



Create Channels and Circuits

This chapter explains how to create Cisco ONS 15454 dense wavelength division multiplexing (DWDM) optical channel network connections (OCHNCs) and overhead circuits.



Note

Unless otherwise specified, “ONS 15454” refers to both ANSI and ETSI shelf assemblies.

Before You Begin

Before performing any of the following procedures, investigate all alarms and clear any trouble conditions. Refer to the *Cisco ONS 15454 Troubleshooting Guide* and the *Cisco ONS 15454 SDH Troubleshooting Guide* as necessary.

This section lists the chapter procedures (NTPs). Turn to a procedure for applicable tasks (DLPs).

1. [NTP-G58 Locate and View Optical Channel Network Connections, page 7-2](#)—Complete as needed to find, view, and filter OCHNCs.
2. [NTP-G59 Create and Delete Optical Channel Network Connections, page 7-9](#)—Complete as needed.
3. [NTP-G60 Create Overhead Circuits, page 7-13](#)—Complete as needed to create IP-encapsulated, firewall, and proxy tunnels, to create generic communications channel (GCC) terminations, to provision orderwire, or to create user data channel (UDC) circuits.
4. [NTP-G61 Modify and Delete Overhead Circuits, page 7-21](#)—Complete as needed to repair IP circuits and delete overhead circuits.
5. [NTP-G62 Create a J0 Section Trace, page 7-23](#)—Complete as needed to monitor interruptions or changes to traffic between two nodes.

NTP-G58 Locate and View Optical Channel Network Connections

Purpose	This procedure allows you to locate and view DWDM OCHNCs.
Tools/Equipment	None
Prerequisite Procedures	DLP-G105 Provision DWDM Optical Channel Network Connections , page 7-10
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Retrieve or higher

- Step 1** Complete the “[DLP-G46 Log into CTC](#)” task on page 2-25 at a node on the network where you want to view the circuits. If you are already logged in, continue with Step 2.



Note Do not check Disable Circuit Management in the Login dialog box. No circuits appear if this option is checked.

- Step 2** As needed, complete the “[DLP-G100 Search for Optical Channel Network Connections](#)” task on page 7-2.
- Step 3** As needed, complete the “[DLP-G101 View Optical Channel Network Connection Information](#)” task on page 7-3.
- Step 4** As needed, complete the “[DLP-G102 Filter the Display of Optical Channel Network Connections](#)” task on page 7-7.
- Step 5** As needed, complete the “[DLP-G103 View Optical Channel Network Connections on a Span](#)” task on page 7-8.

Stop. You have completed this procedure.

DLP-G100 Search for Optical Channel Network Connections

Purpose	This task searches for DWDM OCHNCs and ONS 15454 circuits at the network, node, or card level.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC , page 2-25
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Retrieve or higher

- Step 1** Navigate to the appropriate Cisco Transport Controller (CTC) view:
- To search the entire network, choose **View > Go to Network View**.

- To search for circuits that originate, terminate, or pass through a specific node, choose **View > Go to Other Node**, then choose the node you want to search and click **OK**.
 - To search for circuits that originate, terminate, or pass through a specific card, double-click the card on the shelf graphic in node view to open the card in card view.
- Step 2** Click the **Circuits** tab.
- Step 3** If you are in node or card view, choose the scope for the search, **Node** or **Network (All)**, in the Scope drop-down list located at the bottom right side of the screen. Choose **Node** to see all of the circuits on that node, or **Network (All)** to see all circuits in the network.
- Step 4** Click **Search** if you need to search through the list of circuits.
- Step 5** In the Circuit Name Search dialog box, complete the following:
- Find What—Enter the text of the circuit name you want to find.
 - Match whole word only—Check this check box to instruct CTC to select circuits only if the entire word matches the text in the Find What field.
 - Match case—Check this check box to instruct CTC to select circuits only when the capitalization matches the capitalization entered in the Find What field.
 - Direction—Choose the direction for the search. Searches are conducted up or down from the currently selected circuit.
- Step 6** Click **Find Next**. If a match is found the circuit will be highlighted. To continue the search, click **Find Next** again to find the next circuit.
- Step 7** Repeat Steps 5 and 6 until you are finished, then click **Cancel**.
- Step 8** Return to your originating procedure (NTP).

DLP-G101 View Optical Channel Network Connection Information

Purpose	This task provides information about DWDM OCHNCs and ONS 15454 circuits.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC, page 2-25
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Retrieve or higher

- Step 1** Navigate to the appropriate CTC view:



Note

The following order is the default column sequence, the order might be different on your screen, depending on your individual CTC setup.

