel routes and want to prioritize routing by assigning different metrics.
- **NSAP Address**—Enter the destination NE or OSI router NSAP address.

**Step 4** Click **OK**.

**Step 5** Provision the other tunnel endpoint using the documentation provided by the manufacturer of the third party vendor NE.

**Step 6** Return to your originating procedure (NTP).

## NTP-G29 Set Up SNMP

<b>Purpose</b>	This procedure provisions the SNMP parameters so that you can use SNMP management software with the ONS 15454.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a>
<b>Required/As Needed</b>	Required if SNMP is used at your site.
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

**Step 1** Complete the [DLP-G46 Log into CTC](#) task at the node where you want to set up SNMP. If you are already logged in, continue with Step 2.

**Step 2** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > SNMP** tabs.

**Step 3** In the Trap Destinations area, click **Create**.

**Step 4** Complete the following in the Create SNMP Trap Destination dialog box ([Figure 14-7](#)):

- **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**

In ONS 15454 Software Release 9.1 and later, you can configure IPv6 addresses for SNMPv2/v3 trap destinations and SNMPv3 proxy targets, in addition to IPv4 addresses.

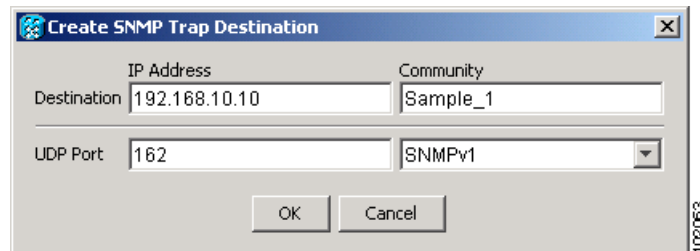
- **Community**—Type the SNMP community name. For a description of SNMP community names, refer to the [SNMP](#) document.

**Note**

The community name is a form of authentication and access control. The community name assigned to the ONS 15454 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.

**Figure 14-7** Creating an SNMP Trap



- Step 5** Click **OK**. The node IP address of the node where you provisioned the new trap destination appears in the Trap Destinations area.
- Step 6** Click the node IP address in the Trap Destinations area. Verify the SNMP information that appears in the Selected Destination list.
- Step 7** 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 8** If you want to set up the SNMP proxy feature to allow network management, message reporting, and performance statistic retrieval across ONS firewalls, click the **Allow SNMP Proxy** check box located on the SNMP tab.

**Note**

The Use Generic MIB check box is normally not checked for MSTP. It is checked only when the ONS 15454 resides in networks with multiple ONS products, and the network management system requires MIBs with the same name to have the same object IDs. By default, the ONS 15454 uses the CERENT-454-MIBs. Other ONS products, such as the ONS 15600, the ONS 15327, and ONS 15310-CL, use the CERENT-GENERIC-MIBs. If Use Generic MIB is checked, the ONS 15454 will use the CERENT-GENERIC-MIBs so the object IDs will be the same for all products.

**Note**

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

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

**Step 9** Click **Apply**.

**Step 10** 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:

- a. Click the first trap destination IP address. The address and its community name appear in the Destination fields.
- b. 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 11** Click **Apply**.

**Stop. You have completed this procedure.**

## NTP-G143 Import the Cisco Transport Planner NE Update Configuration File

<b>Purpose</b>	This procedure imports the Cisco Transport Planner NE Update configuration file and creates a log file. The configuration file, which is provided in XML format, provisions internal patchcords, optical sides and card parameters for optical units, transponders, and passive units (DCUs and patch panels). Finally, the NE Update file installs the ANS parameters calculated by Cisco Transport Planner. The log file, which is a text document records the results of the NE update.
<b>Tools/Equipment</b>	A Cisco Transport Planner NE Update file for the network where the node is installed must be accessible to the CTC computer.
<b>Prerequisite Procedures</b>	<a href="#">NTP-G139 Verify Cisco Transport Planner Reports and Files, page 14-3</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only



### Caution

Verify that you have the correct Cisco Transport Planner network file before you begin this procedure. The file will have an XML extension and a name assigned by your network planner. Check with your network planner or administrator if you have any questions.

**Note**

The Cisco Transport Planner configuration file contains parameters for the node, shelf, card type, port (including the card's wavelength), pluggable port module (PPM), as well as OTN and FEC parameters. Only the values present in XML format appear in the configuration file parameters; if the values are not in XML format, a column appears blank. The XML file values are independently reported and do not affect any configuration changes that you apply.

- 
- Step 1** Complete the [DLP-G46 Log into CTC](#) task at the node where you want to import the Cisco Transport Planner configuration file. If you are already logged in, continue with [Step 2](#).
- Step 2** If you choose the Provision Node Layout option to preprovision the cards in the shelf, complete the following steps. If not, continue with [Step 3](#).
- a. Display the node in node view (single-shelf mode) or multishelf view (multishelf mode).
  - b. Verify that the common control cards (TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE, AIC-I and MSC-ISC) cards are the only cards installed. If in single or multishelf mode, verify that each shelf in the multishelf has two TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE cards.
    - If common control cards are the only cards installed, continue with [Step 3](#).
    - If other cards appear, continue with [Step c](#).
  - c. If a physical card other than the common control cards is installed, remove it from the shelf.
  - d. If preprovisioned DWDM cards are present, delete them using the [“DLP-G351 Delete a Card in CTC” task on page 14-51](#), then repeat Steps [a](#) and [b](#).
- Step 3** If you have not created a log file to record the results of the NE update, complete the following steps. If a log file has been created, continue with [Step 4](#).
- a. Open a text editor or word processing application.
  - b. Create a new text (TXT) document with a file name of your choosing.
  - c. Save the text document in a directory that is easy to navigate to from CTC.
- Step 4** In CTC node view (single-shelf mode) or multishelf view, click the **Provisioning > WDM-ANS > Node Setup** tabs.
- Step 5** Choose **Load latest installation file from node** to reload the latest XML file that was applied and stored in the node. Continue with [Step 8](#).
- Step 6** Choose **Load installation file from network repository** and navigate to the Cisco Transport Planner node setup file containing the parameters for the network where the node resides. This option downloads the XML file from the remote server. Continue with [Step 8](#).
- Step 7** In the field under Select XML file, type the path to the Cisco Transport Planner node setup file containing the parameters for the network where your node resides, or click **Browse** and navigate to the file on your computer. Click the file, then click **Open**. The file will have an XML extension. Continue with [Step 8](#).
- Step 8** In the field under Select Log file, type the path to the text file that you created in [Step 3](#), or click **Browse** and navigate to the file on your computer or a network server where you want the node setup results recorded.

**Note**

The log file records the parameters that were updated successfully and provides an explanation of why an update could not be completed. Each node setup session overwrites the log file contents. If you want to save the results from a previous NE update, save the log file with new name.

- Step 9** Click **Apply**.
- Step 10** When **Load installation file from network repository** option is chosen, the FTP Remote Installation File *Node-Name* page appears.
- When the node is configured as a Gateway Network Element (GNE) node, enter the parameters (host name, port, user name, password, remote directory, and XML file name of the remote server) and click **Next**.
  - When the node is configured as a Elementary Network Element (ENE) node, an additional parameter called GNE Selector appear. From the **GNE Selector** drop-down list, select the appropriate GNE in the network. The FTP relay must be configured on the selected GNE to the remote server where the XML file is stored. See “[NTP-G28 Create FTP Host](#)” procedure on page 14-33 to configure the FTP relay on the selected GNE.
- Step 11** When the Node Setup Selection for *Node-Name* page appears, complete the following steps. If not, continue with [Step 12](#).
- Choose the node profile that you want to apply to the node. The Cisco Transport Planner XML file contains profiles for all nodes in the network. Choose the profile that applies to the node you are provisioning.
  - Click **Next**.
- Step 12** On the Node Setup for *node name* page, choose one or more of the following:
- Node Layout—Preprovisions the slots in each shelf in CTC for the cards defined in the network plan. Choose this option when no DWDM cards are installed. (Errors will occur if cards are installed or the slots are preprovisioned.) Preprovisioning the slots before the physical cards are installed ensures that card installers place the cards in the correct slots. Preprovisioning the slots is also useful if you want to set up the network prior to card installation. The node layout also preprovisions the chassis and passive units.
  - Card Parameters—If checked, provisions the following parameters, if the cards are installed.
    - TXP, MXP, GE\_XP, 10GE\_XP, GE\_XPE, 10GE\_XPE, ADM-10G, and OTU2\_XP cards—Provisions the OTN and FEC parameters.
    - OPT-AMP-L, OPT-AMP-17-C, OPT-AMP-C, OPT-EDFA-17, OPT-EDFA-24, GE\_XP, 10GE\_XP, GE\_XPE, and 10GE\_XPE cards—Provisions the card mode.
  - Pluggable Port Modules— If checked, allows the provisioning of PPMs on TXP, MXP, GE\_XP, 10GE\_XP, GE\_XPE, 10GE\_XPE, ADM-10G, and OTU2\_XP cards, including PPM payloads.
  - Internal Patchcords—If checked, allows creation of internal patchcords among cards provisioned in the node.
  - Optical Sides—If checked, allows the provisioning of optical sides.
  - ANS Parameters—If checked, installs the ANS parameters. ANS parameters provision the values required for the node to function within the specified network design. ANS parameters include span losses, optical power, optics thresholds, amplifier working mode, gain, tilt, and many others. Refer to [Chapter 12, “Node Reference”](#) for a list of ONS 15454 ANS parameters.




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**Note** If you are importing the Cisco Transport Planner configuration file for the first time, you normally choose all available options.

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- Skip Interactive Mode—If checked, CTC provisions all the chosen setup components automatically without allowing you to view the results after each one.

- Save Installation Files (XML and log) On Node—If checked, CTC saves the XML and log files on the node.

**Step 13** Click **Next**. If you chose Skip Interactive Mode, continue with [Step 14](#). If not, the wizard page that appears depends on the options chosen in [Step 12](#): Complete the steps shown in [Table 14-2](#) for each option.

**Table 14-2** NE Update Wizard Options


NE Update Function	
Node/Shelves Layout	<p>View the cards and slots on the left side of the page and verify that they are the same as the layout in the Cisco Transport Planner Shelf Layout (see <a href="#">Table 14-1 on page 14-4</a>). If the cards and slots match, click <b>Apply</b>. If not, click <b>Cancel</b>, and contact your next level of support to verify that you have the correct node setup file. If the site has a multishelf configuration, click <b>Next</b> and repeat this step for each shelf at the site.</p> <p>CTC preprovisions the slots. (This might take a few seconds.) The results appear in the Log window. Slots that are successfully provisioned display an “Applied” status. A “Slot not empty” status appears if slots cannot be provisioned because a card is physically installed or the slot is already provisioned. If this occurs, complete the following steps. Otherwise, continue with the next NE Update function.</p> <ol style="list-style-type: none"> <li>1. Click <b>Cancel</b>, then click <b>Yes</b> in the confirmation dialog box. The slot preprovisioning does not revert when you click <b>Cancel</b>.</li> <li>2. If a physical card is installed, remove it from the shelf.</li> <li>3. Perform one of the following steps: <ul style="list-style-type: none"> <li>– Delete all the preprovisioned slots using the “<a href="#">DLP-G351 Delete a Card in CTC</a>” task on <a href="#">page 14-51</a>, then repeat Steps 2 through <a href="#">Step 13</a>.</li> <li>– Delete the slot where the Slot Not Empty error occurred using the “<a href="#">DLP-G351 Delete a Card in CTC</a>” task on <a href="#">page 14-51</a>. Complete the “<a href="#">DLP-G353 Preprovision a Slot</a>” task on <a href="#">page 14-53</a> to provision the slot manually, then repeat Steps 2 through 13 making sure to uncheck the Provision Node Layout option in <a href="#">Step 12</a>.</li> </ul> </li> </ol> <p> <b>Note</b> When you preprovision a slot, the card is purple in the CTC shelf graphic and “NP” (not present) appears on the card. After the physical card is installed, the card changes to white and “NP” is removed from the CTC shelf graphic.</p>
Passive Units Layout	<ol style="list-style-type: none"> <li>1. Review the passive unit settings.</li> <li>2. Click <b>Apply</b>.</li> <li>3. Click <b>Next</b>.</li> </ol>
Pluggable Port Modules	<ol style="list-style-type: none"> <li>1. Review the PPM settings for each TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, and OTU2_XP card.</li> <li>2. Click <b>Apply</b>.</li> <li>3. Click <b>Next</b>.</li> </ol>
Card Parameters	<ol style="list-style-type: none"> <li>1. Review the OTN, FEC, and card mode settings for each TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, and OTU2_XP card.</li> <li>2. Click <b>Apply</b>.</li> <li>3. Click <b>Next</b>.</li> </ol>

Table 14-2 NE Update Wizard Options

NE Update Function	
Internal Patchcords	<ol style="list-style-type: none"> <li>1. Review the internal patchcords.</li> <li>2. Click <b>Apply</b>.</li> <li>3. Click <b>Next</b>.</li> </ol>
Optical Sides	<ol style="list-style-type: none"> <li>1. Review the optical side assignments.</li> <li>2. Click <b>Apply</b>.</li> <li>3. Click <b>Next</b>.</li> </ol>
ANS Parameters	<ol style="list-style-type: none"> <li>1. Review the ANS parameters on the left half of the page.</li> <li>c. Click <b>Apply</b>. The log file displays the results. At the end, a Done status will appear. If a parameter could not be applied, a Setting Refused status appears. If this occurs, contact your next level of support.</li> </ol>
Select All	<ol style="list-style-type: none"> <li>1. If checked, selects all the options.</li> </ol>
Skip Interactive Mode	If checked, CTC provisions all the chosen setup components automatically without allowing you to view the results after each one.
Save Installation Files (XML and log) On Node	If checked, CTC saves the XML and log files on the node.

- Step 14** Click **Finish**, then click **OK** in the Wizard Complete confirmation dialog box. The confirmation box indicates whether the xml import process was completed successfully.



**Note** Common control cards are not provisioned by Cisco Transport Planner.

**Stop.** You have completed this procedure.

## DLP-G351 Delete a Card in CTC

<b>Purpose</b>	This task deletes a card from an ONS 15454 slot that is provisioned in CTC.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only



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

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

- The card is a TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE 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 replace a TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE card, refer to the *Cisco ONS 15454 DWDM Troubleshooting Guide*.
- To delete a protection group, see the [NTP-G83 Modify or Delete Card Protection Settings](#) procedure.
- To delete optical channels see the “[DLP-G347 Delete Optical Channel Client Connections](#)” task on [page 16-26](#) and the “[DLP-G106 Delete Optical Channel Network Connections](#)” task on [page 16-46](#); to delete overhead circuits, see the “[DLP-G112 Delete Overhead Circuits](#)” task on [page 16-89](#).
- 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](#)” procedure on [page 15-40](#).
- To remove a DWDM patchcord, see the “[DLP-G355 Delete an Internal Patchcord](#)” procedure on [page 14-123](#).
- To remove an optical side, see the “[DLP-G480 Delete an Optical Side](#)” procedure on [page 14-125](#).

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




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**Note** A deleted card no longer reboots and reappears in CTC after R5.0.

---

**Step 3** Return to your originating procedure (NTP).

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## DLP-G353 Preprovision a Slot

<b>Purpose</b>	This task preprovisions a ONS 15454 slot in CTC. Preprovisioning of all the slots in the shelf is normally performed when you complete the <a href="#">“NTP-G143 Import the Cisco Transport Planner NE Update Configuration File” procedure on page 14-47</a> . Use this task if you need to manually preprovision a slot. All slot preprovisioning must be based on the Cisco Transport Planner shelf layout prepared for your site.
<b>Tools/Equipment</b>	Cisco Transport Planner shelf layout table or JPG file.
<b>Prerequisite Procedures</b>	<a href="#">NTP-G139 Verify Cisco Transport Planner Reports and Files, page 14-3</a> <a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

- 
- 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 (see [Table 14-1 on page 14-4](#)). Only cards that can be installed in the slot appear in the Add Card shortcut menu. [Table 14-3](#) shows the Add Card shortcut menu, submenu, card groups, and menu options or cards that they reference.

Table 14-3 CTC Add Card Shortcut Menu for DWDM Cards

Menu Item	Submenu Category	Card Group	Submenu Item 1	Submenu Item 2	Cards
DWDM			—	10GE_XP	10GE_XP
nXP			—	10GE_XPE	10GE_XPE
Transponder and Muxponder			—	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_C MXP_2.5G_10E_L MXP_2.5G_10EX_C
			—	MXP_2.5G_10G	MXP_2.5G_10G
			—	MXP_MR_10DME	MXP_MR_10DME_C MXP_MR_10DME_L MXP_MR_10DMEX_C
			—	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_L TXP_MR_10EX_C
			—	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 40ME-MXP-C
			—	40E-TXP-C	40E-TXP-C 40ME-TXP-C
			—	AR_MXP	AR_MXP
			—	AR_XP	AR_XP

Table 14-3 CTC Add Card Shortcut Menu for DWDM Cards (continued)

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-WSS-CE	
				32 MUXO	32MUX-O	
				32 WSS	32WSS	
				4MD	4MD-xx.x	
				32 DMX	32DMX	
				40-MUX-C	40-MUX-C	
				32 MUXO	32MUX-O	
				40-DMX-C, or 40-DMX-CE	40-DMX-C, or 40-DMX-CE	
				40-DMX-C, or 40-DMX-CE	40-DMX-C, or 40-DMX-CE	
	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
	OADM	Optical Add/Drop Multiplexer	—	—	AD-1B	AD-1B-xx.x
					AD-1C	AD-1C-xx.x
AD-2C					AD-2C-xx.x	
AD-4B					AD-4B-xx.x	
AD-4C					AD-4C-xx.x	
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	
				L Band	OPT-BST L	OPT-BST-L
OPT-AMP L	OPT-AMP-L					
OTHER	—	—	—	PSM	PSM	

Table 14-3 CTC Add Card Shortcut Menu for DWDM Cards (continued)

Menu Item	Submenu Category	Card Group	Submenu Item 1	Submenu Item 2	Cards
Ethernet	—	—	—	MS-ISC-100T	MS-ISC-100T
				G1000	G1000
OSCM	—	—	—	—	OSCM (Slots 8 and 10 only)
TNC TSC <sup>1</sup>	—	Control Cards	—	—	TNC, TNCE, TSC, and TSCE

1. Choose the menu option TNC for both TNC and TNCE preprovision. The CTC displays the TNC or TNCE card name according to the inserted card. Same applies for TSCE card also.

