



Turn Up a DWDM Node

This chapter explains how to provision a single Cisco ONS 15454 dense wavelength division multiplexing (DWDM) or a single hybrid (TDM and DWDM) node and turn it up for service, including node name, date and time, timing references, network attributes such as IP address and default router, users and user security, card installation, and DWDM connections.



Note

Procedures in this chapter require Cisco MetroPlanner, a DWDM planning tool provided to you by your Cisco account representative. You enter your DWDM network topology and traffic requirements into MetroPlanner. MetroPlanner 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 MetroPlanner, contact your Cisco account representative.

Before You Begin

Complete the procedures and tasks listed in [Table 5-1](#) for the node type you are provisioning (DWDM or hybrid) before starting procedures in this chapter:

Table 5-1 DWDM and Hybrid Node Installation Road Map

Chapter	DWDM Node	Hybrid (TDM and DWDM) Node
Chapter 1, “Install the Shelf and Backplane Cable”	All procedures and tasks	All procedures and tasks
Chapter 2, “Install Cards and Fiber-Optic Cable”	DLP-A36 Install the TCC2 Cards, page 2-7	DLP-A36 Install the TCC2 Cards, page 2-7 DLP-A37 Install the XC, XCVT, or XC10G Cards, page 2-9

Table 5-1 DWDM and Hybrid Node Installation Road Map (continued)

Chapter	DWDM Node	Hybrid (TDM and DWDM) Node
Chapter 3, “Connect the PC and Log into the GUI”	All procedures and tasks	All procedures and tasks
Chapter 4, “Turn Up Node”	NTP-A24 Verify Card Installation, page 4-2 NTP-A30 Create Users and Assign Security, page 4-4 NTP-A25 Set Up Name, Date, Time, and Contact Information, page 4-7 NTP-A169 Set Up CTC Network Access, page 4-9 NTP-A27 Set Up the ONS 15454 for Firewall Access, page 4-19 NTP-A28 Set Up Timing, page 4-22¹ NTP-A256 Set Up SNMP, page 4-33	NTP-A24 Verify Card Installation, page 4-2 NTP-A30 Create Users and Assign Security, page 4-4 NTP-A25 Set Up Name, Date, Time, and Contact Information, page 4-7 NTP-A169 Set Up CTC Network Access, page 4-9 NTP-A27 Set Up the ONS 15454 for Firewall Access, page 4-19 NTP-A28 Set Up Timing, page 4-22¹ NTP-A256 Set Up SNMP, page 4-33

1. External timing only; line timing with an OSCM or OSC-CSM timing reference is performed in this chapter.

This section lists the procedures (NTPs) that you need to complete to turn up a DWDM node. Turn to a procedure for applicable tasks (DLPs).

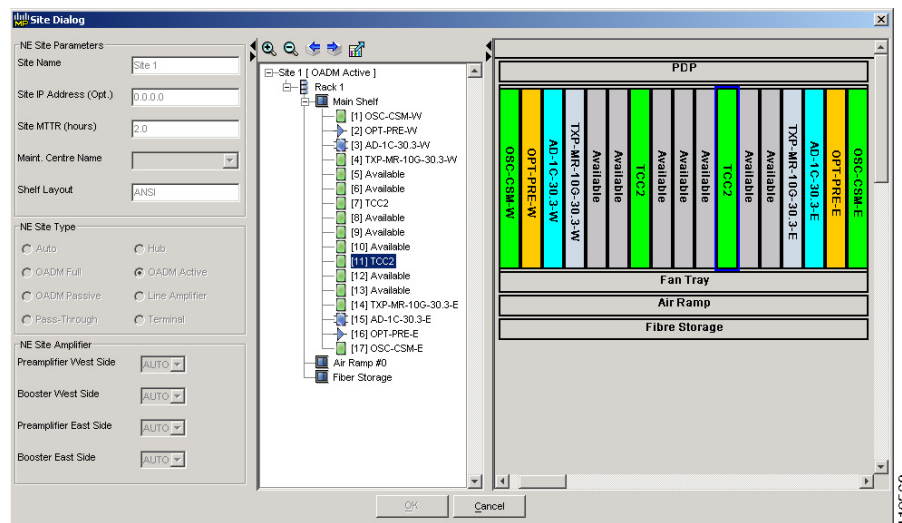
- [NTP-A268 Install the DWDM or Hybrid Node Cards, page 5-3](#)—Complete this procedure first.
- [NTP-A269 Provision the DWDM Connections, page 5-5](#)—Complete this procedure next.
- [NTP-A270 Run Automatic Node Setup, page 5-9](#)—Complete this procedure next.
- [NTP-A271 Verify OSCM and OSC-CSM Transmit Power, page 5-12](#)—Complete this procedure next.
- [NTP-A273 Terminal and Hub Node Acceptance Test, page 5-13](#)—Complete this procedure to test terminal and hub nodes.
- [NTP-A272 View DWDM Node Parameters, page 5-15](#)—Complete this procedure, as needed, to view or modify DWDM parameters.

NTP-A268 Install the DWDM or Hybrid Node Cards

Purpose	This procedure installs cards in DWDM or hybrid (DWDM and TDM) nodes.
Tools/Equipment	None
Prerequisite Procedures	A DWDM network plan calculated by Cisco MetroPlanner. MetroPlanner is a planning tool available from your Cisco account representative that calculates the DWDM card locations based on your network topology and traffic requirements.
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Superuser

Step 1 In MetroPlanner, display the NE Site Dialog for the node you are provisioning ([Figure 5-1](#)).

Figure 5-1 MetroPlanner NE Site Dialog



- Step 2** Complete the “[DLP-A60 Log into CTC](#)” task on page 3-24 at the DWDM node you want to provision.
- Step 3** Complete the “[DLP-A330 Preprovision a Slot](#)” task on page 5-5 for each DWDM card based on the NE site parameters provided by MetroPlanner.
- Step 4** If your site plan requires AIC, AIC-I, transponder (TXP) or muxponder (MXP) cards, complete the following procedures and tasks. If not, continue with [Step 5](#).
- To install AIC or AIC-I cards, complete the “[DLP-A38 Install the Alarm Interface Controller or Alarm Interface Controller–International Card](#)” task on page 2-11.
 - To install TXP and MXP cards, complete the “[NTP-A249 Install the Transponder and Muxponder Cards](#)” procedure on page 2-14.



Note The MetroPlanner NE site plan does not show AIC and AIC-I card locations.