- To view circuits for an entire network, choose **View > Go to Network View**.
- To view circuits that originate, terminate, or pass through a specific node, choose **View > Go to Other Node**, then choose the node you want to search and click **OK**.

- To view circuits that originate, terminate, or pass through a specific card, in node view, double-click the card containing the circuits you want to view.



Note In node or card view, you can change the scope of the circuits that appear by choosing Card (in card view), Node, or Network from the Scope drop-down list in the bottom right corner of the Circuits window.

Step 2 Click the **Circuits** tab. The Circuits tab shows the following information:

- Circuit Name—Name of the circuit. The circuit name can be manually assigned or automatically generated.
- Type—Circuit types are OCHNC.



Note The following circuit types are not applicable to DWDM nodes: STS, VT, VTT (VT tunnel), VAP (VT aggregation point), STS-v (STS VCAT circuit), VT-v (VT VCAT circuit), HOP (high-order circuit), LOP (low-order circuit), VCT (VC low-order tunnel), and VCA (low-order VCAT circuit).

- Size—Circuit size. OCHNC sizes are Equipped not specific, Multi-rate, 2.5 Gbps No FEC (forward error correction), 2.5 Gbps FEC, 10 Gbps No FEC, and 10 Gbps FEC.



Note The following circuit types under the circuit size column are not applicable to DWDM nodes: STS, VT, VCAT, VC12, VC11, VC3, and VC4.

- OCHNC Wlen—The wavelength provisioned for the OCHNC. See [Table 7-3 on page 7-11](#) for a list of channels and wavelengths.
- Direction—The circuit direction, either two-way or one-way.
- OCHNC Dir—The line direction of the OCHNC, either East to West or West to East. If the direction is West to East, the channel exits from the node through the LINE-TX port of the OSC-CSM-E or OPT-BST-E, named the East Side Card by Cisco MetroPlanner (typically these cards are hosted by Slot 17). If the direction is East to West, the channel exits from the node through the LINE-TX port of OSC-CSM-W or OPT-BST-W, named the West Side Card by Cisco MetroPlanner (typically these cards are hosted by Slot 1).
- Protection—The type of circuit protection. See [Table 7-1 on page 7-5](#) for a list of protection types.
- Status—The circuit status. [Table 7-2 on page 7-6](#) lists the circuit statuses that can appear.
- Source—The circuit source in the format: *node/slot/port* “*port name*” (if a port name has been assigned by the user, the name will appear in quotes).



Note The user can assign a specific port name to every port of any DWDM card after completing the “[DLP-G104 Assign a Name to a Port](#)” task on page 7-10.

- Destination—The circuit destination in same format as the circuit source. STSs, VTs, VCs, and tributary units are not applicable to DWDM nodes.
- # of VLANs—The number of VLANs used by an Ethernet circuit. VLANs are not applicable to DWDM nodes.
- # of Spans—The number of internode links that constitute the circuit.

- **State**—The circuit service state, which is an aggregate of its cross-connects. For ANSI, the service state is IS, OOS, or OOS-PARTIAL. For ETSI, the service state is Unlocked, Locked, or Locked-partial. For more information about ANSI and ETSI service states, see the [Appendix C, “DWDM Administrative and Service States.”](#)
 - IS/Unlocked—All cross-connects are in service and operational.
 - OOS/Locked—For ANSI, all cross-connects are Out-of-Service and Management, Maintenance (OOS-MA,MT) and/or Out-of-Service and Management, Disabled (OOS-MA,DSBLD). For ETSI, all cross-connects are Locked-enabled,maintenance and/or Locked-enabled,disabled.
 - OOS-PARTIAL/Locked-partial—At least one cross-connect is In-Service and Normal (IS-NR [ANSI]) or Unlocked-enabled (ETSI) and others are out-of-service.



Note Right-clicking a column title (Circuit name, Type, etc.) opens a shortcut menu that allows you to show or hide the desired circuit details.

Table 7-1 **Circuit Protection Types**

Protection Type	Description
Y-Cable	The circuit is protected by a transponder or muxponder card Y-cable protection group.
Splitter	The circuit is protected by the protect transponder splitter protection.
Unprot	A circuit with a source and destination on different nodes is not protected.
N/A	A circuit with connections on the same node is not protected.
Unknown	A circuit has a source and destination on different nodes and communication is down between the nodes. This protection type appears if not all circuit components are known.