**Note**

When you preprovision 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.**

## NTP-G320 Configure the Node as a Non-DWDM Network

<b>Purpose</b>	This task configures a node as a Non-DWDM network.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

- 
- 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 Network Type.
- Step 3** Choose **Not-DWDM**, from the Value drop-down list. Click **Apply**.
- Step 4** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Port Status** tabs.
- Step 5** Click the **Launch ANS** button. The relevant ports in the node will be in IS state.
- Step 6** Click **OK**.
- Step 7** Return to your originating procedure (NTP).
- 

## DLP-G693 Configure the Amplifier

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

- 
- 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 Add an ANS Parameter” task on page 14-60](#) for instructions.

- Step 6** Click the value of the ANS parameter that you want to modify and enter the new value specified in [Table 14-4](#). To modify the ANS parameters, see the “[DLP-G681 Modify an ANS Parameter](#)” task on [page 14-61](#) for instructions.

**Table 14-4 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 Configure the PSM

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

- 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 Add an ANS Parameter](#)” task on [page 14-60](#) for instructions.

- Step 3** Click the value of the ANS parameter that you want to modify and enter the new value specified in [Table 14-4](#). To modify the ANS parameters, see the “[DLP-G681 Modify an ANS Parameter](#)” task on [page 14-61](#) for instructions.

**Table 14-5 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 Add, Modify, or Delete ANS Parameters

<b>Purpose</b>	This procedure allows you to add, modify, or delete ANS parameters for a DWDM node.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	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.

- 
- Step 1** Complete the [DLP-G46 Log into CTC](#) task at the node where you want to add, modify, or delete the ANS parameters. If you are already logged in, continue with [Step 2](#).
- Step 2** As needed, complete the following tasks:
- Complete the “[DLP-G541 Add an ANS Parameter](#)” task on page 14-60.
  - Complete the “[DLP-G681 Modify an ANS Parameter](#)” task on page 14-61.
  - Complete the “[DLP-G542 Delete an ANS Parameter](#)” task on page 14-63.
- Stop. You have completed this procedure.**
- 

## DLP-G541 Add an ANS Parameter

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

- 
- 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 Modify an ANS Parameter

<b>Purpose</b>	This task modifies ANS parameters.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	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.

**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 [Table 14-6](#), 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 14-6** 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	Yes
Amplifier Working Mode	Control Power, Control Gain, Fixed Gain	Yes <sup>1</sup>
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

**Table 14-6** Ranges, Values, and Edit Options for the ANS Parameters

ANS Parameter	Range/Value	Editable with Port in IS
Raman Ratio	0.0 to 100.0%	Yes
Raman Total Power	100 to 450 mW	Yes
Raman Expected Gain <sup>2</sup>	0.0 to 12.0 dB	Yes
Power	-30.0 to +50 dBm	Yes <sup>3</sup>
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 <sup>4</sup>

1. 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
2. Editable only on OPT-RAMP-C and OPT-RAMP-CE cards.
3. 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.
4. 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 Delete an ANS Parameter

<b>Purpose</b>	This task removes an ANS parameter.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

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**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.



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

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**Step 3** Click **Remove**, and then **Yes**.

**Step 4** Return to your originating procedure (NTP).

---

# NTP-G30 Install the DWDM Cards

<b>Purpose</b>	This procedure describes how to install the DWDM multiplexer, demultiplexer, wavelength selective switch, wavelength cross-connect, OADM, OSC, PSM, and optical amplifier cards.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Cisco Transport Planner shelf layout</li> <li>• The following C-band or L-band cards, as required by your site plan: <ul style="list-style-type: none"> <li>– 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, TDC-CC, TDC-FC, 40-SMR1-C, 40-SMR2-C, OPT-AMP-17-C, OPT-AMP-C, OPT-RAMP-C, OPT-RAMP-CE, OPT-EDFA-17, OPT-EDFA-24, MMU, 4MD-xx.x, AD-1C-xx.x, AD-2C-xx.x, AD-4C-xx.x, AD-1B-xx.x, AD-4B-xx.x, OSCM, OSC-CSM, and PSM cards (as applicable)</li> <li>– L-band: 32WSS-L, 32DMX-L, OPT-BST-L, OPT-AMP-L, and PSM cards (as applicable)</li> </ul> </li> <li>• The ONS 15454 NE defaults file if the node uses custom NE defaults</li> </ul>
<b>Prerequisite Procedures</b>	<ul style="list-style-type: none"> <li>• “NTP-G15 Install the Common Control Cards” section on page 3-34</li> <li>• “NTP-G14 Install DWDM Equipment” in the <i>Cisco ONS 15454 Hardware Installation Guide</i></li> <li>• NTP-G139 Verify Cisco Transport Planner Reports and Files, page 14-3</li> <li>• NTP-G143 Import the Cisco Transport Planner NE Update Configuration File, page 14-47</li> </ul>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher



Warning

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**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

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Warning

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**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

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Warning

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

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**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**

**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

**Caution**

Always use the supplied electrostatic discharge (ESD) wristband when working with a powered ONS 15454. For detailed instructions on how to wear the ESD wristband, refer to the [Electrostatic Discharge and Grounding Guide for Cisco CPT and Cisco ONS Platforms](#).

**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.

**Step 1**

If the node requires a custom NE default settings to be installed on the node, complete the “[NTP-G136 Import Network Element Defaults](#)” procedure on page 24-24. If not, continue with [Step 2](#). (For information about the ONS 15454 NE defaults, refer to [Appendix H, “Network Element Defaults.”](#))

**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 Import the Cisco Transport Planner NE Update Configuration File](#)” procedure on page 14-47.
- The Cisco Transport Planner shelf layout report (see [Table 14-1 on page 14-4](#)).

**Step 3**

If the slots are preprovisioned, continue with [Step 4](#). If you are using the Cisco Transport Planner shelf layout report, complete the “[DLP-G348 Use the Cisco Transport Planner Shelf Layout Report](#)” task on page 14-67.

**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.
  - 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-L, OPT-AMP-17-C, OPT-AMP-C, OPT-EDFA-17, or OPT-EDFA-24 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 or OPT-AMP-L DC TX and RX ports for each OPT-PRE or OPT-AMP-L card installed in the shelf.
  - If the shelf layout includes DCUs, complete the [“NTP-G31 Install the DWDM Dispersion Compensating Units” procedure on page 14-68](#) for each side of the shelf that requires a DCU.

**Stop. You have completed this procedure.**

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## DLP-G348 Use the Cisco Transport Planner Shelf Layout Report

<b>Purpose</b>	This task describes how to use the Cisco Transport Planner shelf layout report to install cards in a DWDM node.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G139 Verify Cisco Transport Planner Reports and Files, page 14-3</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

- 
- Step 1** Display the Cisco Transport Planner shelf layout report for your site. The report can be viewed in Cisco Transport Planner. It can also be viewed as a JPEG graphic. Refer to the *Cisco Transport Planner DWDM Operations Guide* for information about generating shelf layout reports.
- Step 2** Review the following installation information:
- Rack—Indicates the rack in the node where the cards must be installed.
  - Shelf—Indicates the shelf in the rack where the cards must be installed. Shelf options include:
    - Flex Shelf—The ONS 15216 FlexLayer mechanical shelf houses Y-cable modules. Flex shelf positions are numbered 1 to 4 from left to right.
    - DCU Shelf—The Cisco ONS 15216 dispersion compensation shelf assembly houses DCUs. DCU positions are numbered 1 to 2 from left to right.
    - Shelf-ANSI-*n* or Shelf-ETSI-*n*—The ONS 15454 shelf assembly houses ONS 15454 common, DWDM, and client cards. Positions in this type of shelf are numbered 1 to 17 from left to right. Multiple shelves might appear.
  - Slot—Indicates the slot in the specific shelf where the cards must be installed:
    - Unit Name (Product ID)— Identifies the card by its Product ID.
    - Unit Description—Identifies the card by its name.
  - Unit Side—Identifies the side of the node that the specific card is serving: A, B, C, D, E, F, G, or H.
  - Unit Plug-in Modules—Identifies the type and number of PPMs that will be used with specific TXP, MXP, GE\_XP, 10GE\_XP, GE\_XPE, 10GE\_XPE, or OTU2\_XP cards.
- Step 3** Return to your originating procedure (NTP).
-

# NTP-G31 Install the DWDM Dispersion Compensating Units

<b>Purpose</b>	This procedure describes how to install the DCUs for DWDM shelves.
<b>Tools/Equipment</b>	DCUs
<b>Prerequisite Procedures</b>	<p>“NTP-G15 Install the Common Control Cards” section on page 3-34</p> <p>“NTP-G14 Install DWDM Equipment” in the <i>Cisco ONS 15454 Hardware Installation Guide</i></p> <p>NTP-G30 Install the DWDM Cards, page 14-64</p> <p>NTP-G139 Verify Cisco Transport Planner Reports and Files, page 14-3</p>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher



## 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



## Caution

Always use the supplied ESD wristband when working with a powered ONS 15454. For detailed instructions on how to wear the ESD wristband, refer to the *Electrostatic Discharge and Grounding Guide for Cisco CPT and Cisco ONS Platforms*.



## 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.

- Step 1** Remove the DCU from its packaging, then remove the protective caps from the connectors. (Safety caps are typically yellow.)
- Step 2** Use both hands to push the DCU all the way into the chassis until the connector spring lock on the right side of the module clicks into place.
- Step 3** Open the cover with the laser warning on the connector adapter and then connect the cable connector.



## Note

The Side A DCU is commonly installed on the left side and the Side B DCU is commonly installed on the right side.



## Note

Double-check the placement of the DCU card(s) with your Cisco Transport Planner shelf layout. If you install the wrong DCU in a slot, remove the DCU and install the correct one.

Stop. You have completed this procedure.

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## NTP-G179 Install the TXP, MXP, AR\_MXP, AR\_XP, GE\_XP, 10GE\_XP, GE\_XPE, 10GE\_XPE, ADM-10G, and OTU2\_XP Cards

<b>Purpose</b>	This procedure describes how to install the ONS 15454 TXP, MXP, AR_MXP, AR_XP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, and OTU2_XP cards.
<b>Tools/Equipment</b>	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, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP cards (as applicable)
<b>Prerequisite Procedures</b>	<p>“NTP-G15 Install the Common Control Cards” section on page 3-34</p> <p>“NTP-G14 Install DWDM Equipment” in the <i>Cisco ONS 15454 Hardware Installation Guide</i></p> <p><a href="#">NTP-G139 Verify Cisco Transport Planner Reports and Files</a>, page 14-3</p>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	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

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**Warning**

**Class 1 laser product.** Statement 1008

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**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

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**Warning**

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

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**Caution**

Always use the supplied ESD wristband when working with a powered ONS 15454. For detailed instructions on how to wear the ESD wristband, refer to the *Electrostatic Discharge and Grounding Guide for Cisco CPT and Cisco ONS Platforms*.

---

**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.

**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.

- Step 1** Display the Cisco Transport Planner shelf layout (see [Table 14-1 on page 14-4](#)) 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 or XFP) connector, complete one of the following tasks:

- [DLP-G63 Install an SFP or XFP, page 14-72](#)—Complete this task to install the physical SFP or XFP into the TXP, MXP, GE\_XP, 10GE\_XP, GE\_XPE, 10GE\_XPE, ADM-10G, or OTU2\_XP card.
- [DLP-G273 Preprovision an SFP or XFP Slot, page 14-73](#)—(Optional) Complete this task if you do not have the physical SFP or XFP and need to preprovision the SFP or XFP slot.



**Note** SFPs/XFPs are hot-swappable input/output devices that plug into a TXP, MXP, GE\_XP, 10GE\_XP, GE\_XPE, 10GE\_XPE, ADM-10G, OTU2\_XP, or line card port to link the port with the fiber-optic network. For more information, refer to the [Hardware Specifications](#) and the [Installing GBIC, SFP, SFP+, and XFP Optics Modules in ONS Platforms](#) documents.



**Note** PPM provisioning determines how the SFPs and XFPs are used in CTC. PPM provisioning procedures are provided in [Chapter 11, “Provision Transponder and Muxponder Cards.”](#)

**Step 8** If you need to remove an SFP or XFP, complete the [“DLP-G64 Remove an SFP or XFP”](#) task on [page 14-74](#).



**Note** You will 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 [Chapter 11, “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.**

## DLP-G63 Install an SFP or XFP

<b>Purpose</b>	This task installs SFPs and XFPs into TXP, MXP, AR_MXP, AR_XP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, and OTU2_XP cards. SFPs and XFPs provide a fiber interface to the card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G179 Install the TXP, MXP, AR_MXP, AR_XP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, and OTU2_XP Cards</a> , page 14-69
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher



### Warning

The intrabuilding ports of the ONS 15454 are suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding ports of the ONS 15454 must not be metallically connected to interfaces that connect to the OSP or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE, Issue 4), and require isolation from the exposed OSP cabling. The addition of Primary Protectors is not sufficient protection while connecting these interfaces metallically to the OSP wiring.



### Warning

The intrabuilding ports of the ONS 15454 are suitable for connection only to shielded intrabuilding cabling, grounded at both ends.



### Note

In case of a full C-band tunable XFP, it is mandatory to use optical cables that are fully compliant with NEBS Telcordia GR-326-CORE, Issue 3 recommendation. The Cisco patchcord indicated by the Cisco Transport Planner (CTP) tool is fully compliant with NEBS Telcordia GR-326-CORE, Issue 3 recommendation.



### Note

The CC-FTA fan tray assembly must be installed in a shelf where CWDM and DWDM SFPs or XFPs are used.



### Note

SFPs and XFPs are hot-swappable I/O devices that plug into a TXP, MXP, AR\_MXP, AR\_XP, GE\_XP, 10GE\_XP, GE\_XPE, 10GE\_XPE, ADM-10G, or OTU2\_XP port to link the port with the fiber-optic network. For more information, see to the [Hardware Specifications](#) and the [Installing GBIC, SFP, SFP+, and XFP Optics Modules in ONS Platforms](#) documents.



### Note

If you have installed a fan tray lower than CC-FTA on the MSTP unit, you must have the TXP\_MR\_10E transponder card (only if you have installed ONS-XC-10G-L2 XFP on the TXP\_MR\_10E card) installed in Slot 5, 6, 12, or 13. This limitation does not exist for fan-tray versions higher than CC-FTA.

**Note**

SFPs and XFPs are generically called PPMs in CTC. After installing multirate SFPs or XFPs, multirate PPMs must be provisioned in CTC. To complete the provisioning of the pluggable port, complete the [“DLP-G277 Provision a Multirate PPM” task on page 11-152](#).

- Step 1** Verify that the SFP or XFP is correct for your network and TXP, MXP, AR\_MXP, AR\_XP, GE\_XP, 10GE\_XP, GE\_XPE, 10GE\_XPE, ADM-10G, or OTU2\_XP card (see [Chapter 11, “Provision Transponder and Muxponder Cards”](#)). Ensure that you are installing compatible SFPs or XFPs, for example, SX to SX or LX/LH to LX/LH.
- Step 2** Install the SFP or XFP:
- For a mylar tab SFP or XFP— Slide the SFP or XFP into the slot.
  - For an actuator/button SFP or XFP— Slide the SFP or XFP all the way into the slot until you hear a click.
  - For a bail clasp SFP or XFP— Latch (flip upwards) the bail clasp before inserting the SFP or XFP into the slot and then slide it into the slot.

**Note**

SFP and XFPs are keyed to prevent incorrect installation.

Do not remove the protective caps from the SFP or XFP until you are ready to attach the network fiber-optic cable.

- Step 3** Return to your originating procedure (NTP).

## DLP-G273 Preprovision an SFP or XFP Slot

<b>Purpose</b>	This task preprovisions SFPs and XFPs, which connect fiber to TXP, MXP, AR_MXP, AR_XP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, and OTU2_XP cards.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

**Note**

SFPs and XFPs are generically called PPMs in CTC. After installing multirate SFPs or XFPs, multirate PPMs must be provisioned in CTC.

- Step 1** In node view (single-shelf mode) or shelf view (multishelf mode), double-click the TXP, MXP, AR\_MXP, AR\_XP, GE\_XP, 10GE\_XP, GE\_XPE, 10GE\_XPE, ADM-10G, or OTU2\_XP card where you want to provision SFPs or XFPs.
- Step 2** Click the **Provisioning > Pluggable Port Modules** tabs.
- Step 3** In the Pluggable Port Modules area, click **Create**. The Create PPM dialog box appears.

- Step 4** In the Create PPM dialog box, complete the following:
- PPM—Choose the PPM slot number where the SFP or XFP is installed from the drop-down list.
  - PPM Type—Choose the number of ports supported by your SFP or XFP from the drop-down list. The drop-down list displays the number of PPMs that are available for provisioning. If only one port is supported, **PPM (1 port)** is the only option.
- Step 5** Click **OK**. The newly created port appears in the Pluggable Port Modules pane. The row in the Pluggable Port Modules pane turns light blue. The Actual Equipment Type column remains blank until the actual SFP or XFP is installed. After the SFP or XFP is installed, the row in the pane turns white and the Actual Equipment Type column shows the equipment name.
- Step 6** Verify that the PPM appears in the list in the Pluggable Port Modules pane. If it does not, repeat Steps 3 through 5.
- Step 7** Repeat the task to provision a second PPM, if needed. If not, continue with [Step 8](#).
- Step 8** Click **OK**.
- Step 9** Return to your originating procedure (NTP).
- 

## DLP-G64 Remove an SFP or XFP

<b>Purpose</b>	This task removes SFPs and XFPs from TXP, MXP, AR_MXP, AR_XP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, and OTU2_XP cards.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G179 Install the TXP, MXP, AR_MXP, AR_XP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, and OTU2_XP Cards</a> , page 14-69
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher



### Note

This task removes the SFP or XFP hardware. To delete the provisioning for an SFP or XFP, see the [“DLP-G280 Delete a PPM” procedure on page 11-161](#).