- Step 5** Install the DWDM cards in their preprovisioned slots. See the “[NTP-A242 Install the DWDM Cards](#)” procedure on page 2-25.
- Step 6** If OPT-PRE (amplifier) cards are installed, perform one of the following:
- If dispersion compensating cards (DCUs) are required, install the DCUs in the DCU shelf assembly according to the NE site plan provided by MetroPlanner. See the “[NTP-A243 Install the DWDM Dispersion Compensating Cards](#)” procedure on page 2-28.
 - If DCUs are not required, connect the two OPT-PRE DC ports with the attenuated patch cord shipped with the OPT-PRE card.

**Note**

If the DCU chassis is not installed, complete the “[DLP-A412 Install the DCU Shelf Assembly](#)” task on page 1-65.

- Step 7** If transponder or muxponder cards are installed and your site plan requires Y cable protection, complete the “[DLP-A252 Create a Y-Cable Protection Group](#)” task on page 4-32. If not, continue with [Step 9](#).
- Step 8** (hybrid nodes only) Install the OC-N and DS-N cards using the following procedures:
- [NTP-A16 Install the OC-N Cards](#), page 2-12
 - [NTP-A17 Install the Electrical Cards](#), page 2-16
- Step 9** (hybrid nodes only) If OC-N or electrical cards are installed and your site plan requires card protection, complete one or more of the following tasks. If not, continue with [Step 10](#).
- [DLP-A71 Create a 1:1 Protection Group](#), page 4-28 for 1:1 electrical card protection.
 - [DLP-A72 Create a 1:N Protection Group](#), page 4-29 for 1:N electrical card protection.
 - [DLP-A73 Create a 1+1 Protection Group](#), page 4-30 for 1+1 OC-N card protection.
- Step 10** Click the **Alarms** tab.
- Verify that the alarm filter is not on. See the “[DLP-A227 Disable Alarm Filtering](#)” task on page 9-32 as necessary.
 - Verify that no unexplained alarms appear on the network. If alarms appear, investigate and resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide* for procedures.

Stop. You have completed this procedure.

DLP-A330 Preprovision a Slot

Purpose	This task preprovisions a card slot in CTC before you physically install the card in the ONS 15454. You can use this task for TDM, DWDM, and hybrid nodes.
Tools/Equipment	None
Prerequisite Procedures	Chapter 3, “Connect the PC and Log into the GUI”
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

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- Step 1** In node view, right-click the empty slot where you will later install a card.
- Step 2** From the Add Card popup menu, choose the card type that will be installed. Only cards that can be installed in the slot appear in the Add Card popup menu.



Note When you preprovision a slot, the card appears purple in the CTC shelf graphic, rather than white when a card is installed in the slot. NP (not present) on the card graphic indicates that the card is not physically installed.

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

NTP-A269 Provision the DWDM Connections

Purpose	This procedure provisions an ONS 15454 connections for ONS 15454s provisioned for DWDM or DWDM and TDM (hybrid).
Tools/Equipment	None
Prerequisite Procedures	A DWDM network plan calculated by Cisco MetroPlanner. NTP-A24 Verify Card Installation, page 4-2
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Superuser

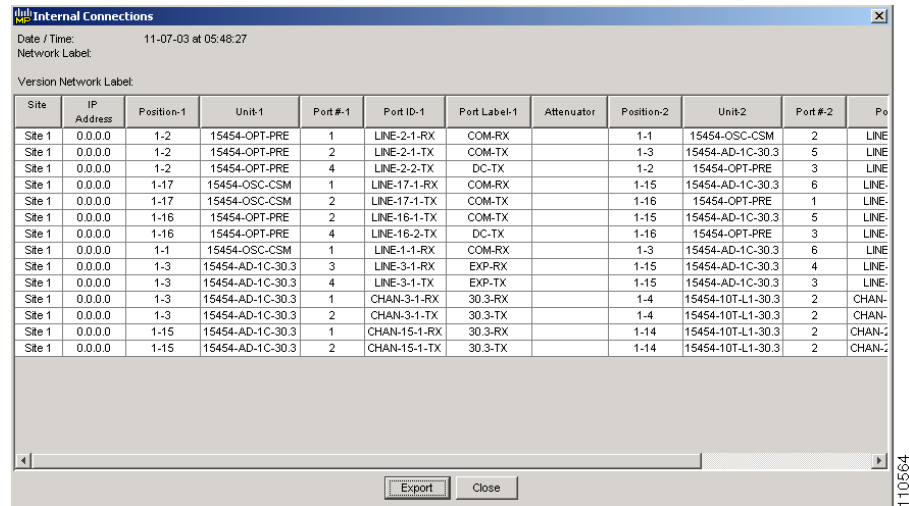
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- Step 1** Complete the “[DLP-A60 Log into CTC](#)” task on [page 3-24](#) at the node where you want to provision the DWDM cable connections. If you are already logged in, continue with [Step 2](#).
- Step 2** Click the **Alarms** tab.
- Verify that the alarm filter is not on. See the “[DLP-A227 Disable Alarm Filtering](#)” task on [page 9-32](#) as necessary.
 - Verify that no unexplained alarms appear on the network. If alarms appear, investigate and resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide* for procedures.
- Step 3** Complete the “[DLP-A389 Connect the Internal DWDM Cables](#)” task on [page 5-6](#).

- Step 4** Complete the “[DLP-A396 Calculate DWDM Connections](#)” task on page 5-8.
Stop. You have completed this procedure.
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DLP-A389 Connect the Internal DWDM Cables

Purpose	This task connects the internal ONS 15454 cables for ONS 15454s provisioned for DWDM or DWDM and TDM (hybrid).
Tools/Equipment	None
Prerequisite Procedures	A DWDM network plan calculated by Cisco MetroPlanner.
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Superuser

- Step 1** In MetroPlanner, display the Internal Connections table for the node you are provisioning ([Figure 5-2 on page 5-7](#)). The internal connections table shows the following information:
- **Site 1**—The DWDM network site number for the node where you are provisioning the internal connections.
 - **IP Address**—The node IP address.
 - **Position-1**—The first (west) position site and slot. For example, “1-2” indicates site 1, slot 2.
 - **Unit-1**—The ONS 15454 DWDM card (unit) that is installed in the first position slot.
 - **Port #1**—The card port number used for the first Position-1 connection.
 - **Port ID-1**—The port ID used for the Position-1 connection.
 - **Port Label-1**—The port label for the Position-1 connection.
 - **Attenuator**—Indicates whether attenuation is required.
 - **Position-2**—The second (east) position site and slot. For example, “1-1” indicates site 1, slot 1.
 - **Unit-2**—The ONS 15454 DWDM card (unit) that is installed in the Position-2 slot.
 - **Port #2**—The card port number used for the Position-2 connection.
 - **Port ID-2**—The port ID used for the Position-2 connection.
 - **Port Label-2**—The port label for the Position-2 connection.
 - **Manually Set**—Indicates whether you must create the connection manually.