Table 7-2 Cisco ONS 15454 Circuit Status

Status	Definition/Activity
CREATING	CTC is creating a circuit.
DISCOVERED	CTC created a circuit. All components are in place and a complete path exists from the circuit source to the circuit destination.
DELETING	CTC is deleting a circuit.
PARTIAL	A CTC-created circuit is missing a cross-connect or network span, a complete path from source to destination(s) does not exist, or an alarm interface panel (AIP) change occurred on one of the circuit nodes and the circuit is in need of repair. (AIPs store the node MAC address.) In CTC, circuits are represented using cross-connects and network spans. If a network span is missing from a circuit, the circuit status is PARTIAL. However, a PARTIAL status does not necessarily mean that a circuit traffic failure has occurred, because traffic might flow on a protect path. Network spans are in one of two states: up or down. On CTC circuit and network maps, up spans are shown as green lines, and down spans are shown as gray lines. If a failure occurs on a network span during a CTC session, the span remains on the network map but its color changes to gray to indicate the span is down. If you restart your CTC session while the failure is active, the new CTC session cannot discover the span and its span line will not appear on the network map. Subsequently, circuits routed on a network span that goes down will appear as DISCOVERED during the current CTC session, but they will appear as PARTIAL to users who log in after the span failure. This status does not appear for OCHNC circuit types.
DISCOVERED_TL1	A TL1-created circuit or a TL1-like CTC-created circuit is complete. A complete path from source to destination(s) exists. This status does not appear for OCHNC circuit types.
PARTIAL_TL1	A TL1-created circuit or a TL1-like CTC-created circuit is missing a cross-connect, and a complete path from source to destination(s) does not exist. This status does not appear for OCHNC circuit types.

Step 3 Return to your originating procedure (NTP).

DLP-G102 Filter the Display of Optical Channel Network Connections

Purpose	This task filters the display of OCHNCs and circuits in the Circuits window. You can filter the circuits in network, node, or card view based on circuit or OCHNC name, size, type, direction, and other attributes.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC, page 2-25
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Retrieve or higher

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- Step 1** Navigate to the appropriate CTC view:
- To filter network circuits, choose **View > Go to Network View**.
 - To filter circuits that originate, terminate, or pass through a specific node, choose **View > Go to Other Node**, then choose the node you want to search and click **OK**.
 - To filter circuits that originate, terminate, or pass through a specific card, double-click the card on the shelf graphic in node view to open the card in card view.
- Step 2** Click the **Circuits** tab.
- Step 3** Set the attributes for filtering the circuit display:
- a. Click the **Filter** button.
 - b. In the Circuit Filter dialog box, set the filter attributes by choosing one or more of the following:
 - Name—Enter a complete or partial circuit name to filter circuits based on the circuit name; otherwise leave the field blank.
 - Direction—Choose one: **Any** (direction not used to filter circuits), **1-way** (display only one-way circuits), or **2-way** (display only two-way circuits).
 - OCHNC Dir—(DWDM OCHNCs only) Choose one: **East to West** (displays only east-to-west circuits) or **West to East** (displays only west-to-east circuits).
 - OCHNC Wlen—(DWDM OCHNCs only) Choose an OCHNC wavelength to filter the circuits. For example, choosing 1530.33 will display channels provisioned on the 1530.33-nm wavelength.
 - Status—Choose one: **Any** (status not used to filter circuits) or **Discovered** (display only discovered circuits). Other statuses do not apply to OCHNCs.
 - State—Choose one: **OOS (ANSI)** or **Locked (ETSI)** to display only out-of-service circuits; **IS (ANSI)** or **Unlocked (ETSI)** to display only in-service circuits (OCHNCs have IS/Unlocked states only); or **OOS-PARTIAL (ANSI)** or **Locked-partial (ETSI)** to display only circuits with cross-connects in mixed service states.
 - Slot—Enter a slot number to filter circuits based on the source or destination slot; otherwise leave the field blank.
 - Port—Enter a port number to filter circuits based on the source or destination port; otherwise leave the field blank.
 - Type—Choose one: **Any** (type not used to filter circuits) or **OCHNC** (displays only OCHNCs).

**Note**

The following circuit types are not applicable to DWDM nodes: STS (displays only STS circuits), VT (displays only VT circuits), VT Tunnel (displays only VT tunnels), STS-V (displays STS VCAT circuits), VT-V (displays VT VCAT circuits), and VT Aggregation Point (displays only VT aggregation points), VC_HO_PATH_CIRCUIT (displays VC4 and VC4-Nc circuits), VC_LO_PATH_CIRCUIT (displays only VC3 and VC12 circuits), VC_LO_PATH_TUNNEL (displays only low-order tunnels), VC_LO_PATH_AGGREGATION (displays only log-order aggregation points), VC_HO_PATH_VCAT_CIRCUIT (displays high-order VCAT circuits), VC_LO_PATH_VCAT_CIRCUIT (displays low-order VCAT circuits).