---

- Step 1** If a fiber is connected, disconnect the network fiber cable from the SFP or XFP LC-type connector.
- Step 2** Release the SFP or XFP from the slot by performing one of the following actions (depending on which latch is on the SFP or XFP):
- For a mylar tab SFP or XFP— Pull out the mylar tab.
  - For an actuator/button SFP or XFP— Press the actuator/button.
  - For a bail clasp SFP or XFP— Unlatch the bail clasp and swing it downward.
- Step 3** Slide the SFP or XFP out of the slot.
- Step 4** Return to your originating procedure (NTP).

**Note**

Removing an SFP from the client ports of a Y-cable protection group card causes an IMPROPRMVL (PPM) alarm. The working port raises the CR,IMPROPRMVL,SA alarm and the protected port raises the MN,IMPROPRMVL,NSA alarm. The severity on the client ports is changed according to the protection switch state.

## NTP-G123 Install the Filler Cards

<b>Purpose</b>	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.
<b>Tools/Equipment</b>	Filler cards
<b>Prerequisite Procedures</b>	<a href="#">NTP-G30 Install the DWDM Cards, page 14-64</a> <a href="#">NTP-G31 Install the DWDM Dispersion Compensating Units, page 14-68</a> <a href="#">NTP-G179 Install the TXP, MXP, AR_MXP, AR_XP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, and OTU2_XP Cards, page 14-69</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	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 ONS 15454. For detailed instructions on how to wear the ESD wristband, refer to the [Electrostatic Discharge and Grounding Guide for Cisco CPT and Cisco ONS Platforms](#).

**Caution**

In an ONS 15454 shelf assembly, a filler card (Cisco P/N 15454-FILLER) can be installed in any unused traffic or AIC-I card slots (Slots 1 through 6, 9, and 12 through 17). These cards are detected by CTC in Software Release 6.0 and later.

**Note**

In an ONS 15454 M6 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 ONS 15454 M2 shelf assembly, the line card filler (15454-M-FILLER) can be installed in any unused line card slots (Slot 2 or Slot 3). CTC does not detect the filler card in Release 9.2; however, CTC may detect it in later software releases.

- 
- 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-G239 Add and Delete Passive Units

<b>Purpose</b>	This procedure explains how to add or delete passive units on a DWDM node.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

- 
- Step 1** Complete the [DLP-G46 Log into CTC](#) task to log in to an ONS 15454 node on the network.
- Step 2** Complete the “[DLP-G543 Add Passive Units Manually](#)” task on page 14-76 to manually preprovision a passive unit.
- Step 3** Complete the “[DLP-G544 Delete a Passive Unit](#)” task on page 14-77 to delete a passive unit.
- Stop. You have completed this procedure.**
- 


## DLP-G543 Add Passive Units Manually

<b>Purpose</b>	This task preprovisions passive units (patch panels and DCUs) in CTC. Preprovisioning of the passive units is normally performed when you complete the “ <a href="#">NTP-G143 Import the Cisco Transport Planner NE Update Configuration File</a> ” section on page 14-47. Use this task if you need to manually preprovision a passive unit. All slot preprovisioning must be based upon the Cisco Transport Planner shelf layout prepared for your site.
<b>Tools/Equipment</b>	Cisco Transport Planner shelf layout table or JPG file.
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a> <a href="#">NTP-G139 Verify Cisco Transport Planner Reports and Files</a> , page 14-3
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

- 
- Step 1** In the node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Passive Cards** tabs.
- Step 2** Click **Create**. The Create Passive Card dialog box appears.
- Step 3** Choose the passive unit from the Card Type drop-down list and click **OK**.  
The passive unit is installed in the first available slot in the rack.
-  **Note** You can also add a passive unit in the multishelf view by right-clicking the slot inside the rack. Refer to the [NTP-G146 Add a Rack, Passive Unit, or Shelf to a Multishelf Node](#) procedure.
-  **Note** If you need to view the details of the passive units that have been installed on a node, click the Inventory tab.
- 
- Step 4** Return to your originating procedure (NTP).
- 

## DLP-G544 Delete a Passive Unit

<b>Purpose</b>	This task deletes a passive unit.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

- 
- Step 1** In the node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Passive Cards** tabs.
- Step 2** Click the passive unit you want to delete.
- Step 3** Click **Delete**, then click **Yes**.
-  **Note** You can also delete a passive unit in the multi-shelf view. Refer to [NTP-G147 Delete a Passive Unit, Shelf, or Rack from a Multishelf Node](#) procedure.
- 
- Step 4** Return to your originating procedure (NTP).
-

# NTP-G34 Install Fiber-Optic Cables on DWDM Cards and DCUs

<b>Purpose</b>	This procedure attaches fiber-optic cables on the DWDM cards and DCUs.
<b>Tools/Equipment</b>	Fiber-optic cables Cisco Transport Planner Internal Connections Report
<b>Prerequisite Procedures</b>	<a href="#">NTP-G30 Install the DWDM Cards, page 14-64</a> <a href="#">NTP-G31 Install the DWDM Dispersion Compensating Units, page 14-68</a> (as applicable) <a href="#">NTP-G139 Verify Cisco Transport Planner Reports and Files, page 14-3</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	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 Install Fiber-Optic Cables Between Terminal, Hub, or ROADM Nodes” procedure on page 14-82.](#)

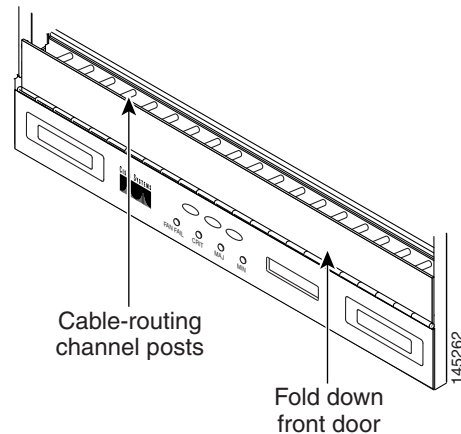
**Step 1** Refer to the [“DLP-G349 Use the Cisco Transport Planner Internal Connections Report” task on page 14-80](#) to install cables to the DWDM cards.

**Step 2** Verify that the appropriate fiber optic cables are available to complete the connections shown in the Cisco Transport Planner Internal Connections report:

- Count the number of connections listed in the Internal Connections and verify that you have the same number of cables.
- Measure the distance between Origination Position and Destination Position for each connection, then verify that the fiber lengths will fit each one.

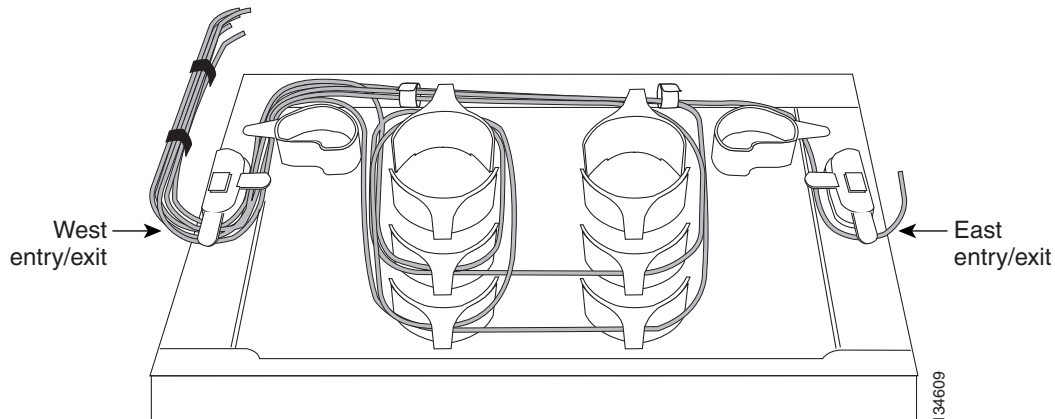
- Step 3** Complete the for all fiber connections, even new fiber. Dust particles can degrade performance. Put caps on any fiber connectors that are not used.
- Step 4** On the front of the fiber-storage tray (usually installed below the node you are fibering), push the tabs on the left and right sides 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 14-8).

**Figure 14-8** 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 32MUX-O, 32DMX, 32DMX-O, 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, and OPT-EDFA-24 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 14-9).

Figure 14-9 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 (see the [“NTP-G38 Provision OSC Terminations” procedure on page 14-126](#)) 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 Use the Cisco Transport Planner Internal Connections Report

<b>Purpose</b>	This task describes how to use the Cisco Transport Planner Internal Connections report to install cables on the DWDM cards.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G139 Verify Cisco Transport Planner Reports and Files, page 14-3</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

**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 ONS 15454 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-L, 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 ONS 15454 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).

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

<b>Purpose</b>	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.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• See <a href="#">Step 1</a> for a list of equipment specific to each node type.</li> <li>• All node types require fiber-optic cables, terminated with a single LC-type connector on each end.</li> <li>• Cisco Transport Planner Internal Connections Report</li> </ul>
<b>Prerequisite Procedures</b>	<ul style="list-style-type: none"> <li>• In the <a href="#">Cisco ONS 15454 Hardware Installation Guide</a> <ul style="list-style-type: none"> <li>– “DLP-G28 Install the Fiber Patch-Panel Tray”</li> <li>– “DLP-G29 Install the Fiber-Storage Tray”</li> </ul> </li> <li>• <a href="#">NTP-G34 Install Fiber-Optic Cables on DWDM Cards and DCUs, page 14-78</a></li> <li>• <a href="#">DLP-G348 Use the Cisco Transport Planner Shelf Layout Report, page 14-67</a></li> </ul>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	None

**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 32DMX-O card and 32MUX-O card, and one standard or deep patch panel tray
  - One of 32WSS card and 32DMX or 32DMX-O card, and one standard or deep patch panel tray
  - One of 32WSS-L card and 32DMX-L 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 (ONS 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 (ONS 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
- Hub node:
  - Two of 32MUX-O cards and 32DMX-O or 32DMX cards, and two standard or deep patch panel trays
  - Two of 32WSS cards and 32DMX or 32DMX-O cards, and two standard or deep patch panel trays
  - Two of 32WSS-L cards and 32DMX-L 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 or 32DMX-O cards, and two standard or deep patch panel trays
  - Two 32WSS-L cards, optionally, two 32DMX-L 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
- 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 Install Fiber-Optic Cables From the 32WSS/32DMX and 32MUX-O/32DMX-O Cards to the Standard Patch Panel Tray](#)” task on page 14-85.
    - Complete the “[DLP-G316 Install Fiber-Optic Cables from TXP, MXP, GE\\_XP, 10GE\\_XP, GE\\_XPE, 10GE\\_XPE, ADM-10G, or OTU2\\_XP Cards to the Standard Patch Panel Tray](#)” task on page 14-89.
  - Deep patch panel tray:
    - Complete the “[DLP-G356 Install Fiber-Optic Cables from the 32WSS/32DMX and 32MUX-O/32DMX-O Cards to the Deep Patch Panel Tray](#)” task on page 14-90.
    - Complete the “[DLP-G357 Install Fiber-Optic Cables from the TXP, MXP, GE\\_XP, 10GE\\_XP, GE\\_XPE, 10GE\\_XPE, ADM-10G, or OTU2\\_XP Cards to the Deep Patch Panel Tray or 40-Channel Patch Panel Tray](#)” task on page 14-97.
  - 40-channel patch panel tray:
    - As needed, complete the “[DLP-G427 Reroute Fiber-Optic Cables in the 40-Channel Patch Panel Tray](#)” task on page 14-93 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 Install Fiber-Optic Cables from the 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 Patch Panel Tray](#)” task on page 14-95.
  - 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD patch panel:
    - Complete the “[DLP-G530 Install Fiber-Optic Cables from the 40-SMR1-C, 40-SMR2-C, or 80-WXC-C Cards in a ROADM, Terminal, or Hub Node to the 15216-MD-40 or 15216-MD-48 Patch Panel Tray](#)” task on page 14-99
- 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 Install Fiber-Optic Cables From the 32WSS/32DMX and 32MUX-O/32DMX-O Cards to the Standard Patch Panel Tray

<b>Purpose</b>	This task describes how to route fiber-optic cables from 32MUX-O, 32WSS, 32DMX-O, and 32DMX cards in a terminal, hub, or ROADM node to the standard patch panel.
<b>Tools/Equipment</b>	<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"> <li>• One 32DMX-O card</li> <li>• One 32MUX-O card</li> <li>• One standard patch panel tray</li> <li>• 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</li> </ul> <p>Hub node:</p> <ul style="list-style-type: none"> <li>• Two 32DMX-O cards</li> <li>• Two 32MUX-O cards</li> <li>• Two standard patch panel trays</li> <li>• 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</li> </ul> <p>ROADM node:</p> <ul style="list-style-type: none"> <li>• Two 32WSS cards</li> <li>• Two 32DMX cards</li> <li>• Two standard patch panel trays</li> <li>• 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</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">NTP-G34 Install Fiber-Optic Cables on DWDM Cards and DCUs, page 14-78</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	None

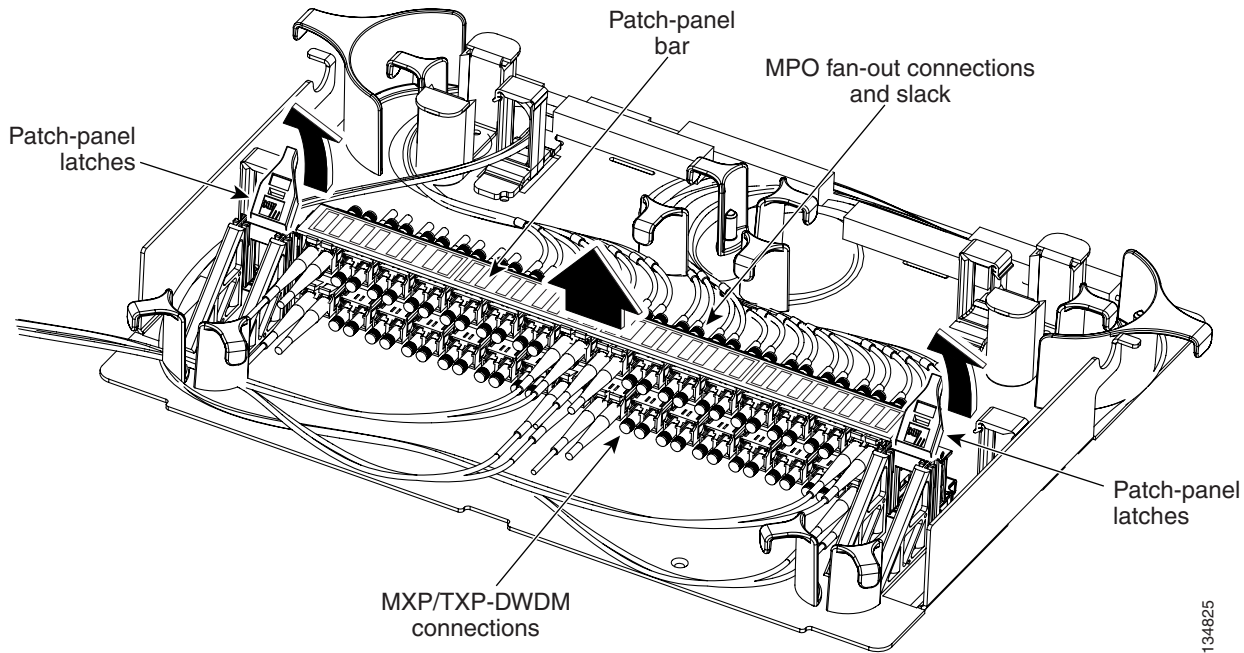

**Note**

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.

- Step 1** Choose either the Side B or Side A to cable the 32MUX-O and 32DMX-O cards (or the 32WSS and 32DMX cards for a ROADM node).

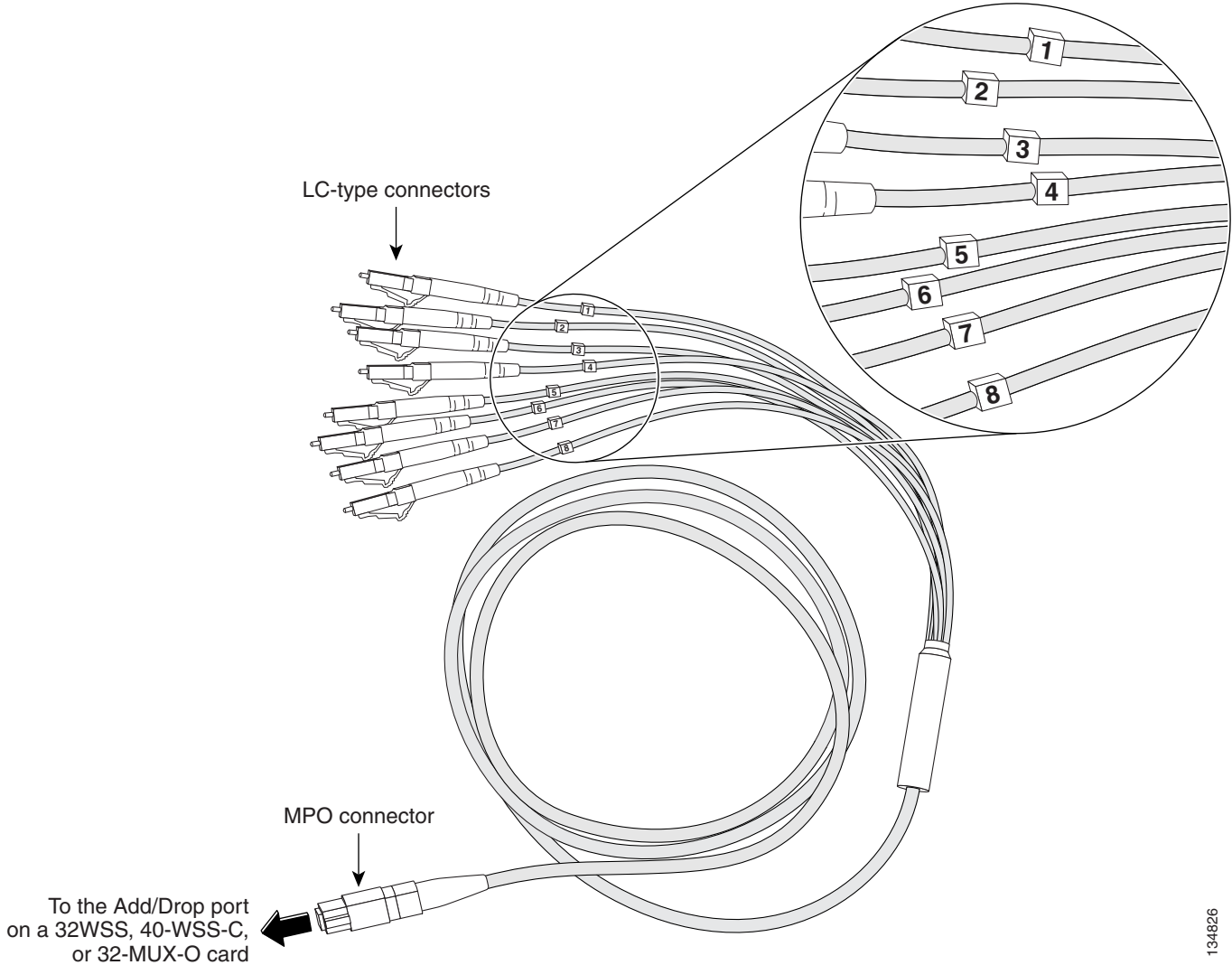
- Step 2** On the patch panel, pull up firmly on the two latches and use them to slide the patch panel up until it snaps in place above the tray (Figure 14-10).