Figure 5-2 MetroPlanner Internal Connections Table


The screenshot shows a window titled "Internal Connections" with a date/time of 11-07-03 at 05:48:27. Below the title bar is a table with 12 columns: Site, IP Address, Position-1, Unit-1, Port #-1, Port ID-1, Port Label-1, Attenuator, Position-2, Unit-2, Port #-2, and Port Label-2. The table contains 20 rows of connection data for Site 1. At the bottom of the window are "Export" and "Close" buttons.

Site	IP Address	Position-1	Unit-1	Port #-1	Port ID-1	Port Label-1	Attenuator	Position-2	Unit-2	Port #-2	Port Label-2
Site 1	0.0.0.0	1-2	15454-OPT-PRE	1	LINE-2-1-RX	COM-RX		1-1	15454-OSC-CSM	2	LINE
Site 1	0.0.0.0	1-2	15454-OPT-PRE	2	LINE-2-1-TX	COM-TX		1-3	15454-AD-1C-30.3	5	LINE
Site 1	0.0.0.0	1-2	15454-OPT-PRE	4	LINE-2-2-TX	DC-TX		1-2	15454-OPT-PRE	3	LINE
Site 1	0.0.0.0	1-17	15454-OSC-CSM	1	LINE-17-1-RX	COM-RX		1-15	15454-AD-1C-30.3	6	LINE
Site 1	0.0.0.0	1-17	15454-OSC-CSM	2	LINE-17-1-TX	COM-TX		1-16	15454-OPT-PRE	1	LINE
Site 1	0.0.0.0	1-16	15454-OPT-PRE	2	LINE-16-1-TX	COM-TX		1-15	15454-AD-1C-30.3	5	LINE
Site 1	0.0.0.0	1-16	15454-OPT-PRE	4	LINE-16-2-TX	DC-TX		1-16	15454-OPT-PRE	3	LINE
Site 1	0.0.0.0	1-1	15454-OSC-CSM	1	LINE-1-1-RX	COM-RX		1-3	15454-AD-1C-30.3	6	LINE
Site 1	0.0.0.0	1-3	15454-AD-1C-30.3	3	LINE-3-1-RX	EXP-RX		1-15	15454-AD-1C-30.3	4	LINE
Site 1	0.0.0.0	1-3	15454-AD-1C-30.3	4	LINE-3-1-TX	EXP-TX		1-15	15454-AD-1C-30.3	3	LINE
Site 1	0.0.0.0	1-3	15454-AD-1C-30.3	1	CHAN-3-1-RX	30.3-RX		1-4	15454-10T-L1-30.3	2	CHAN-
Site 1	0.0.0.0	1-3	15454-AD-1C-30.3	2	CHAN-3-1-TX	30.3-TX		1-4	15454-10T-L1-30.3	2	CHAN-
Site 1	0.0.0.0	1-15	15454-AD-1C-30.3	1	CHAN-15-1-RX	30.3-RX		1-14	15454-10T-L1-30.3	2	CHAN-
Site 1	0.0.0.0	1-15	15454-AD-1C-30.3	2	CHAN-15-1-TX	30.3-TX		1-14	15454-10T-L1-30.3	2	CHAN-

Step 2 Export the internal connections table:

- Click **Export**.
- Enter a file name in the File Name field of the Save Table dialog box.
- In the Files of Type field, choose HTML.
- Click **Save**.

Step 3 Open the exported MetroPlanner internal connections file in a web browser, and then print the file.

Step 4 Connect the cables to the slot and ports specified in the printed MetroPlanner internal connections file. Use the following tasks as a general guide for connecting the DWDM cables. However, connect the cables to the slot and port specified in the MetroPlanner internal connections file.

- [DLP-A424 Install Fiber-Optic Cables for a Terminal Node, page 2-44](#)
- [DLP-A425 Install Fiber-Optic Cables for a Hub Node, page 2-45](#)
- [DLP-A426 Install Fiber-Optic Cables for a Line Amplifier Node, page 2-47](#)
- [DLP-A427 Install Fiber-Optic Cables for an Amplified or Passive OADM Node, page 2-50](#)

Step 5 If 32DMX-O or 32MUX-O cards are installed, connect them to the patch panel above the ONS 15454 shelf.

Step 6 Connect DWDM cards to the 32DMX-O or 32MUX-O cards through the patch panel above the ONS 15454 shelf.

Step 7 If TXP, MXP, or OC-N line cards are installed, connect each card with the correct DWDM card according to your site plan. OC-N line connections are not shown in MetroPlanner.

Step 8 Return to your originating procedure (NTP).

DLP-A396 Calculate DWDM Connections

Purpose	This task calculates the ONS 15454 cable connections for ONS 15454s provisioned for DWDM or DWDM and TDM (hybrid).
Tools/Equipment	None
Prerequisite Procedures	A DWDM network plan calculated by Cisco MetroPlanner. DLP-A389 Connect the Internal DWDM Cables, page 5-6
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Superuser

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- Step 1** In node view, click the **Provisioning > WDM-ANS > Connections** tabs.
- Step 2** Click the **Calculate Connections** button.
- Step 3** Create any connections that require manual provisioning (indicated by a “Yes” in the MetroPlanner connections file Manually Set column). See the “[DLP-A406 Create a DWDM Connection](#)” task on [page 5-8](#).
- Step 4** Verify that the connections in the CTC Connections tab match the connections in the MetroPlanner internal connections file. (The CTC Connections tab will not show connections between TXP, MXP, and OC-N line cards and DWDM cards.) If connections are not correct:
- Delete the connection. See the “[DLP-A405 Delete a DWDM Connection](#)” task on [page 5-9](#).
 - Uninstall the fibers from the incorrect slot/card/port.
 - Connect the fiber to the correct slot/card/port, then repeat [Step 2](#).
- Step 5** Return to your originating procedure (NTP).
-

DLP-A406 Create a DWDM Connection

Purpose	This task creates a DWDM connection.
Tools/Equipment	None
Prerequisite Procedures	DLP-A60 Log into CTC, page 3-24
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Superuser

-
- Step 1** In node view, click the **Provisioning > WDM-ANS > Connections** tabs.
- Step 2** Click the **Create** button.
- Step 3** In the Create Optical Link dialog box, choose the From and To slots and ports from the drop-down menus.
- Step 4** If the connection is unidirectional, uncheck the **bidirectional** check box.
- Step 5** Click **OK**. The new connection appears in the Connections table, but its State is “Uncommitted.”