- **Size**—Click the appropriate check boxes to filter circuits based on size: Multi-rate, Equipment non specific, 2.5 Gbps FEC, 2.5 Gbps No FEC, 10 Gbps FEC, or 10 Gbps No FEC.

**Note**

VT1.5, STS-1, STS3c, STS-6c, STS-9c, STS-12c, STS-24c, STS-48c, and STS-192c are not applicable to ANSI DWDM nodes. VC12, VC3, VC4, VC4-2c, VC4-3c, VC4-4c, VC4-6c, VC4-8c, VC4-9c, VC4-16c, and VC4-64 are not applicable to ETSI DWDM nodes.

The check boxes shown depend on the Type field selection. If you chose Any, all sizes are available. If you chose OCHNC as the circuit type, only Multi-rate, Equipment non specific, 2.5 Gbps FEC, 2.5 Gbps No FEC, 10 Gbps FEC, and 10 Gbps No FEC appear.

- Step 4** Click **OK**. Circuits matching the attributes in the Filter Circuits dialog box appear in the Circuits window.
- Step 5** To turn filtering off, click the Filter icon in the lower right corner of the Circuits window. Click the icon again to turn filtering on, and click the **Filter** button to change the filter attributes.
- Step 6** Return to your originating procedure (NTP).

DLP-G103 View Optical Channel Network Connections on a Span

Purpose	This task allows you to view OCHNCs and circuits on an ONS 15454 span.
Tools/Equipment	None
Prerequisite Procedures	DLP-G105 Provision DWDM Optical Channel Network Connections , page 7-10 DLP-G46 Log into CTC , page 2-25
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Retrieve or higher

- Step 1** In node view, choose **View > Go to Network View**. If you are already in network view, continue with [Step 2](#).
- Step 2** Right-click the green line containing the circuits you want to view and choose **Circuits** to view DWDM OCHNCs or unprotected circuits on the span.

In the Circuits on Span dialog box, you can view information about the circuits that traverse the span. The information that appears depends on the circuit type. For DWDM OCHNCs, the following information appears:

- OCHNC Wavelength—The wavelength provisioned for the OCHNC.
- DIR—2-way or 1-way.
- OCHNC Dir—The direction provisioned for the OCHNC, either east-to-west or west-to-east.
- Circuit—The OCHNC circuit name.

Step 3 Return to your originating procedure (NTP).

NTP-G59 Create and Delete Optical Channel Network Connections

Purpose	This procedure creates and deletes DWDM OCHNCs.
Tools/Equipment	None
Prerequisite Procedures	Chapter 3, “Turn Up a Node”
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

- Step 1** Complete the [“DLP-G46 Log into CTC” task on page 2-25](#) at a node on the network where you want to create and delete OCHNCs. If you are already logged in, continue with Step 2.
- Step 2** If you want to assign a name to the OCHNC source and destination ports before you create the circuit, complete the [“DLP-G104 Assign a Name to a Port” task on page 7-10](#). If not, continue with the next step.
- Step 3** Complete the [“DLP-G105 Provision DWDM Optical Channel Network Connections” task on page 7-10](#) as needed.
- Step 4** Complete the [“DLP-G106 Delete Optical Channel Network Connections” task on page 7-12](#) as needed.
- Stop. You have completed this procedure.**
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DLP-G104 Assign a Name to a Port

Purpose	This task assigns a name to a port on any ONS 15454 card.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC, page 2-25
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

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- Step 1** Double-click the card that has the port you want to provision. This can be any port on a traffic carrying card.
- Step 2** Click the **Provisioning** tab.
- Step 3** Click the **Port Name** column for the port number to which you are assigning a name.
- Step 4** Type the port name.
The port name can be up to 32 alphanumeric/special characters. The field is blank by default.
- Step 5** Click **Apply**.
- Step 6** Return to your originating procedure (NTP).
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DLP-G105 Provision DWDM Optical Channel Network Connections

Purpose	This task creates an OCHNC between ONS 15454s that are provisioned for DWDM.
Tools/Equipment	An OCHNC add port on the source node and an OCHNC drop port on destination node of the same wavelength are required. DLP-G46 Log into CTC, page 2-25
Prerequisite Procedures	All procedures in Chapter 3, “Turn Up a Node” must be completed at all nodes within the OCHNC route.
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

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- Step 1** Choose **View > Go to Network View**.
- Step 2** Click the **Circuits** tab, then click **Create**.
- Step 3** In the Circuit Creation dialog box, choose **OCHNC** from the Circuit Type list.
- Step 4** Click **Next**.
- Step 5** Define the circuit attributes:
- Name—Assign a name to the OCHNC. The name can be alphanumeric and up to 48 characters (including spaces). Circuit names should be 44 characters or less if you want the ability to create monitor circuits. If you leave the field blank, CTC assigns a default name to the circuit.