**Figure 14-10** Using the Patch Panel Latches to Slide the Patch Panel Away from the Tray



- Step 3** At the 32WSS or 32MUX-O card in the node, plug the MPO connector of an MPO cable (Figure 14-11) 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 14-11 MPO Cable



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

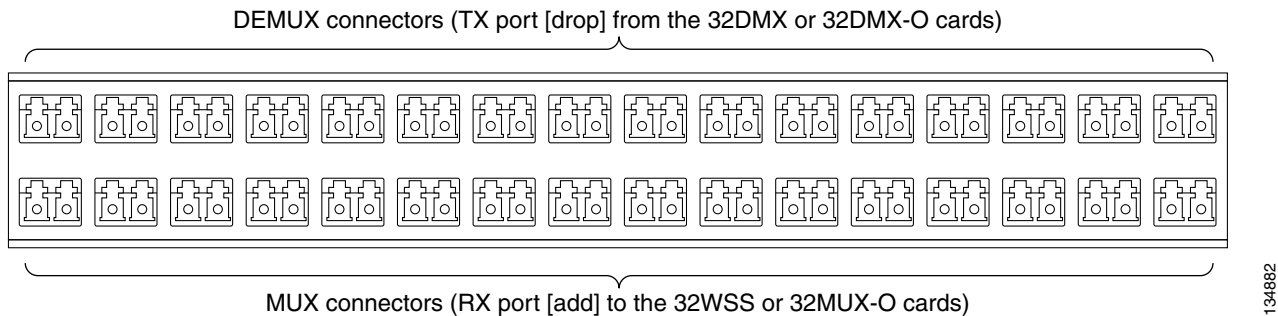
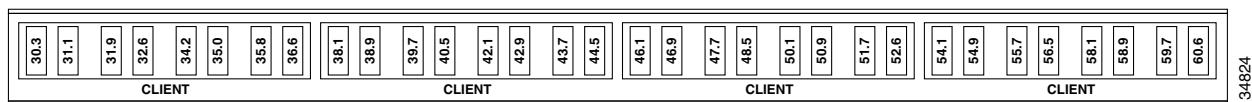


**Caution**

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.

Figure 14-12 shows the patch panel connectors from the rear of the patch panel tray. Figure 14-13 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 14-12 Rear View of the Patch Panel****Figure 14-13 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 or 32MUX-O 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 or 32DMX-O 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 or 32DMX-O 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 or DMX-O 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 Install Fiber-Optic Cables from TXP, MXP, GE\_XP, 10GE\_XP, GE\_XPE, 10GE\_XPE, ADM-10G, or OTU2\_XP Cards to the Standard Patch Panel Tray

<b>Purpose</b>	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.
<b>Tools/Equipment</b>	TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, or OTU2_XP card(s) Fiber-optic cable(s)
<b>Prerequisite Procedures</b>	<a href="#">NTP-G34 Install Fiber-Optic Cables on DWDM Cards and DCUs, page 14-78</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	None

**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.



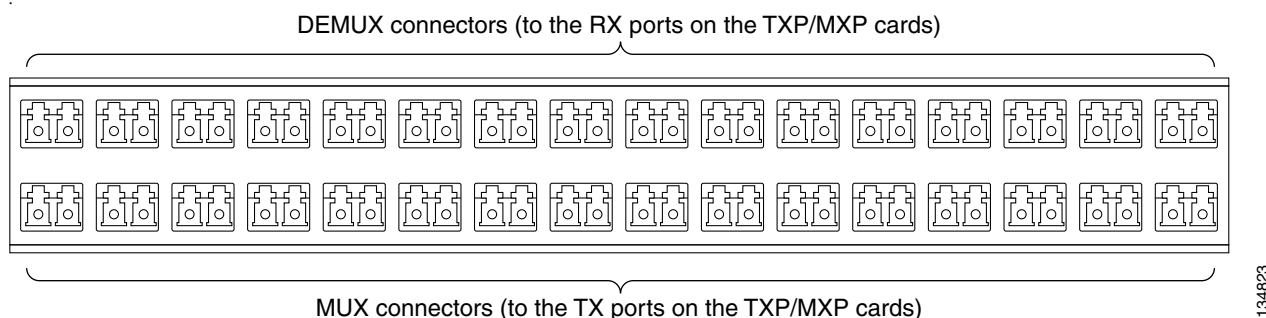
**Caution**

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. (See [Figure 14-13 on page 14-88](#) for a view of the wavelengths assigned to the patch panel connectors).

[Figure 14-14](#) shows the patch panel connectors from the front of the patch panel tray.

**Figure 14-14 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 Install Fiber-Optic Cables from the 32WSS/32DMX and 32MUX-O/32DMX-O Cards to the Deep Patch Panel Tray

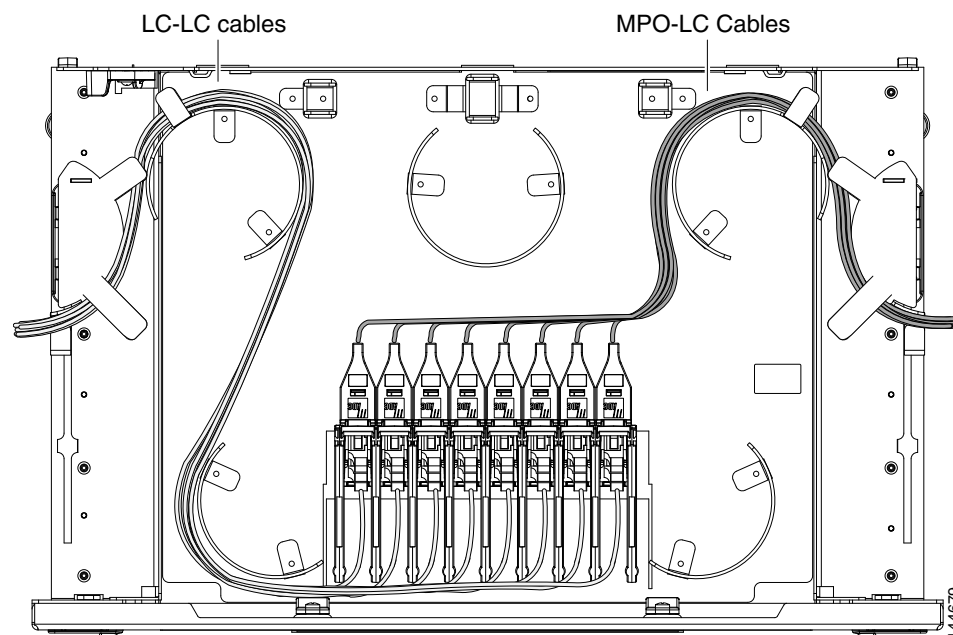
<b>Purpose</b>	This task describes how to route fiber-optic cables from 32MUX-O, 32WSS, 32DMX-O, and 32DMX cards in a terminal, hub, or ROADM node to the deep patch panel tray.
<b>Tools/Equipment</b>	<p>The following node types require the following equipment. The cards and patch panels should already 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"> <li>• One 32MUX-O card and one 32DMX-O or 32DMX card</li> <li>• One 32WSS card and one 32DMX or 32DMX-O card</li> <li>• One 32WSS-L cards and one 32DMX-L card</li> </ul> <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"> <li>• Two 32MUX-O cards and two 32DMX-O or 32DMX cards</li> <li>• Two 32WSS cards and two 32DMX or 32DMX-O cards</li> <li>• Two 32WSS-L cards and two 32DMX-L cards</li> </ul> <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"> <li>• Two 32WSS cards and two 32DMX or 32DMX-O cards</li> <li>• Two 32WSS-L cards and two 32DMX-L cards</li> </ul> <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>
<b>Prerequisite Procedures</b>	<a href="#">NTP-G34 Install Fiber-Optic Cables on DWDM Cards and DCUs, page 14-78</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	None

**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.

- Step 1** Choose either Side A or Side B of the shelf to cable the 32MUX-O and 32DMX-O cards (or the 32WSS and 32DMX cards for a ROADM node).
- Step 2** On the patch panel, locate the MPO connectors (Figure 14-11 on page 14-87).
- Step 3** Route the preinstalled MPO cables out of the tray to the right or left (Figure 14-15).

**Figure 14-15 Deep Patch Panel Tray**



- Step 4** At the 32WSS or 32MUX-O card in the node, plug the MPO connector labeled 1-RX on an MPO cable (Figure 14-11 on page 14-87) 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.
- Figure 14-16 shows the deep patch panel ports and corresponding wavelengths.

**Figure 14-16** Deep Patch Panel Port Wavelengths

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

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- Step 8** At the adjacent 32DMX or 32DMX-O card in the same side of the shelf, plug the MPO connector labeled 1 TX on the MPO cable (Figure 14-11 on page 14-87) into the top Drop TX (30.3–36.6) port of the card (Figure 14-16).
- 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).

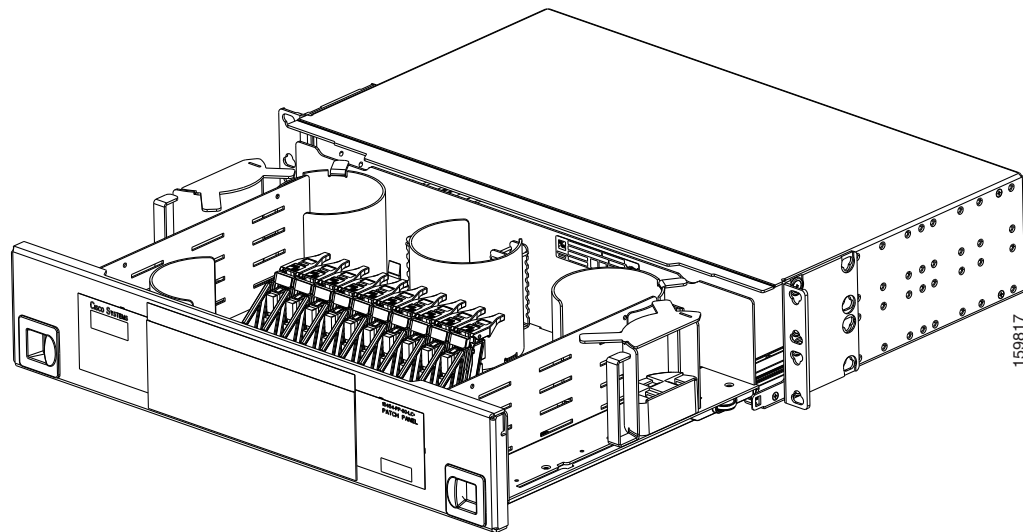
## DLP-G427 Reroute Fiber-Optic Cables in the 40-Channel Patch Panel Tray

<b>Purpose</b>	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 (Slots 12 through 17).
<b>Tools/Equipment</b>	#2 Phillips screwdriver
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	None

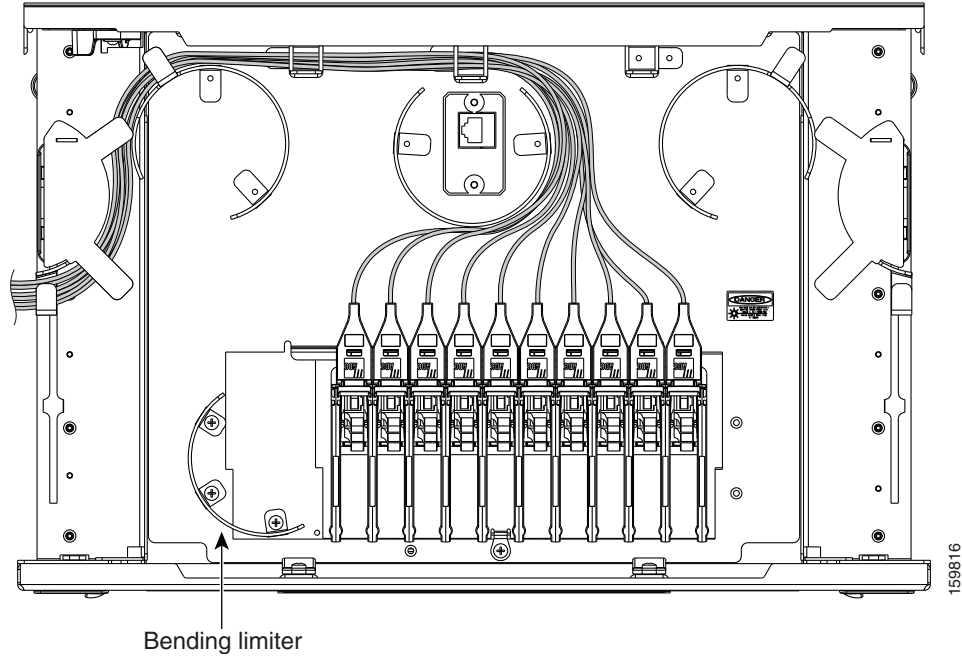
- Step 1** Carefully unwind all of the MPO cables in the patch panel tray and gently set the cables to the side of the tray, out of the way of the internal hardware.

[Figure 14-17](#) and [Figure 14-18](#) show the 40-channel patch panel tray.

**Figure 14-17** 40-Channel Patch Panel Tray, Side View



**Figure 14-18** 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 Install Fiber-Optic Cables from the 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 Patch Panel Tray

<b>Purpose</b>	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).
<b>Tools/Equipment</b>	<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"> <li>• One 40-WSS-C or 40-WSS-CE card</li> <li>• One 40-DMX-C or 40-DMX-CE card</li> </ul> <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"> <li>• Two 40-WSS-C or 40-WSS-CE cards</li> <li>• Two 40-DMX-C or 40-DMX-CE cards</li> </ul> <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>
<b>Prerequisite Procedures</b>	<p><a href="#">NTP-G34 Install Fiber-Optic Cables on DWDM Cards and DCUs, page 14-78</a></p> <p><a href="#">DLP-G427 Reroute Fiber-Optic Cables in the 40-Channel Patch Panel Tray, page 14-93</a></p>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	None



### Note

For a ROADM node, two patch panels will be used, one for the Side A (Slots 1 through 6) and one for Side B (Slots 12 through 17). 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.

### 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 Reroute Fiber-Optic Cables in the 40-Channel Patch Panel Tray”](#) task on page 14-93 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 14-11 on page 14-87) 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.

Figure 14-19 shows the 40-channel patch panel ports and corresponding wavelengths.