- Step 6** Click the new connection in the table. Click the **Commit** button. The connection state changes to “Connected.”
- Step 7** Return to your originating procedure (NTP).
-

DLP-A405 Delete a DWDM Connection

Purpose	This task deletes a DWDM connection.
Tools/Equipment	None
Prerequisite Procedures	DLP-A60 Log into CTC, page 3-24
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Superuser

- Step 1** In node view, click the **Provisioning > WDM-ANS > Connection** tabs.
- Step 2** Click the connection you want to delete.
- Step 3** Click **Delete**.
- Step 4** Return to your originating procedure (NTP).
-

NTP-A270 Run Automatic Node Setup

Purpose	This procedure launches the DWDM Automatic Node Setup (ANS) function. ANS adjusts the values of the variable optical attenuators (VOAs) to equalize the per-channel power at the amplifier level.
Tools/Equipment	None
Prerequisite Procedures	An Installation Parameters file for the node exported from Cisco MetroPlanner. NTP-A269 Provision the DWDM Connections, page 5-5
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Superuser

- Step 1** Complete the “[DLP-A60 Log into CTC](#)” task on page 3-24 at the node where you want to provision the DWDM cable connections. If you are already logged in, continue with [Step 2](#).
- Step 2** Click the **Alarms** tab.
- Verify that the alarm filter is not on. See the “[DLP-A227 Disable Alarm Filtering](#)” task on page 9-32 as necessary.
 - Verify that no unexplained alarms appear on the network. If alarms appear, investigate and resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide* for procedures.

- Step 3** Complete the “[DLP-A400 Import a Cisco MetroPlanner Configuration File](#)” task on page 5-10.
- Step 4** Complete the “[DLP-A396 Calculate DWDM Connections](#)” task on page 5-8.
- Step 5** In node view, click the **Provisioning > WDM-ANS > Port Status** tabs.
- Step 6** Click **Launch ANS**.
- Step 7** In the Apply Launch ANS dialog box, click **Yes**. Automatic Node Setup (ANS) adjusts the values of the variable optical attenuators (VOAs) to equalize the per-channel power at the amplifier level.
- Step 8** In the Launch ANS confirmation dialog box, click **OK**.
- Step 9** Verify that the Link Status column displays a “Regulated” status for all ports. If any links say Not Regulated, repeat the “[NTP-A269 Provision the DWDM Connections](#)” procedure on page 5-5 to verify that all connections have been provisioned correctly, paying attention to connections that require manual provisioning.
- Step 10** Complete the “[DLP-A342 Provision OSC Terminations](#)” task on page 5-11.
- Step 11** If the node timing is line timing with an OSCM or OSC-CSM card as a timing reference, complete the “[NTP-A28 Set Up Timing](#)” task on page 4-22.
- Stop. You have completed this procedure.**
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DLP-A400 Import a Cisco MetroPlanner Configuration File

Purpose	This task imports a Cisco MetroPlanner configuration file into the node to configure the node automatically.
Tools/Equipment	None
Prerequisite Procedures	A Cisco MetroPlanner network configuration file must be located on an available local or network drive. DLP-A60 Log into CTC , page 3-24
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Superuser

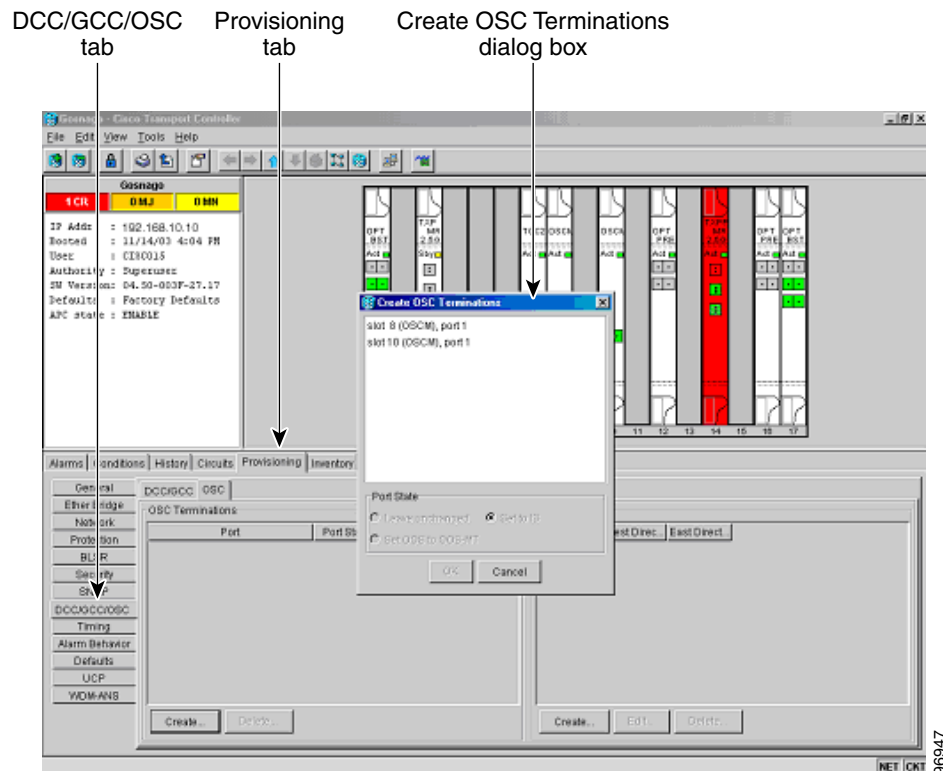
- Step 1** Export the Installation Parameters for your node from Cisco MetroPlanner. If the parameters file has been exported, continue with [Step 2](#).
- In MetroPlanner, right-click the node icon and choose **Site Installation > Assisted Conf Setup**.
 - In the dialog box, choose a location to save the MetroPlanner installation file.
- Step 2** In CTC node view, click the **Provisioning > WDM-ANS > NE Update** tabs.
- Step 3** Click **Import**.
- Step 4** In the Import Defaults From File dialog box, enter the path to the configuration file, or click **Browse** and navigate to the configuration file using the Open dialog box.
- Step 5** Click **OK**.
- Step 6** Click **Apply**.
- Step 7** Return to your originating procedure (NTP).