- Size—Equipped non specific is the default. You cannot change it.
- OCHNC Channel—Choose the wavelength you want to provision. [Table 7-3](#) lists the thirty-two available wavelengths.

Table 7-3 OCHNC 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
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

- **OCHNC Direction**—Choose the OCHNC direction, either East to West or West to East. If you choose West to East, the channel will exit the node through the LINE-TX port of the OSC-CSM-E or OPT-BST-E, named the East Side Card by Cisco MetroPlanner (typically these cards are hosted by Slot 17). If you choose East to West, the channel will exit the node through the LINE-TX port of the OSC-CSM-W or OPT-BST-W, named the West Side Card by Cisco MetroPlanner (typically these cards are hosted by Slot 1).
- **Bidirectional**—Check this check box to create a bidirectional OCHNC; uncheck it to create a unidirectional OCHNC.

Step 6 Click **Next**.

Step 7 In the Circuit Source area, choose the source node from the Node drop-down list.

Step 8 Click **Next**.

Step 9 In the Circuit Destination area, choose the destination node from the Node drop-down list.

Step 10 Click **Finish**. The circuit might take a few minutes to come up, depending on the size of the network. If problems persist, refer to the *Cisco ONS 15454 DWDM Troubleshooting Guide* as necessary.

Step 11 Return to your originating procedure (NTP).

DLP-G106 Delete Optical Channel Network Connections

Purpose	This task deletes circuits and DWDM OCHNCs.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC, page 2-25
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Step 1 Complete the [“NTP-G103 Back Up the Database” procedure on page 13-2](#), or record the circuit information if it will be recreated.

Step 2 Consult your network operations center (NOC) or other appropriate personnel to verify that the OCHNC can be safely deleted.

Step 3 Investigate all network alarms and resolve any problems that might be affected by the OCHNC deletion.

Step 4 Choose **View > Go to Network View**.

Step 5 Click the **Circuits** tab.

Step 6 Choose the OCHNCs you want to delete, then click **Delete**.

Step 7 In the Delete Circuits confirmation dialog box, check **Notify when completed**, as needed.

If checked, the CTC Alerts confirmation dialog box indicates when the OCHNC is deleted. During this time, you cannot perform other CTC functions. If you are deleting many OCHNCs, waiting for confirmation might take a few minutes. Circuits are deleted whether or not this check box is checked.

**Note**

The CTC Alerts dialog box will not automatically open to show a deletion error unless you checked All alerts or Error alerts only in the CTC Alerts dialog box. For more information, see the “[DLP-G53 Configure the CTC Alerts Dialog Box for Automatic Popup](#)” task on page 2-32. If the CTC Alerts dialog box is not set to open automatically with a notification, the red triangle inside the CTC Alerts toolbar icon indicates that a notification exists.

- Step 8** Complete one of the following:
- If you checked Notify when completed, the CTC Alerts dialog box appears. If you want to save the information, continue with [Step 9](#). If you do not want to save the information, continue with [Step 10](#).
 - If you did not check Notify when completed, the Circuits window appears. Continue with [Step 11](#).
- Step 9** If you want to save the information in the CTC Alerts dialog box, complete the following steps. If you do not want to save it, continue with [Step 10](#).
- a. Click **Save**.
 - b. Click **Browse** and navigate to the directory where you want to save the file.
 - c. Type the file name using a .txt file extension, and click **OK**.
- Step 10** Click **Close** to close the CTC Alerts dialog box.
- Step 11** Complete the “[NTP-G103 Back Up the Database](#)” procedure on page 13-2 if you require a backup of your changes.
- Step 12** Return to your originating procedure (NTP).