**Figure 14-19 40-Channel (15454-PP-80) Patch Panel Port Wavelengths**

1530.3nm	RX	TX	1533.4nm	RX	TX	1536.6nm	RX	TX	1539.7nm	RX	TX	1542.9nm	RX	TX	1546.1nm	RX	TX	1549.3nm	RX	TX	1552.5nm	RX	TX	1555.7nm	RX	TX	1558.9nm	RX	TX			
1531.1nm	RX	TX	1534.2nm	RX	TX	1537.4nm	RX	TX	1540.5nm	RX	TX	1543.7nm	RX	TX	1546.9nm	RX	TX	1550.1nm	RX	TX	1553.3nm	RX	TX	1556.5nm	RX	TX	1559.7nm	RX	TX			
1531.8nm	RX	TX	1535.0nm	RX	TX	1538.1nm	RX	TX	1541.3nm	RX	TX	1544.5nm	RX	TX	1547.7nm	RX	TX	1550.9nm	RX	TX	1554.1nm	RX	TX	1557.3nm	RX	TX	1560.6nm	RX	TX			
1532.6nm	RX	TX	1535.8nm	RX	TX	1538.9nm	RX	TX	1542.1nm	RX	TX	1545.3nm	RX	TX	1548.5nm	RX	TX	1551.7nm	RX	TX	1554.9nm	RX	TX	1558.1nm	RX	TX	1561.4nm	RX	TX			

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- 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 Install Fiber-Optic Cables from the TXP, MXP, GE\_XP, 10GE\_XP, GE\_XPE, 10GE\_XPE, ADM-10G, or OTU2\_XP Cards to the Deep Patch Panel Tray or 40-Channel Patch Panel Tray

<b>Purpose</b>	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.
<b>Tools/Equipment</b>	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
<b>Prerequisite Procedures</b>	<a href="#">NTP-G34 Install Fiber-Optic Cables on DWDM Cards and DCUs, page 14-78</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	None

**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. Cisco Transport Planner designates Side A as Slots 1 to 6 and Side B as Slots 12 to 17. 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 [Figure 14-16 on page 14-92](#) for a view of the wavelengths assigned to the deep patch panel connectors or [Figure 14-19 on page 14-96](#) 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).
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## DLP-G530 Install Fiber-Optic Cables from the 40-SMR1-C, 40-SMR2-C, or 80-WXC-C Cards in a ROADM, Terminal, or Hub Node to the 15216-MD-40 or 15216-MD-48 Patch Panel Tray

<b>Purpose</b>	This task describes how to route fiber-optic cables from the 40-SMR1-C <sup>1</sup> , 40-SMR2-C <sup>1</sup> , or 80-WXC-C <sup>2</sup> cards in a ROADM, terminal, or hub node to the 15216-MD-40 or 15216-MD-48 patch panel tray.
<b>Tools/Equipment</b>	<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 nodes:</p> <ul style="list-style-type: none"> <li>• One 40-SMR1-C<sup>1</sup> and one 15216 Odd patch panel<sup>3</sup></li> <li>• One 40-SMR2-C<sup>1</sup> and one 15216 Odd patch panel<sup>3</sup></li> <li>• One 80-WXC-C<sup>2</sup> card, one 15216 Odd patch panel<sup>3</sup>, and one 15216 Even patch panel<sup>4</sup>, and one 15216-MD-ID-50 or 15216-MD-48-CM unit</li> </ul> <p>Hub nodes:</p> <ul style="list-style-type: none"> <li>• Two 40-SMR1-C<sup>1</sup> cards and two 15216 Odd patch panels<sup>3</sup></li> <li>• Two 40-SMR2-C<sup>1</sup> cards and two 15216 Odd patch panels<sup>3</sup></li> </ul> <p>ROADM nodes:</p> <ul style="list-style-type: none"> <li>• Two 40-SMR1-C<sup>1</sup> cards and two 15216 Odd patch panels<sup>3</sup></li> <li>• Two 40-SMR2-C<sup>1</sup> cards and two 15216 Odd patch panels<sup>3</sup></li> <li>• Two 80-WXC-C<sup>2</sup> cards, two 15216 Odd patch panels<sup>3</sup>, and 15216 Even patch panels<sup>4</sup> and 15216-MD-ID-50 or 15216-MD-48-CM units</li> </ul>
<b>Prerequisite Procedures</b>	<p>Install and route fiber-optic cables on the patch panel. For more information, see the required installation guide:</p> <ul style="list-style-type: none"> <li>• <i>Installing the Cisco ONS 15216-MD-40-ODD and 15216-MD-40-EVEN Mux/Demux Patch Panels</i></li> <li>• <i>Installing the Cisco ONS 15216-EF-40-ODD and 15216-EF-40-EVEN Mux/Demux Patch Panels</i></li> <li>• <i>Installing the Cisco ONS 15216-MD-48-ODD and 15216-MD-48-EVEN Mux/Demux Patch Panels</i></li> <li>• <i>Installing Cisco ONS 15216-MD-ID-50 Optical Interleaver and Deinterleaver Pluggable</i></li> <li>• <i>Installing the Cisco ONS 15216-MD-48-CM Interleaver and Deinterleaver Pluggable</i></li> </ul>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	None

1. The 40-SMR1-C and 40-SMR2-C cards can be connected only to the odd patch panel (15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD).

2. The 80-WXC-C card can be connected to the odd patch panel (15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD) and the even patch panel (15216-MD-40-EVEN, 15216-EF-40-EVEN, or 15216-MD-48-EVEN) in the presence of interleaver and deinterleaver pluggable (15216-MD-ID-50 or 15216-MD-48-CM).
3. 15216-MD-40-ODD, 15216-EF-40-ODD, or 15216-MD-48-ODD patch panel.
4. 15216-MD-40-EVEN, 15216-EF-40-EVEN, or 15216-MD-48-EVEN patch panel.

**Note**

For optical interconnections between the odd patch panel, interleaver and deinterleaver module, and the even patch panel, see the “*Installing Cisco ONS 15216-MD-ID-50 Optical Interleaver and Deinterleaver Pluggable*” or “*Installing the Cisco ONS 15216-MD-48-CM Interleaver and Deinterleaver Pluggable*” guide.

**Note**

For a ROADM node, two patch panels will be used, one for the Side A (Slots 1 through 6) and one for Side B (Slots 12 through 17). The Side B 40-SMR1-C<sup>1</sup> or 40-SMR2-C<sup>1</sup> card will connect to the Side B patch panel. The Side A 40-SMR1-C<sup>1</sup> or 40-SMR2-C<sup>1</sup> will connect to the Side A patch panel.

- Step 1** Choose Side A or Side B of the shelf to route the cables from the 40-SMR1-C, 40-SMR2-C, or 80-WXC-C card.
- Step 2** On the 15216 patch panel<sup>1,2</sup>, locate the COM TX port and insert one end of an LC-LC cable.
- Step 3** Route the LC-LC cable through the 15216 patch panel<sup>1,2</sup> to the 40-SMR1-C<sup>1</sup> card, 40-SMR2-C<sup>1</sup> card, or 80-WXC-C<sup>2</sup> card on Side A of the node.
- Step 4** Connect the other end of the LC-LC cable to the ADD RX port on the 40-SMR1-C or 40-SMR2-C cards or the AD port on the 80-WXC-C card.
- Step 5** On the 15216 patch panel<sup>1,2</sup>, locate the COM RX port and insert one end of an LC-LC cable.
- Step 6** Route the LC-LC cable through the 15216 patch panel<sup>1,2</sup> to the 40-SMR1-C<sup>1</sup>, 40-SMR2-C<sup>1</sup> or 80-WXC-C<sup>2</sup> card on Side A of the node.
- Step 7** Connect the other end of the LC-LC cable to the DROP TX port on the 40-SMR1-C<sup>1</sup>, 40-SMR2-C<sup>1</sup>, or 80-WXC-C<sup>2</sup> 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 8** For a hub or ROADM node, repeat Steps 2 through 7 to cable the other side of the shelf to the second patch panel. For a terminal node, go to Step 9.

**Note**

For a ROADM node using 40-SMR2-C<sup>1</sup> cards, you must use a special reversed MPO cable (15454-MPO-XMPO-2=) to connect the EXP ports of the Side A 40-SMR2-C<sup>1</sup> to the EXP ports of the Side B 40-SMR2-C<sup>1</sup>.

- Step 9** Return to your originating procedure (NTP).

# NTP-G185 Install Fiber-Optic Cables between Mesh Nodes

<b>Purpose</b>	<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"> <li>• 40-MUX-C and 40-DMX-C cards in a mesh node to the 40-channel (80-port) patch panel tray (15454-PP-80)</li> <li>• 40-WXC-C or 80-WXC-C cards in a mesh node to one of the mesh patch panel trays (four-degree or eight-degree)</li> <li>• 40-SMR2-C cards in a mesh node to the 15454-PP-4-SMR patch panel tray.</li> </ul>
<b>Tools/Equipment</b>	<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"> <li>• One 40-MUX-C card per side of the mesh node (up to 8 sides per node)</li> <li>• One 40-DMX-C card per side of the mesh node (up to 8 sides per node)</li> <li>• One 40-channel patch panel tray per side of the mesh node (up to 8 sides per node)</li> <li>• One 40-WXC-C card per side (up to 8 sides per node)</li> <li>• One 80-WXC-C card per side (up to 8 sides per node)</li> <li>• One 40-SMR2-C card per side (up to 4 sides per node)</li> <li>• One MPO-MPO fiber-optic cable per side (up to 8 sides per node)</li> <li>• One LC-LC fiber-optic cable per side (up to 8 sides per node)</li> <li>• 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</li> </ul> <p><b>Note</b> 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>
<b>Prerequisite Procedures</b>	<p><a href="#">NTP-G34 Install Fiber-Optic Cables on DWDM Cards and DCUs, page 14-78</a></p> <p><a href="#">DLP-G427 Reroute Fiber-Optic Cables in the 40-Channel Patch Panel Tray, page 14-93</a></p>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	None

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- 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 Install Fiber-Optic Cables from the 40-MUX-C and 40-DMX-C Cards in a Mesh Node to the 40-Channel Patch Panel Tray](#)” task on page 14-102.
- Step 3** Complete the “[DLP-G431 Install Fiber-Optic Cables from the 40-WXC-C, or 40-SMR2-C Cards in a Mesh Node to a Mesh Patch Panel Tray](#)” task on page 14-104.
- 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 Install Fiber-Optic Cables from the 40-MUX-C and 40-DMX-C Cards in a Mesh Node to the 40-Channel Patch Panel Tray

<b>Purpose</b>	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).
<b>Tools/Equipment</b>	The cards and patch panels should already be installed before you begin this procedure. <ul style="list-style-type: none"> <li>• One 40-MUX-C card per side of the mesh node</li> <li>• One 40-DMX-C card per side of the mesh node</li> <li>• 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)</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">NTP-G34 Install Fiber-Optic Cables on DWDM Cards and DCUs, page 14-78</a> <a href="#">DLP-G427 Reroute Fiber-Optic Cables in the 40-Channel Patch Panel Tray, page 14-93</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	None

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



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**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 Reroute Fiber-Optic Cables in the 40-Channel Patch Panel Tray” task on page 14-93](#) to route the MPO cables out of the right side of the patch panel tray, or route the cables through a fiber storage panel.

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- 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.



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**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.

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- 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).
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## DLP-G431 Install Fiber-Optic Cables from the 40-WXC-C, or 40-SMR2-C Cards in a Mesh Node to a Mesh Patch Panel Tray

<b>Purpose</b>	This task connects fiber-optic cables from the 40-WXC-C or 40-SMR2-C cards in a mesh node to the 4-degree (PP-MESH-4 or 15454-PP-4-SMR) or 8-degree (PP-MESH-8) mesh patch panel. The four-degree patch panel allows up to 4 sides to be used per node, while the eight-degree patch panel allows up to 8 sides to be used per node.
<b>Tools/Equipment</b>	<p>The cards and patch panel trays should already be installed before you begin this procedure.</p> <ul style="list-style-type: none"> <li>• One 40-WXC-C card per side (up to 8 sides per node)</li> <li>• One 40-SMR2-C card per side (up to 4 sides per node)</li> <li>• One MPO-MPO fiber-optic cable per side</li> <li>• One LC-LC fiber-optic cable per side</li> <li>• One PP-MESH-4 (four-degree), PP-MESH-8 (eight-degree), or 15454-PP-4-SMR (four-degree) mesh patch panel tray</li> <li>• Cisco Transport Planner Internal Connections Report</li> </ul> <p><b>Note</b> 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>
<b>Prerequisite Procedures</b>	<ul style="list-style-type: none"> <li>• In the <a href="#">Cisco ONS 15454 Hardware Installation Guide</a> <ul style="list-style-type: none"> <li>– “DLP-G28 Install the Fiber Patch-Panel Tray” i</li> <li>– “DLP-G29 Install the Fiber-Storage Tray”</li> </ul> </li> <li>• <a href="#">NTP-G34 Install Fiber-Optic Cables on DWDM Cards and DCUs, page 14-78</a></li> <li>• <a href="#">DLP-G348 Use the Cisco Transport Planner Shelf Layout Report, page 14-67</a></li> <li>• Install and route fiber-optic cables on the 15454-PP-4-SMR mesh patch panel. For more information, see the <i>Installing Cisco ONS 15454-PP-4-SMR Patch Panel</i>.</li> </ul>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	None

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- Step 1** Choose Side A of the shelf to cable the 40-WXC-C, or 40-SMR2-C card to the mesh patch panel.
- Step 2** On the mesh patch panel, locate the EXP TX A port (for PP-MESH-4 and PP-MESH-8) or EXP-A port (for 15454-PP-4-SMR) and insert one end of an MPO-MPO cable.
- Step 3** Route the MPO cable through the mesh patch panel and out to the 40-WXC-C, or 40-SMR2-C card on Side A of the node.
- Step 4** Connect the other end of the MPO cable to the EXP RX port on the 40-WXC-C, or EXP port on the 40-SMR2-C card.



**Note** If you are connecting a 40-SMR2-C card to the 15454-PP-4-SMR mesh patch panel, skip steps 5 through 7.

- Step 5** On the PP-MESH-4 or PP-MESH-8 mesh patch panel, locate the COM RX A port and insert one end of an LC-LC cable.
- Step 6** Route the LC cable through the mesh patch panel to the 40-WXC-C card on Side A of the node.
- Step 7** Connect the other end of the LC cable to the EXP TX port on the 40-WXC-C.
- Step 8** Repeat Steps 1 through 7 as necessary to cable Sides B through D for a 4-degree patch panel, and Sides B through H for an 8-degree patch panel.

**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.**

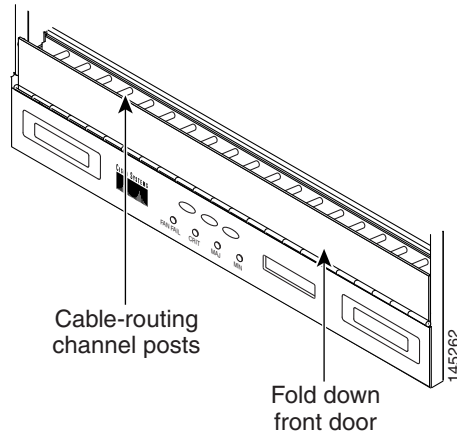
## NTP-G191 Install Fiber-Optic Cables on Passthrough ROADM Nodes

<b>Purpose</b>	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.
<b>Tools/Equipment</b>	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"> <li>• One 32WSS card</li> <li>• One fiber-storage tray</li> <li>• Two 3-meter fiber-optic cables, each terminated with a single LC connector on each end.</li> <li>• Cisco Transport Planner Internal Connections Report</li> </ul>
<b>Prerequisite Procedures</b>	“DLP-G29 Install the Fiber-Storage Tray” in the <a href="#">Cisco ONS 15454 Hardware Installation Guide</a> DLP-G348 Use the Cisco Transport Planner Shelf Layout Report, page 14-67
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	None

- Step 1** Choose either the East or West side of the first shelf to cable the 32WSS card for the first ROADM node.

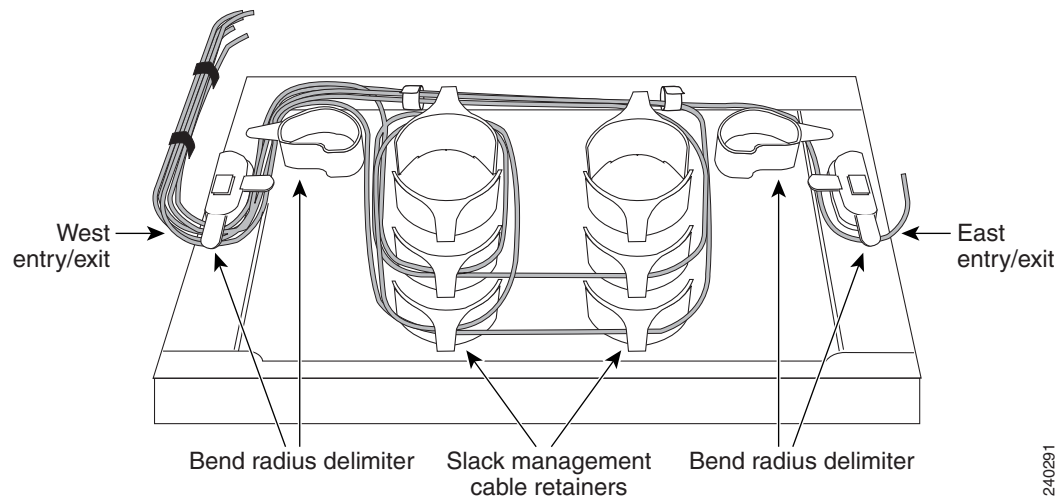
- Step 2** Choose the corresponding West or East side of the second shelf to cable the 32WSS card for the second ROADM node.
- Step 3** On the front of the fiber-storage tray that will be used for routing the fiber-optic cable, push the tabs on the left and right sides inward to release the lock on the 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 14-20).

**Figure 14-20** 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 (Figure 14-21).
- Step 10** As needed, route slack fiber-optic cable around the slack management cable retainers in the fiber-storage tray (Figure 14-21).

Figure 14-21 Fiber-Storage Tray



240281

**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 Install Fiber-Optic Cables for Y-Cable Protection Modules

<b>Purpose</b>	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, 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 FlexLayer shelf, or Y-cable modules installed in a Y-cable module tray.
<b>Tools/Equipment</b>	Fiber-optic cables  Cisco Transport Planner Internal Connections Report
<b>Prerequisite Procedures</b>	See <a href="#">Cisco ONS 15454 Hardware Installation Guide</a> : <ul style="list-style-type: none"> <li>“DLP-G32 Install the Y-Cable Protection Modules in the FlexLayer Shelf”</li> <li>“DLP-G377 Install the Y-Cable Protection Modules in the Y-Cable Module Tray”</li> </ul>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	None

**Note**

For more information about Y-cable protection, see [Chapter 1, “Install the Cisco ONS 15454, ONS 15454 M2, and ONS 15454 M6 Shelf”](#) and [Chapter 11, “Provision Transponder and Muxponder Cards”](#).

**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. (See the [“DLP-G379 Change the GE\\_XP, 10GE\\_XP, GE\\_XPE, and 10GE\\_XPE Card Mode”](#) task on page 11-149.) 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.

- Step 1** As needed, complete the [“DLP-G375 Install Fiber-Optic Cables on the Y-Cable Modules in the FlexLayer Shelf”](#) task on page 14-109.
- Step 2** As needed, complete the [“DLP-G376 Install Fiber-Optic Cables on the Y-Cable Modules in the Y-Cable Module Tray”](#) task on page 14-110.

**Stop. You have completed this procedure.**

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

<b>Purpose</b>	This task installs fiber-optic cables from the TXP, MXP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, AR_MXP, or AR_XP cards to the Y-cable modules installed in the FlexLayer shelves, and from the Y-cable modules to the client devices.
<b>Tools/Equipment</b>	Fiber-optic cables
<b>Prerequisite Procedures</b>	Cisco Transport Planner Internal Connections Report “DLP-G32 Install the Y-Cable Protection Modules in the FlexLayer Shelf” in the <a href="#">Cisco ONS 15454 Hardware Installation Guide</a> <a href="#">NTP-G179 Install the TXP, MXP, AR_MXP, AR_XP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, and OTU2_XP Cards, page 14-69</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	None

**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, or AR\_XP card and a Y-cable module.

If you want to protect one client signal, connect the fiber-optic cables according to either [Table 14-7](#) or [Table 14-8](#). To protect two client signals using a single Y-cable module, connect the cables according to both [Table 14-7](#) and [Table 14-8](#).

**Table 14-7 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 14-8 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

**Table 14-8 Cable Connections for Y-Cable Protection of a Second Client Signal (continued)**

From	To (Y-Cable Port Number)
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 14-9 on page 14-80).