DLP-A342 Provision OSC Terminations

Purpose	This task creates the DWDM OSC terminations required for network setup of a system that includes ONS 15454 DWDM optical filters and amplifiers.
Tools/Equipment	None
Prerequisite Procedures	DLP-A60 Log into CTC, page 3-24
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

- Step 1** In node view click the **Provisioning > WDM-ANS > Connections** tabs.
- Step 2** Click **Calculate Connections**. Ports that can have an OSC termination appear.
- Step 3** Click the **Provisioning > DCC/GCC/OSC > OSC** tabs.
- Step 4** In the OSC Terminations pane, click **Create** ([Figure 5-3](#)).

Figure 5-3 OSC Terminations Pane



- Step 5** In the Create OSC Terminations dialog box, click the ports where you want to create the OSC termination. To select more than one port, press the **Shift** key or the **Ctrl** key.



Note OSC on the DWDM node uses a separate OC3 channel to transport the section data communications channel (SDCC), which is used for ONS 15454 DCC terminations.

- Step 6** Click **OK**. Ports are automatically placed in service. Until all network OSC terminations are created and the ports are in service, the following alarms might appear: EOC (SDCC Termination Failure) and power failure alarms on the OPT-BST or OSC-CSM, such as Loss of Continuity alarms.
- Step 7** Return to your originating procedure (NTP).

NTP-A271 Verify OSCM and OSC-CSM Transmit Power

Purpose	This procedure verifies the transmit power of the ONS 15454 Optical Service Channel Module (OSCM) and the Optical Service Channel + Combiner Separator Module (OSC-CSM).
Tools/Equipment	None
Prerequisite Procedures	NTP-A270 Run Automatic Node Setup, page 5-9
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Superuser

- Step 1** Complete the “[DLP-A60 Log into CTC](#)” task on [page 3-24](#) at the node where you want to provision the DWDM cable connections. If you are already logged in, continue with [Step 2](#).
- Step 2** In the node view shelf graphic, double-click the OSCM or OSC-CSM card in Slot 8.
- Step 3** Click the **Maintenance** tab.
- Step 4** Verify that the ALS Command is set to OSRI off.
- Step 5** From the ALS Mode drop-down menu, choose **Disable**. Click **Apply**.
- Step 6** Click the **Provisioning > Optical Line** tabs.
- Step 7** For the TX (transmit) port entry, verify that the value in the Power column falls within the following ranges:
- For OSCM cards installed on nodes set to Control Gain, the power should be –5 dBm.
 - For OSC-CSM card installed on nodes set to Control Gain, the power should be a minimum of –6 dBm on OADM nodes.
 - For OSC-CSM cards installed on nodes configured as a passive or active OADM nodes, the power level depends on the Pout OADM Stage power level on the WDM-ANS > Provisioning tab:
 - If the Pout OADM Stage value is less than –6.5 dBm +/- 0.5 dBm, the OSC-CSM power should be equal to that power.
 - If the Pout OADM Stage value is greater than –6.5 dBm +/- 0.5 dBm, the OSC-CSM power should be –6.5 dBm +/- 0.5 dBm.
 - For OSC-CSM cards installed on hybrid nodes, the Pout-osc should be:
 - –5.0 dBm if the DWDM system type is Control Gain and
 - –1.5 dBm if the DWDM system type is Control Power.
- Step 8** If the OSCM or OSC-CSM power levels are not within the ranges specified in [Step 7](#), complete the following steps. Otherwise, continue with [Step 9](#).
- a. Click the **Maintenance > ALS** tabs. Verify that OSRI is set to off and ALS Mode is set to Disable.

- b. Clean the optical connections. See the “[NTP-A112 Clean Fiber Connectors](#)” procedure on page 17-21.
- c. Verify the optical connections inside the unit.
- d. Relaunch ANS.

Step 9 Click the **Maintenance** tab.

Step 10 From the ALS Mode drop-down menu, choose **Automatic Restart**. Click **Apply**.

Step 11 Continue with the “[NTP-A273 Terminal and Hub Node Acceptance Test](#)” procedure on page 5-13.
Stop. You have completed this procedure.

NTP-A273 Terminal and Hub Node Acceptance Test

Purpose	This procedure tests a DWDM terminal or hub node.
Tools/Equipment	None
Prerequisite Procedures	Tunable laser or TXP, MXP, or OC-N line cards must be installed. #2 Bulk attenuators (10 dB)
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Superuser

Step 1 Complete the “[DLP-A60 Log into CTC](#)” task on page 3-24 at the node where you want to provision the DWDM cable connections. If you are already logged in, continue with [Step 2](#).

Step 2 From the View menu, choose **Go to Network View**.

Step 3 Click the **Alarms** tab.

- a. Verify that the alarm filter is not on. See the “[DLP-A227 Disable Alarm Filtering](#)” task on page 9-32 as necessary.
- b. Verify that no unexplained alarms appear on the network. If alarms appear, investigate and resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide* for procedures.

Step 4 In node view, click the **Provisioning > WDM-ANS > Port Status** tabs. Verify that all links have a Regulated status. If any links say Not Regulated, click **Launch ANS**.

Step 5 On one side of the node, either east or west (if the node is a terminal, the terminal side), create a physical loop back on the OPT BST by using a patch cord with 10 dB bulk attenuators to connect the card’s Line-TX port with Line-RX port.

Step 6 On the OSCM card, verify that the OSC link becomes active. (OSC Termination must already be provisioned, see the “[DLP-A342 Provision OSC Terminations](#)” task on page 5-11.)



Note The OSC signal loop back might cause an SDCC Termination Failure alarm.

Step 7 Tune the tunable laser on the first wavelength (1530.33 nm) of the 100Ghz ITU-T grid and connect it to the CHAN RX 01 port on the 32 MUX-O card using the available patch-panel.

Step 8 Double-click the west or east 32 MUX-O card on the shelf graphic to open card view.

- Step 9** Click the **Provisioning > Optical Chn > Parameters** tabs.
- Step 10** Set the port #1 status to **OOS_MT**. This puts the port Out Of Service, but enables VOA provisioning.
- Step 11** Verify that the Port 1 power level reaches the provisioned set point (VOA Power Ref).



Note Output power that is lower than the specified value might keep the 32 MUX-O card from reaching the provisioned set point.