NTP-G60 Create Overhead Circuits

Purpose	This procedure creates overhead circuits on an ONS 15454 network. Overhead circuits include generic communications channels (GCCs), IP-encapsulated tunnels, the AIC-I card orderwire, and the AIC-I card UDC.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

- Step 1** Complete the “[DLP-G46 Log into CTC](#)” task on page 2-25 at the node where you will create the overhead circuit. If you are already logged in, continue with Step 2.
- Step 2** Choose **View > Go to Network View**.
- Step 3** As needed, complete the “[DLP-G76 Provision GCC Terminations](#)” task on page 7-14.
- Step 4** As needed, complete the “[DLP-G97 Provision a Proxy Tunnel](#)” task on page 7-15.
- Step 5** As needed, complete the “[DLP-G98 Provision a Firewall Tunnel](#)” task on page 7-16.

- Step 6** As needed, complete the “[DLP-G107 Create an IP-Encapsulated Tunnel](#)” task on page 7-17, then continue with the next step.
- Step 7** After creating an IP-encapsulated tunnel, put the ports that are hosting the IP-encapsulated tunnel in service. See the “[DLP-G108 Change the Service State for a Port](#)” task on page 7-18.
- Step 8** As needed, complete the “[DLP-G109 Provision Orderwire](#)” task on page 7-19.
- Step 9** As needed, complete the “[DLP-G110 Create a User Data Channel Circuit](#)” task on page 7-20.
- Stop. You have completed this procedure.**
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DLP-G76 Provision GCC Terminations

Purpose	This task creates the DWDM GCC terminations required for network setup when using the TXP_MR_10G, TXP_MR_2.5G, TXPP_MR_2.5G, and MXP_2.5G_10G cards. Perform this task before you create circuits for these cards. In this task, you can also set up the node so that it has direct IP access to a far-end non-ONS node over the GCC network.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC , page 2-25
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

- Step 1** In node view, click the **Provisioning > Comm Channels > GCC** tabs.
- Step 2** In the GCC Terminations area, click **Create**.
- Step 3** In the Create OTN GCC Terminations dialog box, click the ports where you want to create the GCC termination. To select more than one port, press the **Shift** key or the **Ctrl** key.



Note GCC refers to the general communications channel, which is used for ONS 15454 transponders and muxponders in DWDM applications.

- Step 4** (Optional) From the GCC Rate drop-down list, choose from two options:
- 192k is the line rate of Section DCC (SDCC)—This is the default option.
 - 576k is the line rate of Line DCC (LDCC)—This option will be supported in a future software release.
- Step 5** Click **Set to IS** if you want to put ports in service.
- Step 6** If the SDCC termination is to include a non-ONS node, check the **Far End is Foreign** check box. This automatically sets the far-end node IP address to 0.0.0.0, which means that any address can be specified by the far end. To change the default to a specific the IP address, see the “[DLP-G184 Change a GCC Termination](#)” task on page 10-40.
- Step 7** In the Layer 3 box, perform one of the following:
- Check the IP box only if the LDCC is between the ONS 15454 and another ONS node and only ONS nodes reside on the network. The LDCC will use Point-to-Point Protocol (PPP).

- Check the IP and OSI boxes—if the LDCC is between the ONS 15454 and another ONS node, and third party NEs that use the OSI protocol stack are on the same network. The LDCC will use PPP.

Step 8 If you checked OSI, complete the following steps. If you checked IP only, continue with [Step 9](#).

a. Click **Next**.

b. Provision the following fields:

- Router—Choose the OSI router.
- ESH—Sets the End System Hello (ESH) propagation frequency. End system network elements (NEs) transmit ESHs to inform other ESs and ISs about the Network Service Access Points (NSAPs) that it serves. The default is 10 seconds. The range is 10 to 1000 seconds.
- ISH—Sets the Intermediate System Hello (ISH) PDU propagation frequency. Intermediate system NEs send ISHs to other ESs and ISs to inform them about the IS NEs that 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.
- 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 9 Click **Finish**. Until all network GCC terminations are created and the ports are in service, GCC-EOC alarms appear.

Step 10 Return to your originating procedure (NTP).

DLP-G97 Provision a Proxy Tunnel

Purpose	This task sets up a proxy tunnel to communicate with a non-ONS far-end node. Proxy tunnels are only necessary when the proxy server is enabled and a foreign GCC termination exists, or if static routes exist so that the GCC network is used to access remote networks or devices. You can provision a maximum of 12 proxy server tunnels.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC, page 2-25 DLP-G76 Provision GCC Terminations, page 7-14
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Superuser



Note

If the proxy server is disabled, you cannot set up a proxy tunnel.

Step 1 In node view, click the **Provisioning > Network > Proxy** tabs.

Step 2 Click **Create**.