**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 Install Fiber-Optic Cables on the Y-Cable Modules in the Y-Cable Module Tray

<b>Purpose</b>	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.
<b>Tools/Equipment</b>	Fiber-optic cables (4-meter [13.12-foot]), single-mode or multimode as appropriate Cisco Transport Planner Internal Connections Report
<b>Prerequisite Procedures</b>	“DLP-G32 Install the Y-Cable Protection Modules in the FlexLayer Shelf” in the <i>Cisco ONS 15454 Hardware Installation Guide</i> <a href="#">NTP-G179 Install the TXP, MXP, AR_MXP, AR_XP, GE_XP, 10GE_XP, GE_XPE, 10GE_XPE, ADM-10G, and OTU2_XP Cards</a> , page 14-69
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	None

**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 14-22).

**Figure 14-22 Y-Cable Protection Port Label**

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

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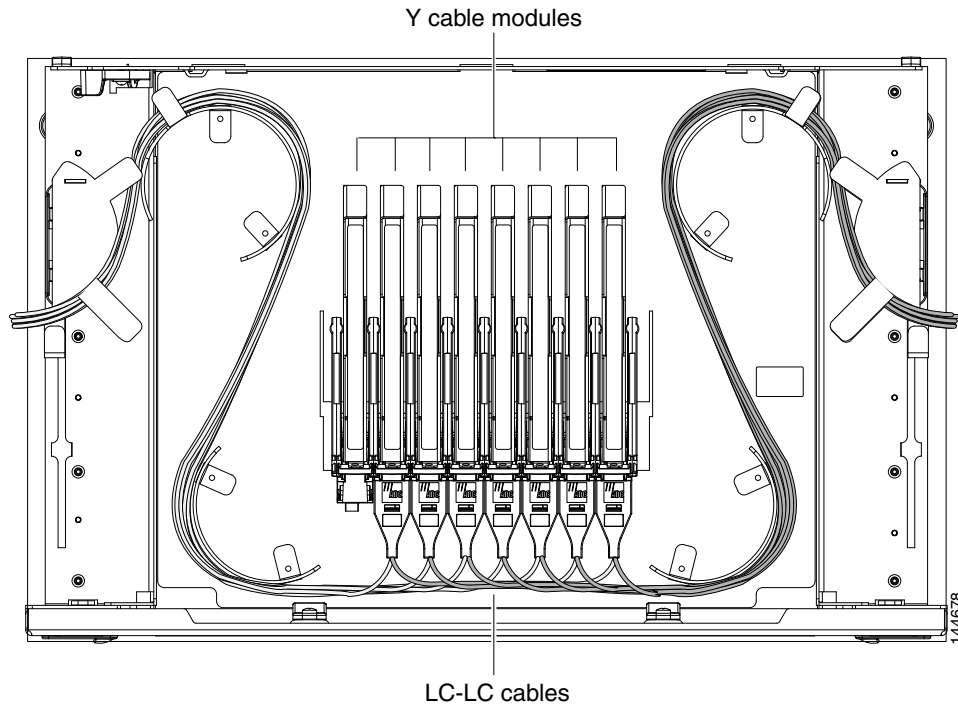
**Note** You can use the label shown in Figure 14-22 to take notes as to which wavelength/port you are connecting to each Y-cable module. “W” denotes the indicated Working port on the TXP, MXP, GE\_XP, 10GE\_XP, GE\_XPE, or 10GE\_XPE card. “P” denotes the indicated Protect port on the TXP, MXP, GE\_XP, 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 (Figure 14-23).

Figure 14-23 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 through 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-G152 Create and Verify Internal Patchcords

<b>Purpose</b>	This procedure imports the internal patchcords using the CTP XML file. Internal patchcords can also be manually provisioned.
<b>Tools/Equipment</b>	<ul style="list-style-type: none"> <li>• Cisco Transport Planner shelf layout</li> <li>• Cisco Transport Planner Internal Connections Report</li> </ul>
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a> <a href="#">NTP-G139 Verify Cisco Transport Planner Reports and Files, page 14-3</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only

- 
- Step 1** Complete the [DLP-G46 Log into CTC](#) task at the node where you want to provision the DWDM cable connections. If you are already logged in, continue with [Step 2](#).
- Step 2** Complete the “[NTP-G143 Import the Cisco Transport Planner NE Update Configuration File](#)” procedure on [page 14-47](#) to import the Cisco Transport Planner NE update file.
- Step 3** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Internal Patchcords** tabs.




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**Note** The Internal Patchcords tab does not show OPT-PRE DCU connections or span connections.

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**Note** The number of rows in the Provisioning > WDM-ANS > Internal Patchcords tab are created dynamically, as per the number of sides present in a node.

---




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**Note** On the 15454-M2 and the 15454-M6 shelves, you can create internal patchcords between the TNC and TNCE cards and the optical amplifier cards.

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- Step 4** Verify that the connections in the Internal Patchcords tab match the connections in the Cisco Transport Planner Internal Connections Report for the DWDM cards (see the “[DLP-G349 Use the Cisco Transport Planner Internal Connections Report](#)” task on [page 14-80](#)). The Internal Patchcords tab will not show OPT-PRE DCU connections or span connections.
- Step 5** Complete the “[NTP-G242 Create an Internal Patchcord Manually](#)” procedure on [page 14-114](#) for any connections that require manual provisioning, for example, to create patchcords between TXP and MXP trunk ports and OCH filter ports. If you need to delete a connection, complete the “[DLP-G355 Delete an Internal Patchcord](#)” task on [page 14-123](#).




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**Note** Connections related to optical bypass circuits must be manually provisioned.

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**Stop. You have completed this procedure.**

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# NTP-G242 Create an Internal Patchcord Manually

<b>Purpose</b>	This procedure creates an internal patchcord manually.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only


**Note**

Use only one management interface to complete the creation of internal patchcords. For example, do not begin the internal patchcord creation using the TL1 interface or CTP XML file and end the internal patchcord creation using CTC.

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

**Step 2** Click **Create**.

**Step 3** Choose one of the following link types for the internal patchcord:

- **Trunk to Trunk (L2)**—Creates a bidirectional patchcord between the trunk ports of GE\_XP and 10GE\_XP cards. If you choose this option, complete “[DLP-G354 Create an Internal Patchcord Manually Using the Trunk to Trunk \(L2\) Option](#)” task on page 14-115.
- **OCH-Trunk to OCH-Filter**—Creates an internal patchcord between an optical channel trunk port on a TXP/MXP stage card (which includes TXP, MXP, GE\_XP, 10GE\_XP, GE\_XPE, 10GE\_XPE, ADM-10G, OTU2\_XP, AR\_MXP, AR\_XP or ITU-T line cards) and an optical channel filter port on an add/drop stage card (which includes 32MUX, 40-MUX-C, 32WSS, 40-WSS-C/40-WSS-CE, 32DMX, 32DMX-O, 40DMX, 40-SMR1-C, or 40-SMR2-C cards).

You can use this option to also create an internal patchcord between an optical channel trunk port on a TXP/MXP stage card (which includes TXP, MXP, GE\_XP, 10GE\_XP, GE\_XPE, 10GE\_XPE, ADM-10G, OTU2\_XP, AR\_MXP, AR\_XP or ITU-T line cards) and the COM port on a PSM card in channel protection configuration (where, PSM card is equipped between one TXP/MXP stage and two add/drop stages). In this case, the Internal Patchcord Creation wizard will prompt you to create patchcords between the working and protect ports on the PSM card and the ports on the two different add/drop stage cards (which includes 32MUX, 40-MUX-C, 32WSS, 40-WSS-C/40-WSS-CE, 32DMX, 32DMX-O, 40DMX, 40-SMR1-C, 40-SMR2-C, or 80-WXC-C cards). If you choose this option, complete “[DLP-G547 Create an Internal Patchcord Manually Using the OCH-Trunk to OCH-Filter Option](#)” task on page 14-116.

- **OCH-Filter to OCH-Filter**—Creates an unidirectional or bidirectional internal patchcord between a MUX input port and a DMX output port. If you choose this option, complete “[DLP-G548 Create an Internal Patchcord Manually Using the OCH-Filter to OCH-Filter Option](#)” task on page 14-118.
- **OTS to OTS**—Creates a unidirectional or bidirectional internal patchcord between two optical transport section (OTS) ports, between two optical cards, between an optical card and a passive card, between two passive cards, or between the TNC or TNCE cards and an optical amplifier card. This option also includes OSC ports. If you choose this option, complete “[DLP-G549 Create an Internal Patchcord Manually Using the OTS to OTS Option](#)” task on page 14-120.

- **Optical Path**—Creates an internal patchcord between two optical cards, or between an optical card and a passive card. If you choose this option, complete “[DLP-G531 Create an Internal Patchcord Manually Using the Optical Path Option](#)” task on page 14-122.



**Note** Manual creation of OTS/OCH to OTS/OCH internal patchcords is not required for standard DWDM nodes. However, manual creation might be required for non-standard nodes, for example, a hub node that has wavelength selective switches installed. In such cases, manual creation is recommended by Cisco Transport Planner.



**Note** To successfully create an internal patchcord between WSS/DMX channel port and TXP trunk port, choose the TXP as the source endpoint and WSS/DMX as the destination endpoint.

**Stop. You have completed this procedure.**

## DLP-G354 Create an Internal Patchcord Manually Using the Trunk to Trunk (L2) Option

<b>Purpose</b>	This task creates a bidirectional internal patchcord between the trunk ports of two GE_XP or 10GE_XP cards.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only

- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Internal Patchcord** tabs.
- Step 2** Click **Create**.
- Step 3** On the Internal Patchcord Type Selection page, choose the patchcord type as Trunk to Trunk (L2) and click **Next**.
- Step 4** On the Internal Patchcord Origination page, provision the internal patchcord origination parameters:
- **Slot**—Choose the slot containing the card where the internal patchcord originates.
  - **Tx Port**—Choose the TX port where the internal patchcord originates. CTC automatically displays the list of ports that are available depending on the link type you choose.
- Step 5** Click **Next**.
- Step 6** In the Internal Patchcord Termination page, provision the internal patchcord termination parameters:
- **Slot**—Choose the slot containing the card where the internal patchcord terminates.
  - **Port**—Choose the RX port where the internal patchcord terminates. CTC automatically displays the list of ports that are available depending on the link type you choose.

- Step 7** Click **Next**.
- Step 8** Review the display-only information on the Internal Patchcord Origination Reverse page. This page shows the slot, and port that CTC will use for the opposite internal patchcord origination route.
- Step 9** Click **Next**.
- Step 10** Review the information displayed on the Internal Patchcord Termination Reverse page. This display-only page shows the slot, and port that CTC will use for the reverse internal patchcord termination route.
- Step 11** Click **Finish**. The new internal patchcord appears in the Internal Patchcord table.
- Step 12** Return to your originating procedure (NTP).
- 

## DLP-G547 Create an Internal Patchcord Manually Using the OCH-Trunk to OCH-Filter Option

<b>Purpose</b>	This task creates a bidirectional internal patchcord between a TXP, MXP, or XP trunk and a DWDM add and drop channel port.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only

---

- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Internal Patchcord** tabs.
- Step 2** Click **Create**.
- Step 3** On the Internal Patchcord Type Selection page, choose the patchcord type as OCH-Trunk to OCH-Filter option and click **Next**.
- Step 4** On the Internal Patchcord OCH Attributes page, provision the following parameters:
- **OCHNC Wavelength**—Sets the OCHNC wavelength for the OCH trunk to OCH filter internal patchcord. Use the unnamed band selection box below to display C-band or L-band wavelengths in the OCHNC Wavelength field. Provision the OCHNC wavelength to the wavelength provisioned for the TXP, MXP, GE\_XP, 10GE\_XP, GE\_XPE, or 10GE\_XPE, ADM-10G, OTU2\_XP, AR\_MXP, AR\_XP or ITU-T line card trunk port.
  - **PSM Protection**—Select this check box if you have provisioned a PSM card in channel protection configuration.
  - **Colorless**—Select this check box if you want to create a colorless patchcord.
- Step 5** Click **Next**.
- Step 6** On the Internal Patchcord Origination page, provision the internal patchcord origination parameters:
- **Slot**—Choose the slot containing the card where the internal patchcord originates.
  - **Tx Port**—Choose the TX port where the internal patchcord originates. CTC automatically displays the list of ports that are available depending on the link type you choose.

- Step 7** In the Internal Patchcord Termination page, provision the internal patchcord termination parameters:
- **Type**—Choose the type of card (optical or passive card) where the internal patchcord terminates.
  - **Side**—Choose the side where the internal patchcord terminates. This field is visible only if you have chosen the type as Optical Card.
  - **Slot**—Choose the slot containing the card where the internal patchcord terminates. This field is visible only if you have chosen the type as Optical Card.
  - **Unit**—Choose the passive card where the internal patchcord terminates. This field is visible only if you have chosen the type as Passive Card.
  - **Rx Port**—Choose the RX port where the internal patchcord terminates. CTC automatically displays the list of ports that are available depending on the link type you choose.

**Step 8** Click **Next**.

- Step 9** In the Internal Patchcord Origination Reverse page, provision the internal patchcord parameters for the reverse internal patchcord origination route:
- **Type**—Choose the type of card (optical or passive card) where the internal patchcord originates.
  - **Side**—Choose the side where the internal patchcord originates. This field is visible only if you have chosen the type as Optical Card.
  - **Slot**—Choose the slot containing the card where the internal patchcord originates. This field is visible only if you have chosen the type as Optical Card.
  - **Unit**—Choose the passive card where the internal patchcord originates. This field is visible only if you have chosen the type as Passive Card.



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**Note** Choose the same passive card that you chose in [Step 7](#).

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- **Tx Port**—Choose the TX port where the internal patchcord originates. CTC automatically displays the list of ports that are available depending on the link type you choose.

**Step 10** Click **Next**.

- Step 11** In the internal Patchcord Termination Reverse page, provision the internal patchcord parameters for the reverse internal patchcord termination route:
- **Slot**—Choose the slot containing the card where the internal patchcord originates.
  - **Rx Port**—Choose the RX port where the internal patchcord originates. CTC automatically displays the list of ports that are available depending on the link type you choose.

**Step 12** Click **Next**.

- Step 13** Click **Finish**. The new internal patchcord appears in the Internal Patchcord table.  
Return to your originating procedure (NTP).
-

## DLP-G548 Create an Internal Patchcord Manually Using the OCH-Filter to OCH-Filter Option

<b>Purpose</b>	This task creates a unidirectional or bidirectional internal patchcord between two DWDM add and drop channel ports.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only

- 
- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Internal Patchcord** tabs.
- Step 2** Click **Create**.
- Step 3** On the Internal Patchcord Type Selection page, choose the patchcord type as OCH-Filter to OCH-Filter option and click **Next**.
- Step 4** On the Internal Patchcord OCH Attributes page, provision the following parameters:
- **OCHNC Wavelength**—Sets the OCHNC wavelength for the OCH trunk to OCH filter internal patchcord. Use the unnamed band selection box below to display C-band or L-band wavelengths in the OCHNC Wavelength field. Provision the OCHNC wavelength to the wavelength provisioned for the TXP, MXP, GE\_XP, 10GE\_XP, GE\_XPE, or 10GE\_XPE, ADM-10G, OTU2\_XP, AR\_MXP, AR\_XP or ITU-T line card trunk port.
  - **Bidirectional**—If checked, creates a bidirectional internal patchcord.
  - **PSM Protection**—Select this check box if you have provisioned a PSM card in channel protection configuration.
- Step 5** Click **Next**.
- Step 6** On the Internal Patchcord Origination page, provision the internal patchcord origination parameters:
- **Type**—Choose the type of card (optical or passive card) where the internal patchcord terminates.
  - **Side**—Choose the side where the internal patchcord terminates. This field is visible only if you have chosen the type as Optical Card.
  - **Slot**—Choose the slot containing the card where the internal patchcord terminates. This field is visible only if you have chosen the type as Optical Card.
  - **Unit**—Choose the passive card where the internal patchcord terminates. This field is visible only if you have chosen the type as Passive Card.
  - **Tx Port**—Choose the TX port where the internal patchcord terminates. CTC automatically displays the list of ports that are available depending on the link type you choose.
- Step 7** In the Internal Patchcord Termination page, provision the internal patchcord termination parameters:
- **Type**—Choose the type of card (optical or passive card) where the internal patchcord terminates.
  - **Side**—Choose the side where the internal patchcord terminates. This field is visible only if you have chosen the type as Optical Card.

- Slot—Choose the slot containing the card where the internal patchcord terminates. This field is visible only if you have chosen the type as Optical Card.
- Unit—Choose the passive card where the internal patchcord terminates. This field is visible only if you have chosen the type as Passive Card.
- Rx Port—Choose the RX port where the internal patchcord terminates. CTC automatically displays the list of ports that are available depending on the link type you choose.

**Step 8** If you did not choose bidirectional in [Step 4](#), continue with [Step 13](#). Otherwise, continue with the next step.

**Step 9** Click **Next**.

**Step 10** In the Internal Patchcord Origination Reverse page, provision the internal patchcord parameters for the reverse internal patchcord origination route:

- Type—Choose the type of card (optical or passive card) where the internal patchcord originates.
- Side—Choose the side where the internal patchcord originates. This field is visible only if you have chosen the type as Optical Card.
- Slot—Choose the slot containing the card where the internal patchcord originates. This field is visible only if you have chosen the type as Optical Card.
- Unit—Choose the passive card where the internal patchcord originates. This field is visible only if you have chosen the type as Passive Card.




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**Note** Choose the same passive card that you chose in [Step 7](#).

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- Tx Port—Choose the TX port where the internal patchcord originates. CTC automatically displays the list of ports that are available depending on the link type you choose.

**Step 11** Click **Next**.

**Step 12** In the internal Patchcord Termination Reverse page, provision the internal patchcord parameters for the reverse internal patchcord termination route:

- Type—Choose the type of card (optical or passive card) where the internal patchcord terminates.
- Side—Choose the side where the internal patchcord terminates. This field is visible only if you have chosen the type as Optical Card.
- Slot—Choose the slot containing the card where the internal patchcord terminates. This field is visible only if you have chosen the type as Optical Card.
- Unit—Choose the passive card where the internal patchcord terminates. This field is visible only if you have chosen the type as Passive Card.