- Step 12** Verify that the west or east OPT BST card is working properly:
- In node view, double-click the west or east OPT-BST card to open card view.
 - Click the **Maintenance > ALS** tabs.
 - Verify that the laser status is set to On. If so, continue with [Step 13](#). If not, continue with Substep [d](#).
 - Verify that the ALS Command is set to OSRI Off (optical safety remote interlock is not enabled).
 - If the ALS Command is set to OSRI On, choose **OSRI Off**. Click **Apply**.
 - Check the Laser Status. If it is not set to On, replace the card. See the “[NTP-A242 Install the DWDM Cards](#)” procedure on page 2-25.



Note On Provisioning > Opt.Ampli.Line> Parameters tab, the power value on port #6 reaches the provisioned set point = +2 dBm. However, the actual value reported by CTC also includes the ASE power contribution, so the value is always greater than +2 dBm (Power Ref).



Note When Laser Status is off, the Port #2 power is lower than or equal to –1 dBm as shown. This value is not a significant optical power and must be ignored.

- Step 13** Verify that the west or east OPT-PRE card is working properly:
- Display the west or east OPT-PRE card in card view (double-click the card on the shelf graphic).
 - Click the **Maintenance > ALS** tab.
 - Verify that the Laser Status is ON.



Note On Provisioning > Opt.Ampli.Line > Parameters tab, the power value on port #6 reaches the provisioned set point = +2 dBm. However, the actual value reported by CTC also includes the ASE power contribution, so the value is always greater than +2 dBm (Power Ref).

- Click the **Provisioning > Optical Line > Parameters** tabs.
- Verify that the DCU IL (insertion loss) value is less than or equal to 10 dB.



Note When Laser Status is off, the Port #2 power is lower or equal to –1 dBm is shown. This value is not a significant optical power and must be ignored.

- Step 14** Verify the west or east 32 DMX-O in card view:
- Display the east or west 32 DMX-O card in card view.
 - Click the **Provisioning > Optical Chn > Parameters** tabs,

- c. Set the status of port #1 to **OOS_MT**.
 - d. Check that the Power value on part #1 reaches the provisioned set point (VOA Power Ref).
 - e. (optional) Connect a power meter to the CHAN TX 01 port through the patch-panel. Verify that the physical optical power value coming out of drop port #1 on the west 32 DMX-O card is consistent with the value read (the maximum allowed error is ± 0.5 dBm).
- Step 15** Restore the default OOS status on the 32 MUX-O card port that was set to OOS_MT in [Step 10](#).
- Step 16** Restore the default OOS status on the 32 DMX-O card port that was set to OOS_MT in [Step 14](#).
- Step 17** Launch ANS to restore the correct node configuration.
- Step 18** Repeat Steps [7](#) through [17](#) for the remaining 32 wavelengths of the 100 Ghz grid to verify the correct behavior of all VOAs inside the 32 MUX-O and 32 DMX-O cards.
- Step 19** If the node is a hub node, repeat Steps [5](#) through [18](#). If it is a terminal node, continue with [Step 20](#).
- Step 20** Remove the loopbacks.
- Step 21** Restore the default OOS status on all ports previously set to OOS_MT and launch ANS to recover the correct node configuration.
- Step 22** Click the **Alarms** tab.
- a. Verify that the alarm filter is not on. See the “[DLP-A227 Disable Alarm Filtering](#)” task on page 9-32 as necessary.
 - b. Verify that no unexplained alarms appear on the network. If alarms appear, investigate and resolve them before continuing. Refer to the *Cisco ONS 15454 Troubleshooting Guide* for procedures.
- Step 23** Continue with the “[NTP-A272 View DWDM Node Parameters](#)” procedure on page 5-15.
- Stop. You have completed this procedure.**

NTP-A272 View DWDM Node Parameters

Purpose	This procedure allows you to view and manually change DWDM parameters on the ONS 15454 after it is provisioned for DWDM.
Tools/Equipment	None
Prerequisite Procedures	NTP-A271 Verify OSCM and OSC-CSM Transmit Power , page 5-12
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Superuser



Caution

Manually changing parameters that have been calculated by Cisco MetroPlanner is not recommended.

- Step 1** Complete the “[DLP-A60 Log into CTC](#)” task on page 3-24 at the node where you want to view the DWDM parameters. If you are already logged in, continue with [Step 2](#).
- Step 2** Perform one of the following tasks:
- [DLP-A401 View DWDM Hub Node Settings](#), page 5-16.
 - [DLP-A402 View DWDM Terminal Node Settings](#), page 5-18.

- [DLP-A403 View DWDM OADM Node Settings, page 5-19.](#)
- [DLP-A404 View DWDM Line Node Settings, page 5-21.](#)

Stop. You have completed this procedure.

DLP-A401 View DWDM Hub Node Settings

Purpose	This task enables you to view and manually change DWDM hub node parameters including the network type, system types, network power levels, and channel power levels for a DWDM hub node.
Tools/Equipment	None
Prerequisite Procedures	DLP-A60 Log into CTC, page 3-24
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Superuser

- Step 1** In node view, click the **Provisioning > WDM-ANS > Provisioning** tabs.
- Step 2** View the information shown in [Table 5-2](#). In the table, the West Side of the node is equipped with cards that receive from the west and transmit to the east. The East Side of the node is equipped with cards that receive from the east and transmit to the west.

Table 5-2 DWDM Hub Node Settings

Parameter	Description	Default Value	Options
Network type	Defines the DWDM network type.	Metro-Core	Metro-Core—Channels are equalized Metro-Access—Channels are not equalized to minimize the number of amplifiers in the ring
West Side			
System Type	Defines the west-side DWDM fiber type, number of channels, and control mode. Table 5-3 shows the per-channel power and control mode for each system type.	SMF-28 32 Ch Control Gain	SMF-28 32 Ch Control Gain SMF-28 32 Ch Control Power SMF-28 8 Ch Control Power SMF-28 16 Ch Control Power
Pdrop	Sets the west-side expected drop power level on the client interface. Pdrop is the power level of each channel after it is demultiplexed. The power is then sent to the client.	−14 dBm	−50 dBm to 30 dBm
Pexpress	Sets the west-side expected per-channel power on the pass-through interface.	−12 dBm	−50 dBm to 30 dBm

Table 5-2 DWDM Hub Node Settings (continued)

Parameter	Description	Default Value	Options
Pout-mux Stage	Sets the per-channel output power at the multiplexing stage. Pout-mux is the power that is sent to the multiplexer after the power from the client transmitters is gathered. The VOAs keep the power sent to the multiplexer at a constant level.	−18 dBm	−50 dBm to 30 dBm
East Side			
System Type	Defines the east-side DWDM fiber type, number of channels, and control mode. Table 5-3 shows the per-channel power and control mode for each system type.	SMF-28 32 Ch Control Gain	SMF-28 32 Ch Control Gain SMF-28 32 Ch Control Power SMF-28 8 Ch Control Power SMF-28 16 Ch Control Power
Pdrop	Sets the east-side expected drop power level on the client interface. Pdrop is the power level of each channel after it is demultiplexed. The power is then sent to the client.	−14 dBm	−50 dBm to 30 dBm
Pexpress	Sets the east-side expected per-channel power on the pass-through interface.	−12 dBm	−50 dBm to 30 dBm
Pout-mux Stage	Sets the per-channel output power at the multiplexing stage. Pout-mux is the power that is sent to the multiplexer after the power from the client transmitters is gathered. The VOAs keep the power sent to the multiplexer at a constant level.	−18 dBm	−50 dBm to 30 dBm

[Table 5-3](#) shows the system types that can be assigned to the node.