- Step 3** In the Create Tunnel dialog box, complete the following:
- Source Address—Type the IP address of the source node (32 bit length) or source subnet (any other length).
 - Length—Choose the length of the source subnet mask.
 - Destination Address—Type the IP address of the destination node (32 bit length) or destination subnet (any other length).
 - Length—Choose the length of the destination subnet mask.
- Step 4** Click **OK**.
- Step 5** Continue with your originating procedure (NTP).
-

DLP-G98 Provision a Firewall Tunnel

Purpose	This task provisions destinations that will not be blocked by the firewall. Firewall tunnels are only necessary when the proxy server is enabled and a foreign GCC termination exists, or if static routes exist so that the GCC network is used to access remote networks or devices. You can provision a maximum of 12 firewall tunnels.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC, page 2-25 DLP-G76 Provision GCC Terminations, page 7-14
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Superuser



Note If the proxy server is configured as proxy-only or is disabled, you cannot set up a firewall tunnel.

- Step 1** In node view, click the **Provisioning > Network > Firewall** tabs.
- Step 2** Click **Create**.
- Step 3** In the Create Tunnel dialog box, complete the following:
- Source Address—Type the IP address of the source node (32 bit length) or source subnet (any other length).
 - Length—Choose the length of the source subnet mask.
 - Destination Address—Type the IP address of the destination node (32 bit length) or destination subnet (any other length).
 - Length—Choose the length of the destination subnet mask.
- Step 4** Click **OK**.
- Step 5** Continue with your originating procedure (NTP).
-

DLP-G107 Create an IP-Encapsulated Tunnel

Purpose	This task creates an IP-encapsulated tunnel to transport traffic from third-party SONET/SDH equipment across ONS 15454 networks. IP-encapsulated tunnels are created on the Section DCC channel (D1-D3) (if not used by the ONS 15454 as a terminated data communications channel [DCC]).
Tools/Equipment	An OSCM, OSC-CSM, MXP_2.5_10E, MXP_2.5_10G, MXPP_MR_2.5G, or MXP_MR_2.5G card must be installed.
Prerequisite Procedures	DLP-G46 Log into CTC, page 2-25
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher



Note

Each ONS 15454 can have up to ten IP-encapsulated tunnel connections. Terminated Section DCCs (SDCCs) used by the ONS 15454 cannot be used as a tunnel endpoint, and an SDCC that is used as a tunnel endpoint cannot be terminated. All tunnel connections are bidirectional.

-
- Step 1** Verify that IP addresses are provisioned at both the source and destination nodes of the planned tunnel. For more information, see the [“DLP-G56 Provision IP Settings” task on page 3-12](#).
- Step 2** In network view, click the **Provisioning > Overhead Circuits** tabs.
- Step 3** Click **Create**.
- Step 4** In the Overhead Circuit Creation dialog box, complete the following in the Circuit Attributes area:
- Name—Type the tunnel name.
 - Type—Choose **IP Tunnel-D1-D3**.
 - Maximum Bandwidth—Type the percentage of total SDCC bandwidth used in the IP tunnel (the minimum percentage is 10 percent).
- Step 5** Click **Next**.
- Step 6** In the Circuit Source area, complete the following:
- Node—Choose the source node.
 - Slot—Choose the source slot.
 - Port—If applicable, choose the source port.
 - Channel—Displays IPT (D1-D3).
- Step 7** Click **Next**.
- Step 8** In the Circuit Destination area, complete the following:
- Node—Choose the destination node.
 - Slot—Choose the destination slot.
 - Port—If applicable, choose the destination port.
 - Channel—Displays IPT (D1-D3).

- Step 9** Click **Finish**.
- Step 10** Return to your originating procedure (NTP).
-

DLP-G108 Change the Service State for a Port

Purpose	This task puts a port in service or removes a port from service. After creating an IP-encapsulated tunnel, put the ports that are hosting the IP-encapsulated tunnel in service.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC, page 2-25
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

- Step 1** In node view on the shelf graphic, double-click the card with the port(s) you want to put in or out of service. The card view appears.
- Step 2** Click the **Provisioning > Line** tabs.
- Step 3** In the Admin State column for the desired port, choose one of the following from the drop-down list:
- **IS (ANSI) or Unlocked (ETSI)**—Puts the port in the IS-NR (ANSI) or Unlocked-enabled (ETSI) service state.
 - **OOS,DSBLD (ANSI) or Locked,disabled (ETSI)**—Puts the port in the OOS-MA,DSBLD (ANSI) or Locked-enabled,disabled (ETSI) service state.