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**Note** Choose the same passive card that you chose in [Step 6](#).

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- Rx Port—Choose the RX port where the internal patchcord terminates. CTC automatically displays the list of ports that are available depending on the link type you choose.

**Step 13** Click **Finish**. The new internal patchcord appears in the Internal Patchcord table. Return to your originating procedure (NTP).

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## DLP-G549 Create an Internal Patchcord Manually Using the OTS to OTS Option

<b>Purpose</b>	This task creates a unidirectional or bidirectional internal patchcord between two optical transport section (OTS) ports.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only

- 
- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Internal Patchcord** tabs.
- Step 2** Click **Create**.
- Step 3** On the Internal Patchcord Type Selection page, choose the patchcord type as OTS to OTS and click **Next**.
- Step 4** On the Internal Patchcords OTS Attributes page, provision the following parameters:
- Bidirectional—If checked, creates a bidirectional internal patchcord.
  - MPO Connection—Creates all the patchcords between two MPO connectors. If this option is checked, the bidirectional option is disabled.
  - Exclude Used Port—If checked, excludes the used ports for patchcord creation. If unchecked, more than one patchcord can be created starting from the same port.
  - Grid Filter—Select the grid option from the drop-down list.
  - Port Type—Select the port type from the drop-down list. The options are:
    - OSC only—Cards with OSC ports and OSCM cards are available for patchcord creation. The MPO Connection and Exclude Used Ports checkboxes are disabled and the Bidirectional option is checked.
    - DC only—Cards with DC ports and passive DCUs are available for patchcord creation. The MPO Connection and Exclude Used Ports checkboxes are disabled and the Bidirectional option is checked. Allows to create an internal patchcord between an optical card and a passive card.
- Step 5** Click **Next**.
- Step 6** On the Internal Patchcord Origination page, provision the internal patchcord origination parameters:
- Type—Choose the type of card (optical or passive card) where the internal patchcord originates.
  - Slot—Choose the slot containing the card where the internal patchcord originates. This field is visible only if you have chosen the type as Optical Card.
  - Unit—Choose the passive card where the internal patchcord originates. This field is visible only if you have chosen the type as Passive Card.
  - Tx Port—Choose the TX port where the internal patchcord originates. CTC automatically displays the list of ports that are available depending on the link type you choose.
  - MPO—Choose the port where the internal patchcord originates. CTC automatically displays the list of ports that are available depending on the link type you choose. This field is visible only if you have chosen MPO connection in [Step 4](#).
- Step 7** Click **Next**.

- Step 8** In the Internal Patchcord Termination page, provision the internal patchcord termination parameters:
- Type—Choose the type of card (optical or passive card) where the internal patchcord terminates.
  - Slot—Choose the slot containing the card where the internal patchcord terminates. This field is visible only if you have chosen the type as Optical Card.
  - Unit—Choose the passive card where the internal patchcord terminates. This field is visible only if you have chosen the type as Passive Card.
  - Rx Port—Choose the RX port where the internal patchcord terminates. CTC automatically displays the list of ports that are available depending on the link type you choose.
  - MPO—Choose the port where the internal patchcord originates. CTC automatically displays the list of ports that are available depending on the link type you choose. This field is visible only if you have chosen MPO connection in [Step 4](#).
- Step 9** If you did not choose bidirectional in [Step 4](#), continue with [Step 14](#). Otherwise, continue with the next step.
- Step 10** Click **Next**.
- Step 11** In the Internal Patchcord Origination Reverse page, provision the internal patchcord parameters for the reverse internal patchcord origination route:
- Type—Choose the type of card (optical or passive card) where the internal patchcord originates.
  - Side—Choose the side where the internal patchcord originates. This field is visible only if you have chosen the type as Optical Card.
  - Slot—Choose the slot containing the card where the internal patchcord originates. This field is visible only if you have chosen the type as Optical Card.
  - Unit—Choose the passive card where the internal patchcord originates. This field is visible only if you have chosen the type as Passive Card.



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**Note** Choose the same passive card that you chose in [Step 8](#).

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- Tx Port—Choose the TX port where the internal patchcord originates. CTC automatically displays the list of ports that are available depending on the link type you choose.
- Step 12** Click **Next**.
- Step 13** In the internal Patchcord Termination Reverse page, provision the internal patchcord parameters for the reverse internal patchcord termination route:
- Type—Choose the type of card (optical or passive card) where the internal patchcord terminates.
  - Side—Choose the side where the internal patchcord terminates. This field is visible only if you have chosen the type as Optical Card.
  - Slot—Choose the slot containing the card where the internal patchcord terminates. This field is visible only if you have chosen the type as Optical Card.
  - Unit—Choose the passive card where the internal patchcord terminates. This field is visible only if you have chosen the type as Passive Card.



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**Note** Choose the same passive card that you chose in [Step 6](#).

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- Rx Port—Choose the RX port where the internal patchcord terminates. CTC automatically displays the list of ports that are available depending on the link type you choose.

- Step 14** Click **Finish**. The new internal patchcord appears in the Internal Patchcord table. Return to your originating procedure (NTP).
- 

## DLP-G531 Create an Internal Patchcord Manually Using the Optical Path Option

<b>Purpose</b>	This task creates an internal patchcord manually between two optical cards or between an optical card and a passive card.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only

---

- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Internal Patchcord** tabs.
- Step 2** Click **Create**.
- Step 3** On the Internal Patchcord Type Selection page, choose the patchcord type as Optical Path and click **Next**.
- Step 4** On the Internal Patchcord Card List page, provision the following parameters:
- Card From Selection area:
    - Type—Choose the type of card (optical or passive card) where the internal patchcord originates.
    - Shelf—(Multishelf nodes only) Choose the shelf where the internal patchcord originates.
    - Slot—Choose the slot containing the card where the internal patchcord originates.
  - Card To Selection area:
    - Type—Choose the type of card (optical or passive card) where the internal patchcord terminates.
    - Shelf—(Multishelf nodes only) Choose the shelf where the internal patchcord terminates.
    - Slot—Choose the slot containing the card where the internal patchcord terminates.
  - Choose the required patchcord from the list that CTC generates.
- Step 5** Click **Next** to continue creating internal patchcords between cards and repeat [Step 4](#). In the Internal Patchcord Card List page that follows, CTC automatically populates the Card From Selection fields with the values you entered in the Card To Selection fields in the previous page.
- Step 6** After creating all the internal patchcords between cards, click **Finish**. The new internal patchcords appear on the Internal Patchcord table.
- Step 7** Return to your originating procedure (NTP).
-

## DLP-G355 Delete an Internal Patchcord

<b>Purpose</b>	This task deletes an internal patchcord.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only

- 
- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Internal Patchcord** tabs.
- Step 2** Click the connection you want to delete.
- Step 3** Click **Delete**, then click **Yes**.
- Step 4** Return to your originating procedure (NTP).
- 

## NTP-G209 Create, Edit, and Delete Optical Sides

<b>Purpose</b>	This procedure allows you to create, edit, and delete optical sides on a DWDM node.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G143 Import the Cisco Transport Planner NE Update Configuration File, page 14-47</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only



**Note**

For any node type including mesh nodes, the association between the shelf, line card and side is reported in the left top window of CTC (Vital Status Pane) in the mode view.



**Note**

For mesh nodes, the association between sides and the 40-WXC-C cards can be found in the **Provisioning > WDM-ANS > Internal Patchcords** screen.

For example:

PP-MESH, LC (A): Shelf 1, Slot 3 (40 WXC), port EXP-TX

PP-MESH, MPO (A): Shelf 1, Slot 3 (40 WXC), port EXP-RX

The above rows indicate that the:

WXC port located in Shelf 1, Slot 3 is connected to the LC connector A (Side A) on PP-MESH.

WXC port located in Shelf 1, Slot 3 is connected to the MPO connector A (Side A) on PP-MESH.

- 
- Step 1** Complete the [DLP-G46 Log into CTC](#) task at the node where you want to provision the optical side. If you are already logged in, continue with [Step 2](#).
- Step 2** As needed, complete the following tasks:
- Complete the “[DLP-G491 Create an Optical Side](#)” task on page 14-124.
  - Complete the “[DLP-G492 Edit an Optical Side](#)” task on page 14-125.
  - Complete the “[DLP-G480 Delete an Optical Side](#)” task on page 14-125.

**Stop. You have completed this procedure.**

---

## DLP-G491 Create an Optical Side

<b>Purpose</b>	This task creates an optical side. For more details on optical sides, refer to <a href="#">Chapter 12, “Node Reference.”</a>
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only

- 
- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Optical Sides** tabs.
- Step 2** Click **Create**.
- Step 3** In the Create Side dialog box, enter the following:
- Side ID—Choose a side ID (A, B,C, D, E, F, G, or H) from the drop-down list.
  - Line In—Choose an RX port from the drop-down list.
  - Line Out—Choose a TX port from the drop-down list.



**Note** For a terminal node equipped with a PSM card in line or multiplex section protection configuration, you can only choose the W-RX and W-TX ports while creating an optical side. After you create the working (w) optical side, the TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE card automatically creates the protected (p) optical side involving the P-RX and P-TX ports of the PSM card. CTC refreshes the Optical Sides tab with both the working and protected optical sides.

---

- Step 4** Return to your originating procedure (NTP).
-

## DLP-G492 Edit an Optical Side

<b>Purpose</b>	This task edits the side ID of an optical side.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only

- 
- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > WDM-ANS > Optical Sides** tabs.
- Step 2** Click the optical side that you want to edit.
- Step 3** Click **Edit**.
- Step 4** In the Edit Side ID dialog box, choose a side ID (A, B,C, D, E, F, G, or H) from the drop-down list.
- Step 5** Click **OK**.
- Step 6** Return to your originating procedure (NTP).
- 

## DLP-G480 Delete an Optical Side

<b>Purpose</b>	This task deletes an optical side.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only

- 
- Step 1** In node view (single-shelf mode) or multishelf view (multishelf mode), click **Provisioning > WDM-ANS > Optical Sides** tabs.
- Step 2** Click the optical side that you want to delete.
- Step 3** Click **Delete**.
- Step 4** In the confirmation dialog box, click **Yes** to continue.
- Step 5** Return to your originating procedure (NTP).
-

# NTP-G38 Provision OSC Terminations

<b>Purpose</b>	This procedure provisions the OSC terminations. The OSC provides a bidirectional channel that connects all nodes within a DWDM ring. The OSC carries a supervisory data channel and synchronizes clocking at network nodes. The OSC also carries a user data channel.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G143 Import the Cisco Transport Planner NE Update Configuration File, page 14-47</a>
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only

**Note**

Before provisioning OSC terminations on TNC ports carrying Fast Ethernet (FE) payloads, ensure to set the ALS mode on these ports to Disabled.

**Note**

This procedure automatically turns on any OPT-RAMP-C, OPT-RAMP-CE, or RAMAN-CTP cards installed in the DWDM ring.

**Note**

The DCCs, GCCs, and OSCs should not be provisioned between SONET (ANSI) and SDH (ETSI) nodes using CTC or TL1 because they cannot operate between SONET and SDH nodes. These communication channels should be provisioned on similar nodes, such as SONET-to-SONET or SDH-to-SDH.

**Note**

In a pure ONS 15454 M6 network configuration, provision the OSC in GE or FE SFP mode. If an OC3 OSC is mandatory, then the network must be timing-synchronized as SONET. Identify the master node and provide external timing signal to the BITS input pins of the master node and provision line timing to the remaining nodes in the network.

In a mixed ONS 15454 and ONS 15454 M6 network configuration, provision the OSC only in OC3 SFP mode. Identify the master node and provide external timing signal to the BITS input pins of the master node and provision line timing to the remaining nodes in the network.

- 
- Step 1** Complete the [DLP-G46 Log into CTC](#) task at the node where you want to provision the OSC terminations. If you are already logged in, continue with [Step 2](#).
- Step 2** In node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning > Comm Channels > OSC** tabs.
- Step 3** In the OSC Terminations area, click **Create**.
- Step 4** In the Create OSC Terminations dialog box, choose the ports where you want to create the OSC termination. To select more than one port, press the **Shift** key (to select a range of ports) or the **Ctrl** key (to select multiple individual ports).



---

**Note** The number of OSC terminations that you create depends on the node type defined by Cisco Transport Planner. Terminal nodes require one OSC termination. Hub, OADM, and ROADM nodes require two OSC terminations.

---

**Step 5** In the Layer 3 area, check the OSI box if the following conditions are met:

- The OSC termination is between the ONS 15454 and another ONS node.
- Third party NEs that use the OSI protocol stack are on the same network.

If you checked OSI, complete the following steps. If not, continue with [Step 6](#).

a. Click **Next**.

b. Provision the following fields:

- Router—Choose the OSI router.
- ESH—Set the ESH propagation frequency. End system NEs transmit ESHs to inform other ESs and ISs about the NSAPs they serve. The default is 10 seconds. The range is 10 to 1000 seconds.
- ISH—Sets the ISH PDU propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the IS NETs it serves. The default is 10 seconds. The range is 10 to 1000 seconds.
- IIH—Sets the IIH PDU propagation frequency. The IS-IS Hello PDUs establish and maintain adjacencies between ISs. The default is 3 seconds. The range is 1 to 600 seconds.
- Metric—Sets the cost for sending packets on the LAN subnet. The IS-IS protocol uses the cost to calculate the shortest routing path. The default metric cost for LAN subnets is 20. It normally should not be changed.

**Step 6** Click **Finish**. Ports are automatically placed in service. The following alarms might appear in the node view (single-shelf mode) or multishelf view (multishelf mode) Alarms tab Description field. They will remain until all the network OSC connections between the adjacent nodes are created:

- SDCC Termination Failure (ANSI) or RS-DCC Termination Failure (ETSI) on the OSCM or OSC-CSM card
- LOS on the OC-3 port (Port 1) on the OSCM, OSC-CSM, or OPT-BST card
- OPWR-LFAIL on the OPT-BST or OSC-CSM card



---

**Note** After the OSC termination is created, the line ports are placed in service and span power levels are checked.

---

**Stop. You have completed this procedure.**

---

# NTP-G37 Run Automatic Node Setup

<b>Purpose</b>	This procedure runs the Launch ANS function. Launch ANS applies the ANS parameters (calculated in the “ <a href="#">NTP-G143 Import the Cisco Transport Planner NE Update Configuration File</a> ” procedure on page 14-47) to the node and to the ports for cards installed in the node. The applied ANS parameters include span loss values, threshold values, power references, and others. Launch ANS also sets the VOA references based on the calculated power references.
<b>Tools/Equipment</b>	The Cisco Transport Planner Installation Parameters file
<b>Prerequisite Procedures</b>	<a href="#">NTP-G139 Verify Cisco Transport Planner Reports and Files</a> , page 14-3 <a href="#">NTP-G30 Install the DWDM Cards</a> , page 14-64 <a href="#">NTP-G152 Create and Verify Internal Patchcords</a> , page 14-113 <a href="#">NTP-G143 Import the Cisco Transport Planner NE Update Configuration File</a> , page 14-47
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only



## Note

ANS provisioning parameters must be calculated by Cisco Transport Planner. ANS provisioning parameters must be manually changed only by Cisco qualified personnel. Setting wrong ANS provisioning (either as preamplifier or booster input power thresholds) may impact traffic.

- 
- Step 1** Complete the [DLP-G46 Log into CTC](#) task at the node where you want to run ANS. If you are already logged in, continue with [Step 2](#).
  - Step 2** Referring to the Cisco Transport Planner Installation Parameters (see [Table 14-1 on page 14-4](#)), identify the parameters that have a Yes in the Manually Set column. If there are no parameters that have a Yes in the Manually Set column, continue with [Step 6](#).
  - Step 3** In CTC, display the card where the parameter is to be manually provisioned in card view.
  - Step 4** Enter the specified Calibration parameter from the Cisco Transport Planner Installation Parameters table. Click **Apply**.
  - Step 5** Repeat Steps [2](#) through [4](#) for each parameter in the Cisco Transport Planner Installation Parameters table that displays Yes in the Manually Set field.
  - Step 6** Change to node view (single-shelf mode) or multishelf view (multishelf mode).
  - Step 7** Click the **Provisioning > WDM-ANS > Port Status** tabs.
  - Step 8** Click **Launch ANS**.
  - Step 9** In the Apply Launch ANS dialog box, click **Yes**.
  - Step 10** In the Launch ANS confirmation dialog box, click **OK**.
  - Step 11** Verify that one of the following status appears in the Result column for all the ports:
    - Success - Changed—The parameter setpoint was recalculated successfully.
    - Success - Unchanged—The parameter setpoint did not need recalculation.
    - Not applicable—When ports are not in use.

If one of the following statuses is shown, complete the provided instructions:

- **Fail - Out of Range**—The calculated setpoint is outside the expected range. If this status appears, do not continue until you have investigated and cleared the cause. This status might appear because of an error in the Cisco Transport Planner file. It could also appear because the insertion loss of the installed cards is greater than the estimated insertion loss calculated by Cisco Transport Planner. If so, the Cisco Transport Planner file will need to be recalculated. All of these possible causes should be investigated. Contact your next level of support if you are unable to clear this status.
- **Fail - Missing Input Parameter**—The parameter could not be calculated because the required provisioning data is unknown or unavailable. If this status appears, check if the correct Cisco Transport Planner file was imported.
- **Unchanged - Port in IS**—The parameter could not be calculated because the port is in service. This status should normally not appear at this point in node turn-up. If it does, display the card in card view, change the port administrative state to OOS,DSL (ANSI) or Locked,disabled (ETSI), and repeat Steps 6 through 11.



**Note** If the ports that are in service carry circuits, you must delete the circuits before you can place the ports out of service. See the “[DLP-G347 Delete Optical Channel Client Connections](#)” task on page 16-26, the “[DLP-G418 Delete an Optical Channel Trail](#)” task on page 16-37, or the “[DLP-G106 Delete Optical Channel Network Connections](#)” task on page 16-46.