Table 5-3 DWDM System Types

System Type	Per-Channel Power	Control Mode
SMF-28 32 Ch Control Gain	2 dBm	Control gain
SMF-28 32 Ch Control Power	2 dBm	Control power
SMF-28 8 Ch Control Power	8 dBm	Control power
SMF-28 16 Ch Control Power	5 dBm	Control power

Step 3 Return to your originating procedure (NTP).

DLP-A402 View DWDM Terminal Node Settings

Purpose	This task enables you to view and manually change DWDM terminal node parameters including its network type, system types, network power levels, and channel power levels.
Tools/Equipment	None
Prerequisite Procedures	DLP-A60 Log into CTC, page 3-24
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Superuser

- Step 1** In node view, click the **Provisioning > WDM-ANS > Provisioning** tabs.
- Step 2** View the fields shown in [Table 5-4](#). In the table, the West Side of the node is equipped with cards that receive from the west and transmit to the east. The East Side of the node is equipped with cards that receive from the east and transmit to the west. The fields that appear depend on the terminal node type.

Table 5-4 DWDM Terminal Node Settings

Parameter	Description	Default Value	Options
Network type	Defines the DWDM network type.	Metro-Core	Metro-Core—Channels are equalized. Metro-Access—Channels are not equalized to minimize the number of amplifiers in the ring.
Term West Side/ East Side			
System Type	Defines the west-side DWDM system type (fiber type, number of channels, control mode). Table 5-3 on page 5-17 shows the per-channel power and control mode for each system type.	SMF-28 32 Ch Control Gain	SMF-28 32 Ch Control Gain SMF-28 32 Ch Control Power SMF-28 8 Ch Control Power SMF-28 16 Ch Control Power
Pdrop	Sets the expected drop power level on the client interface. Pdrop is the power level of each channel after it is demultiplexed. The power is then sent to the client.	–14 dBm/	–50 dBm to 30 dBm
Pout-mux Stage	Sets the per-channel output power at the multiplexing stage. Pout-mux is the power that is sent to the multiplexer after the power from the client transmitters is gathered. The VOAs keep the power sent to the multiplexer at a constant level.	–18 dBm/	–50 dBm to 30 dBm

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

DLP-A403 View DWDM OADM Node Settings

Purpose	This task enables you to view and manually change DWDM add/drop multiplexing node parameters including its network type, system types, network power levels, and channel power levels.
Tools/Equipment	None
Prerequisite Procedures	DLP-A60 Log into CTC, page 3-24
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Superuser

- Step 1** In node view, click the **Provisioning > WDM-ANS > Provisioning** tabs.
- Step 2** View the fields shown in [Table 5-5](#). In the table, the West Side of the node is equipped with cards that receive from the west and transmit to the east. The East Side of the node is equipped with cards that receive from the east and transmit to the west.

Table 5-5 DWDM OADM Node Settings

Parameter	Description	Default Value	Options
Network type	Defines the DWDM network type.	Metro-Core	Metro-Core—Channels are equalized. Metro-Access—Channels are not equalized to minimize the number of amplifiers in the ring.
West Side			
System Type	Defines the west-side DWDM system type. Table 5-3 on page 5-17 shows the per-channel power and control mode for each system type.	SMF-28 32 Ch Control Gain	SMF-28 32 Ch Control Gain SMF-28 32 Ch Control Power SMF-28 8 Ch Control Power SMF-28 16 Ch Control Power
Pout-oadm Stage	Sets the west-side per-channel output power at the OADM stage.	+2 dBm	–50 dBm to 30 dBm
Pin-oadm Stage	Sets the west-side per-channel input power at the OADM stage.	–14 dBm	–50 dBm to 30 dBm
Pout Band [nn.n]	Sets the west-side per-band output power for a specific drop band, where nn.n is the channel ID. Up to 8 bands might appear, 30.3, 34.2, 38.1, 42.1, 46.1, 50.1, 54.1, and 58.1, depending on the optical filter cards that are installed in the node.	–14 dBm	–50 dBm to 30 dBm

Table 5-5 DWDM OADM Node Settings (continued)

Parameter	Description	Default Value	Options
East Side			
System Type	Defines the east-side DWDM system type. Table 5-3 on page 5-17 shows the per-channel power and control mode for each system type.	SMF-28 32 Ch Control Gain	SMF-28 32 Ch Control Gain SMF-28 32 Ch Control Power SMF-28 8 Ch Control Power SMF-28 16 Ch Control Power
Pout-oadm Stage	Sets the east-side per-channel power out from the OADM stage.	+2 dBm	–50 dBm to 30 dBm
Pin-oadm Stage	Sets the east-side per-channel input power from the OADM stage.	–14 dBm	–50 dBm to 30 dBm
Pout Band [<i>nn.n</i>]	Sets the east-side per-band power for a specific drop band, where <i>nn.n</i> is the channel ID. Up to 8 bands might appear, 30.3, 34.2, 38.1, 42.1, 46.1, 50.1, 54.1, and 58.1, depending on the optical filter cards that are installed in the node.	–14 dBm	–50 dBm to 30 dBm

[Table 5-6](#) shows the OADM channels.

Table 5-6 OADM Channels

Channel No.	Channel ID	Frequency (GHz)	Wavelength (nm)
1	30.3	195.9	1530.33
2	31.2	195.8	1531.12
3	31.9	195.7	1531.90
4	32.6	195.6	1532.68
5	34.2	195.4	1534.25
6	35.0	195.3	1535.04
7	35.8	195.2	1535.82
8	36.6	195.1	1536.61
9	38.1	194.9	1538.19
10	38.9	194.8	1538.98
11	39.7	194.7	1539.77
12	40.5	194.6	1540.56
13	42.1	194.4	1542.14
14	42.9	194.3	1542.94
15	43.7	194.2	1543.73
16	44.5	194.1	1544.53
17	46.1	193.9	1546.12

Table 5-6 OADM Channels (continued)

Channel No.	Channel ID	Frequency (GHz)	Wavelength (nm)
18	46.9	193.8	1546.92
19	47.7	193.7	1547.72
20	48.5	193.6	1548.51
21	50.1	193.4	1550.12
22	50.9	193.3	1550.92
23	51.7	193.2	1551.72
24	52.5	193.1	1552.52
25	54.1	192.9	1554.13
26	54.9	192.8	1544.94
27	55.7	192.7	1555.75
28	56.5	192.6	1556.55
29	58.1	192.4	1558.17
30	58.9	192.3	1558.98
31	59.7	192.2	1559.79
32	60.6	192.1	1560.61

Step 3 Return to your originating procedure (NTP).

DLP-A404 View DWDM Line Node Settings

Purpose	This task enables you to view and manually change DWDM line node parameters, including its network and system types.
Tools/Equipment	None
Prerequisite Procedures	DLP-A60 Log into CTC, page 3-24
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Superuser

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

Step 2 View the fields shown in [Table 5-7](#). In the table, the West Side of the node is equipped with cards that receive from the west and transmit to the east. The East Side of the node is equipped with cards that receive from the east and transmit to the west.

Table 5-7 DWDM Line Node Settings

Parameter	Description	Options
Network type	Defines the DWDM network type.	Metro-Core—Channels are equalized Metro-Access—Channels are not equalized to minimize the number of amplifiers in the ring
West Side		
System Type	Defines the west-side DWDM system type. Table 5-3 on page 5-17 shows the per-channel power and control mode for each system type.	SMF-28 32 Ch Control Gain SMF-28 32 Ch Control Power SMF-28 8 Ch Control Power SMF-28 16 Ch Control Power
East Side		
System Type	Defines the east-side DWDM system type. Table 5-3 on page 5-17 shows the per-channel power and control mode for each system type.	SMF-28 32 Ch Control Gain SMF-28 32 Ch Control Power SMF-28 8 Ch Control Power SMF-28 16 Ch Control Power

Step 3 Return to your originating procedure (NTP).

DLP-A331 View DWDM NE Update Parameters

Purpose	Use this task to view all DWDM parameters that have been imported into the node from Cisco MetroPlanner.
Tools/Equipment	None
Prerequisite Procedures	DLP-A60 Log into CTC, page 3-24
Required/As Needed	Required
Onsite/Remote	Onsite or remote
Security Level	Superuser

Step 1 In node view, click the **Provisioning > WDM-ANS > NE Update** tabs.

Step 2 View the parameters shown in [Table 5-8](#).

Table 5-8 NE Update Parameters

Parameter Name	General Name	Min dBm	Max dBm	Default
dwdm.common.NetworkType1	Network Type	¹	1	Metro-Core
dwdm.common.SystemTypeValueW	System Type West	0	3	0
dwdm.common.SystemTypeValueE	System Type East	0	3	0
dwdm.common.OscLosThW	OSC LOS Threshold West	-50	+30	-2 (OPT-BST) -40 (OSC-CSM)
dwdm.common.OscLosThE	OSC LOS Threshold East	-50	+30	-2 (OPT-BST) -40 (OSC-CSM)
dwdm.common.ChLosThW	Channel LOS Threshold West	-50	+30	+10 (OPT-BST) -30 (OSC-CSM)
dwdm.common.ChLosThE	Channel LOS Threshold East	-50	+30	+10 (OPT-BST) -30 (OSC-CSM)
dwdm.hub_site.power.DropW	Hub – Drop Power West	-50	+30	-14
dwdm.hub_site.power.DropE	Hub – Drop Power East	-50	+30	-14
dwdm.hub_site.power.ExpressW	Hub – Express Power West	-50	+30	-14
dwdm.hub_site.power.ExpressE	Hub – Express Power East	-50	+30	-14
dwdm.hub_site.power.OutMuxW	Hub – Mux Output Power West	-50	+30	-14
dwdm.hub_site.power.OutMuxE	Hub – Mux Output Power East	-50	+30	-14
dwdm.oadm_site.power.OutOadmW	OADM – Output Power West	-50	+30	-14
dwdm.oadm_site.power.OutOadmE	OADM – Output Power East	-50	+30	-14
dwdm.oadm_site.power.InOadmW	OADM – Input Power West	-50	+30	-14
dwdm.oadm_site.power.InOadmE	OADM – Input Power East	-50	+30	-14
dwdm.oadm_site.power.DropB1W	OADM – Band 1 Drop Power West	-50	+30	-14
dwdm.oadm_site.power.DropB1E	OADM – Band 1 Drop Power East	-50	+30	-14
dwdm.oadm_site.power.DropB2W	OADM – Band 2 Drop Power West	-50	+30	-14
dwdm.oadm_site.power.DropB2E	OADM – Band 2 Drop Power East	-50	+30	-14
dwdm.oadm_site.power.DropB3W	OADM – Band 3 Drop Power West	-50	+30	-14
dwdm.oadm_site.power.DropB3E	OADM – Band 3 Drop Power East	-50	+30	-14
dwdm.oadm_site.power.DropB4W	OADM – Band 4 Drop Power West	-50	+30	-14
dwdm.oadm_site.power.DropB4E	OADM – Band 4 Drop Power East	-50	+30	-14
dwdm.oadm_site.power.DropB5W	OADM – Band 5 Drop Power West	-50	+30	-14
dwdm.oadm_site.power.DropB5E	OADM – Band 5 Drop Power East	-50	+30	-14
dwdm.oadm_site.power.DropB6W	OADM – Band 6 Drop Power West	-50	+30	-14
dwdm.oadm_site.power.DropB6E	OADM – Band 6 Drop Power East	-50	+30	-14
dwdm.oadm_site.power.DropB7W	OADM – Band 7 Drop Power West	-50	+30	-14
dwdm.oadm_site.power.DropB7E	OADM – Band 7 Drop Power East	-50	+30	-14

Table 5-8 NE Update Parameters (continued)

Parameter Name	General Name	Min dBm	Max dBm	Default
dwdm.oadm_site.power.DropB8W	OADM – Band 8 Drop Power West	-50	+30	-14
dwdm.oadm_site.power.DropB8E	OADM – Band 8 Drop Power East	-50	+30	-14

1. Three network types are available: Metro-Core, Metro-Access, and Not-DWDM.

Step 3 Return to your originating procedure (NTP).