**Stop. You have completed this procedure.**

## NTP-G39 Verify OSCM Transmit Power

<b>Purpose</b>	This procedure verifies that the transmit power for the ONS 15454 OSCM and the OSC-CSM cards is correct.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G37 Run Automatic Node Setup</a> , page 14-128
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Superuser only



**Note** Throughout this procedure, Side A refers to Slots 1 through 6, and Side B refers to Slots 12 through 17.

- Step 1** Complete the [DLP-G46 Log into CTC](#) task at the node where you want to verify the OSCM or OSC-CSM transmit power. If you are already logged in, continue with [Step 2](#).
- Step 2** Disable automatic laser shutdown (ALS) on Side A or (for terminal nodes) the terminal side OSCM or OSC-CSM card:
- 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.
  - Click the **Maintenance > ALS** tabs.
  - From the ALS Mode drop-down list, choose **Disable**.

- d. Click **Apply**. Click **Yes** in the confirmation dialog box.
- Step 3** If an OSC-CSM or OSCM card is installed on Side B, complete the following steps. If not, continue with [Step 4](#).
- In the node view (single-shelf mode) or shelf view (multishelf mode), double-click the Side B OSCM or OSC-CSM card.
  - Click the **Maintenance > ALS** tabs.
  - From the ALS Mode drop-down list, choose **Disable**.
  - Click **Apply**. Click **Yes** in the confirmation dialog box.
- Step 4** Complete the “[DLP-G314 Verify OSCM Transmit Power](#)” task on page 14-130.
- Step 5** Change ALS to Auto Restart on the Side A or (for terminal nodes) the terminal side OSCM or OSC-CSM card:
- 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.
  - Click the **Maintenance > ALS** tabs.
  - From the ALS Mode drop-down list, choose **Auto Restart**.
  - Click **Apply**. Click **Yes** in the confirmation dialog box.
- Step 6** 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 Verify OSCM Transmit Power

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

- 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 Run Automatic Node Setup](#)” procedure on page 14-128.
    - Create the OSC channels using the “[NTP-G38 Provision OSC Terminations](#)” procedure on page 14-126.
  - 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-G163 Upgrade Nodes in Single-Shelf Mode to Multishelf Mode

<b>Purpose</b>	This procedure upgrades nodes in single-shelf mode to multishelf mode.
<b>Tools/Equipment</b>	The node you plan to use as the node controller must be equipped with optical units and cannot have a cross-connect card installed. Any nodes that you plan to add to the multishelf configuration as subtending shelves can be equipped with transponder and muxponder units. For more information on multishelf configurations, see <a href="#">Chapter 12, “Node Reference.”</a>
<b>Prerequisite Procedures</b>	<p><a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a></p> <p>One of the following procedures in the <i>Cisco ONS 15454 Hardware Installation Guide</i>:</p> <ul style="list-style-type: none"> <li>“<a href="#">NTP-G301 Connect the ONS 15454 Multishelf Node and Subtending Shelves to an MS-ISC-100T Card</a>”, or</li> <li>“<a href="#">NTP-G302 Connect the ONS 15454 Multishelf Node and Subtending Shelves to a Catalyst 2950</a>”</li> <li>“<a href="#">NTP-G308 Connect the ONS 15454 M6 Multishelf Node and the ONS 15454 M6 Subtending Shelves</a>”</li> <li>“<a href="#">DLP-G682 Connect the ONS 15454 M6 as the Node Controller in a Mixed Multishelf Configuration</a>”</li> </ul>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Superuser only

**Caution**

An optical shelf in a multishelf configuration must be provisioned as the node controller shelf and not a subtending shelf, otherwise traffic will be dropped. If no slots are available on an optical shelf to install the MS-ISC-100T cards needed for a node controller shelf, install and configure the Cisco Catalyst 2950. See the “NTP-G302 Connect the ONS 15454 Multishelf Node and Subtending Shelves to a Catalyst 2950” procedure in the *Cisco ONS 15454 Hardware Installation Guide*.

**Step 1** Complete the [DLP-G46 Log into CTC](#) task at the node that you want to configure as a multishelf node.

**Step 2** If you want to configure a shelf as the node controller, continue with [Step 3](#). If you want to configure a shelf as a subtending shelf, continue with [Step 4](#).

**Step 3** To set up the login node as the node controller, complete the following steps:

- a. In node view (single-node mode) or multishelf view (multishelf mode), click the **Provisioning > General > Multishelf Config** tabs.
- b. Click **Enable as Node Controller**.
- c. From the LAN Config drop-down list, complete one of the following:
  - Choose **Ethernet Switch** if MS-ISC-100T cards or the Catalyst 2950 switches are already installed and configured.
  - Choose **Stand-Alone** if MS-ISC-100T cards are not installed yet but will be in the final layout or if this is a line amplifier or an OSC-only site. This option will allow a safe migration of the TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE database when the multishelf configuration is complete.
- d. Click **Apply**.
- e. In the confirmation dialog box, click **Yes** to allow the node to reboot. The CTC view changes to network view and the node icon changes to gray. Wait for the reboot to finish. (This might take several minutes.)
- f. After the node reboots, double-click the node. The multishelf view appears.



**Note** The shelf ID of the node controller is automatically assigned as 1.

**Step 4** To add a node as a subtending shelf in the multishelf configuration, complete the following:

- a. In multishelf view, right-click in the white space in the rack and choose **Add Shelf**.
- b. Select the type of subtending shelf (ONS 15454 or ONS 15454 M6).
- c. In the Shelf ID Selection dialog box, choose a shelf ID (from 2 to 30) from the drop-down list.
- d. Click **OK**. The shelf appears in the multishelf view.
- e. Preprovision the new shelf so that it has the same provisioning as the actual shelf that you will add as the subtending shelf:

**Caution**

If the subtending shelf is not preprovisioned, traffic will be lost.

- Cards, PPMs, administrative states, client and trunk port configuration—For more information on card and port settings, see [Chapter 11, “Provision Transponder and Muxponder Cards.”](#)
- Timing—For more information, see the [“NTP-G53 Set Up Timing” procedure on page 15-27.](#)

- GCC—For more information, see the “[DLP-G76 Provision DCC/GCC Terminations](#)” task on page 16-81.
- f. Disconnect the cross-over (CAT-5) LAN cable from the RJ-45 (LAN) port of the ONS 15454 subtending shelf TCC2/TCC2P/TCC3 card in Slot 7 or Slot 11, or from the EMS port of ONS 15454 M6 subtending shelf.
- g. Connect your Windows PC or Solaris workstation NIC to the RJ-45 (LAN) port on the subtending shelf ONS 15454 TCC2/TCC2P/TCC3 card in Slot 7 or Slot 11, or to the EMS port of the ONS 15454 M6 subtending shelf.
- h. Complete the [DLP-G46 Log into CTC](#) task at the subtending shelf.
- i. Click the **Provisioning > General > Multishelf Config** tabs.
- j. Click **Enable as Subtended Shelf**.
- k. Select the appropriate subtending shelf (ONS 15454 or ONS 15454 M6).
- l. From the Shelf ID drop-down list, choose the shelf ID that you created in Step c.
- m. Click **Apply**.
- n. In the confirmation dialog box, click **Yes** to reboot the shelf. The CTC view changes to network view and the node icon changes to gray. Wait for the reboot to finish. (This might take several minutes.)
- o. Disconnect your Windows PC or Solaris workstation network interface card (NIC) from the RJ-45 (LAN) port of the subtending shelf TCC2/TCC2P/TCC3 card in Slot 7 or Slot 11, or from the EMS port of the ONS 15454 M6 subtending shelf.
- p. Reconnect the cross-over (CAT-5) LAN cable (disconnected in Step f) to the RJ-45 (LAN) port of the subtending shelf TCC2/TCC2P/TCC3 card in Slot 7 or Slot 11, or to the EMS port of the ONS 15454 M6 subtending shelf.




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**Note** The Ethernet cable must be connected to the subtended shelf TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE card soon after this TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE card completes its boot phase (when it becomes active and its peer TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE card starts rebooting). Connecting it before the TCC2/TCC2P/TCC3/TNC/TNCE/TSC/TSCE card completes its boot phase is a risk in the conversion process. Connecting it long time after completion of the boot phase might affect traffic due to missing provisioning.

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- q. Repeat Steps a through p to set up additional subtending shelves.




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**Note** Cisco Transport Manager (CTM) users can use the CTM NE Explorer to monitor and configure single-shelf and multishelf nodes. When the upgrade is complete, the original individual subtending shelves will remain the CTM network view and must be manually deleted. For detailed information, refer to the *Cisco Transport Manager User Guide*, Appendix B, “NE Explorer Information.”

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**Stop. You have completed this procedure.**

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## NTP-G210 Provision Node for SNMPv3

<b>Purpose</b>	This procedure provisions the node to allow SNMPv3 access.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a>
<b>Required/As Needed</b>	Required if you want to implement SNMPv3 on your network.
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

- 
- Step 1** Complete the [DLP-G46 Log into CTC](#) task on the node on which you want to set up SNMPv3. If you are already logged in, go to [Step 2](#).
- Step 2** In node view, click the **Provisioning > SNMP > SNMP V3** tabs.
- Step 3** Complete the following tasks as required:
- [DLP-G496 Create an SNMPv3 User, page 14-138](#)
  - [DLP-G498 Create Group Access, page 14-139](#)




---

**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, page 14-139](#)




---

**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 Provision Node to Send SNMPv3 Traps

<b>Purpose</b>	This procedure provisions a node to send SNMP v3 traps.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a>
<b>Required/As Needed</b>	Required if you want to implement SNMPv3 on your network.
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

- 
- Step 1** Complete the [DLP-G46 Log into CTC](#) task on the node on which you want to set up SNMPv3. If you are already logged in, go to [Step 2](#).
- Step 2** In node view, click the **Provisioning > SNMP > SNMP V3** tabs.
- Step 3** Complete the following tasks as required:

- [DLP-G496 Create an SNMPv3 User, page 14-138](#)
- [DLP-G498 Create Group Access, page 14-139](#)
- [DLP-G497 Create MIB Views, page 14-139](#)
- [DLP-G501 Create Notification Filters, page 14-142](#)
- [DLP-G499 Configure SNMPv3 Trap Destination, page 14-140](#). 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 Provision a GNE/ENE to Manage an ENE using SNMPv3

<b>Purpose</b>	This procedure describes how to manually configure a GNE/ENE to allow the NMS to manage an ENE using SNMPv3.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a>
<b>Required/As Needed</b>	Required if you want to implement SNMPv3 on your network.
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

---

- Step 1** Complete the [DLP-G46 Log into CTC](#) task on the node on which you want to set up SNMPv3. If you are already logged in, go to [Step 2](#).
- Step 2** Go to network view.
- Step 3** Double-click the ENE.
- Step 4** Click **Provisioning > SNMP > SNMP V3 > General** and note the context engine ID. The is required in [Step 8](#).
- Step 5** Double-click the GNE.
- Step 6** Complete the “[DLP-G496 Create an SNMPv3 User](#)” task on [page 14-138](#) to create an SNMPv3 user on the GNE.
- Step 7** Complete the following tasks as needed on the ENE:
- [DLP-G496 Create an SNMPv3 User, page 14-138](#)
  - [DLP-G498 Create Group Access, page 14-139](#)
  - [DLP-G497 Create MIB Views, page 14-139](#)
- Step 8** Complete the “[DLP-G502 Manually Configure the SNMPv3 Proxy Forwarder Table](#)” task on [page 14-142](#). Use the from [Step 4](#), the local user details created in [Step 6](#), and the remote user created in [Step 7](#).

**Stop. You have completed this procedure.**

---

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

<b>Purpose</b>	This procedure describes how to automatically configure a GNE to allow an NMS to manage an ENE using SNMPv3.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a>
<b>Required/As Needed</b>	Required if you want to implement SNMPv3 on your network.
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

- 
- Step 1** Complete the [DLP-G46 Log into CTC](#) task on the node on which you want to set up SNMPv3. If you are already logged in, go to [Step 2](#).
- Step 2** Go to network view.
- Step 3** Double-click the GNE.
- Step 4** Complete the “[DLP-G496 Create an SNMPv3 User](#)” task on page 14-138 to create an SNMPv3 user on the GNE.
- Step 5** Complete the “[DLP-G503 Automatically Configure the SNMPv3 Proxy Forwarder Table](#)” task on page 14-143. Use the GNE user that you defined in [Step 4](#) 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 Provision a GNE/ENE to Send SNMPv3 Traps from an ENE using SNMPv3

<b>Purpose</b>	This procedure describes how to manually configure the GNE/ENE to allow an ENE to send SNMPv3 traps to the NMS.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation, page 14-4</a>
<b>Required/As Needed</b>	Required if you want to implement SNMPv3 on your network.
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

- 
- Step 1** Complete the [DLP-G46 Log into CTC](#) task on the node on which you want to set up SNMPv3. If you are already logged in, go to [Step 2](#).

- Step 2** Go to network view.
- Step 3** Double-click the GNE.
- Step 4** Complete the “[DLP-G496 Create an SNMPv3 User](#)” task on page 14-138 to create an SNMPv3 user on the GNE.
- Step 5** On the GNE, complete the “[DLP-G499 Configure SNMPv3 Trap Destination](#)” task on page 14-140. 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 4](#). Also, specify a target tag name.
- Step 6** Double-click the ENE.
- Step 7** Complete the “[DLP-G496 Create an SNMPv3 User](#)” task on page 14-138 to create an SNMPv3 user on the ENE.
- Step 8** Complete the following tasks as required:
- [DLP-G498 Create Group Access](#), page 14-139 to create a group on the ENE
  - [DLP-G497 Create MIB Views](#), page 14-139 to create a MIB view on the ENE
  - [DLP-G501 Create Notification Filters](#), page 14-142
- Step 9** On the ENE, complete the “[DLP-G499 Configure SNMPv3 Trap Destination](#)” task on page 14-140. 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 7](#).
- Step 10** From the network view, click the **Provisioning > SNMPv3** tabs.
- Step 11** Complete the “[DLP-G504 Manually Configure the SNMPv3 Proxy Trap Forwarder Table](#)” task on page 14-144.
- 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 5](#), and the incoming user details configured in [Step 7](#).
- Stop. You have completed this procedure.**
- 

## NTP-G215 Automatically Provision a GNE/ENE to Send SNMPv3 Traps from an ENE Using SNMPv3

<b>Purpose</b>	This procedure describes how to automatically configure the GNE/ENE to allow an ENE to send SNMPv3 traps to the NMS.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">NTP-G22 Verify Common Card Installation</a> , page 14-4
<b>Required/As Needed</b>	Required if you want to implement SNMPv3 on your network.
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Provisioning or higher

---

- Step 1** Complete the [DLP-G46 Log into CTC](#) task on the node on which you want to set up SNMPv3. If you are already logged in, go to [Step 2](#).
- Step 2** Go to Network View.

- Step 3** Double-click the GNE.
- Step 4** Complete the task “[DLP-G496 Create an SNMPv3 User](#)” task on page 14-138 to create an SNMPv3 user on the GNE.
- Step 5** On the GNE, complete the following tasks:
- [DLP-G499 Configure SNMPv3 Trap Destination](#), page 14-140. 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 Configure the SNMPv3 Proxy Trap Forwarder Table](#), page 14-145. Use the target tag configured in [Step 4](#). 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 Create an SNMPv3 User

<b>Purpose</b>	This procedure creates an SNMPv3 user.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

---

- Step 1** In node view, click the **Provisioning > SNMP > SNMP V3 > User** 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 six and a maximum of 20 alphanumeric (a-z, A-Z, 0-9) characters. For TL1 compatibility, the user name must be of 6 to 10 characters.
  - **Group Name**—Specify the group to which the user belongs.
  - **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 NONE or DES as the privacy authentication algorithm.

- Password—Enter a password if you select DES.

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

## DLP-G497 Create MIB Views

<b>Purpose</b>	This procedure creates an SNMPv3 MIB view.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

---

- Step 1** In node view, click the **Provisioning > SNMP > SNMP V3 > 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 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-G498 Create Group Access

<b>Purpose</b>	This procedure creates a user group and configures the access parameters for the users in the group.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

---

- Step 1** In node view, click the **Provisioning > SNMP > SNMP V3 > 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.
- **Security Level**—The security level for which the access parameters are defined. 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.
- **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 (NTP).

---

## DLP-G499 Configure SNMPv3 Trap Destination

<b>Purpose</b>	This procedure provisions SNMPv3 trap destination.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

---

**Step 1** In node view, click the **Provisioning > SNMP > SNMP V3 > 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 Create Notification Filters”](#) task on page 14-142.
- **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** Click **OK** to save the information.

**Step 5** Return to your originating procedure (NTP).

---

## DLP-G500 Delete SNMPv3 Trap Destination

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

---

**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 Create Notification Filters

<b>Purpose</b>	This procedure creates SNMPv3 notification filters.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-G46 Log into CTC</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

- 
- 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 Configure the SNMPv3 Proxy Forwarder Table

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

- 
- Step 1** In network view, click **Provisioning > SNMPv3**.
- Step 2** In the SNMPv3 Proxy Server area, complete the following:
- Select the GNE to be used as the SNMPv3 proxy server from the drop-down list.
  - 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 **Manual Create**.
- Step 4** In the Manual Configuration of SNMPv3 Proxy Forwarder dialog box, enter the following information:

- Target IP 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 or DES as the privacy authentication algorithm.
  - Password—Enter the password if you select DES. The password should not exceed 64 characters.

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

**Step 6** Return to your originating procedure (NTP).

## DLP-G503 Automatically Configure the SNMPv3 Proxy Forwarder Table

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

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

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

- Select the GNE to be used as the SNMPv3 proxy server from the drop-down list.
- 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 (NTP).

## DLP-G504 Manually Configure the SNMPv3 Proxy Trap Forwarder Table

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

- Step 1** In network view, click **Provisioning > SNMPv3** tabs.
- Step 2** In the SNMPv3 Proxy Server area, complete the following:
- Select the GNE to be used as the SNMPv3 proxy server from the drop-down list.
  - 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 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. 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 or DES as the privacy authentication algorithm. Encryption is disabled if NONE is selected.
  - Password—Enter the password if you select DES. 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 Configure the SNMPv3 Proxy Trap Forwarder Table

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

---

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

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

- Select the GNE to be used as the SNMPv3 proxy server from the drop-down list.
- 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 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 (NTP).

---