For ANSI nodes, traffic is not passed on the port until the service state is changed to IS-NR; OOS-MA,MT; or Out-of-Service and Autonomous, Automatic In-Service (OOS-AU,AINS). For ETSI nodes, traffic is not passed on the port until the service state is changed to Unlocked-enabled; Locked-enabled,maintenance; or Unlocked-disabled,automaticInService.
 - **OOS,MT (ANSI) or Locked,maintenance (ETSI)**—Puts the port in the OOS-MA,MT/Locked-enabled,maintenance service state. This service state does not interrupt traffic flow, but alarm reporting is suppressed and loopbacks are allowed. Raised fault conditions, whether or not their alarms are reported, can be retrieved on the CTC Conditions tab or by using the TL1 RTRV-COND command. Use the OOS-MA,MT/Locked-enabled,maintenance service state for testing or to suppress alarms temporarily. Change to the IS-NR/Unlocked-enabled or OOS-AU,AINS/Unlocked-disabled,automaticInService service states when testing is complete.
 - **IS,AINS (ANSI) or Unlocked,automaticInService (ETSI)**—Puts the port in the OOS-AU,AINS/Unlocked-enabled,automaticInService service state. In this service state, alarm reporting is suppressed, but traffic is carried and loopbacks are allowed. After the soak period passes, the port changes to IS-NR/Unlocked-enabled. Raised fault conditions, whether their alarms are reported or not, can be retrieved on the CTC Conditions tab or by using the TL1 RTRV-COND command.

For more information about service states, see [Appendix C, “DWDM Administrative and Service States.”](#)

- Step 4** If you set the Admin State to IS-AINS/Unlocked, automaticInService, set the soak period time in the AINS Soak field. This is the amount of time that the port will stay in the OOS-AU,AINS/Unlocked-enabled,automaticInService service state after a signal is continuously received. When the soak period elapses, the port changes to the IS-NR/Unlocked-enabled service state.
- Step 5** Click **Apply**. The new port service state appears in the Service State column.
- Step 6** As needed, repeat this task for each port.
- Step 7** Return to your originating procedure (NTP).

DLP-G109 Provision Orderwire

Purpose	This task provisions orderwire on the AIC or the AIC-I card.
Tools/Equipment	An AIC-I card must be installed in Slot 9. An OSCM, OSC-CSM, MXP_2.5_10E, MXP_2.5_10G, MXPP_MR_2.5G, or MXP_MR_2.5G card must be installed.
Prerequisite Procedures	DLP-G46 Log into CTC, page 2-25
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

- Step 1** In network view, click the **Provisioning > Overhead Circuits** tabs.
- Step 2** Click **Create**.
- Step 3** In the Overhead Circuit Creation dialog box, complete the following fields in the Circuit Attributes area:
- **Name**—Assign a name to the circuit. The name can be alphanumeric and up to 48 characters (including spaces).
 - **Circuit Type**—Choose either **Local Orderwire** or **Express Orderwire** depending on the orderwire path that you want to create. If regenerators are not used between ONS 15454 nodes, you can use either local or express orderwire channels. If regenerators exist, use the express orderwire channel. You can provision up to four ONS 15454 OC-N ports for each orderwire path.
 - **PCM**—Choose the Pulse Code Modulation voice coding and companding standard, either **Mu_Law** (North America, Japan) or **A_Law** (Europe). The provisioning procedures are the same for both types of orderwire.



Caution

When provisioning orderwire for ONS 15454s residing in a ring, do not provision a complete orderwire loop. For example, a four-node ring typically has east and west ports provisioned at all four nodes. However, to prevent orderwire loops, provision two orderwire ports (east and west) at all but one of the ring nodes.

- Step 4** Click **Next**.
- Step 5** In the Circuit Source area, complete the following:
- **Node**—Choose the source node.
 - **Slot**—Choose the source slot.

- Port—If applicable, choose the source port.
- Step 6** Click **Next**.
- Step 7** In the Circuit Destination area, complete the following:
- Node—Choose the destination node.
 - Slot—Choose the destination slot.
 - Port—If applicable, choose the destination port.
- Step 8** Click **Finish**.
- Step 9** Return to your originating procedure (NTP).
-

DLP-G110 Create a User Data Channel Circuit

Purpose	This task creates a UDC circuit on the ONS 15454. A UDC circuit allows you to create a dedicated data channel between nodes.
Tools/Equipment	OSCM, OSC-CSM, MXPP_MR_2.5G, or MXP_MR_2.5G must be installed.
Prerequisite Procedures	DLP-G46 Log into CTC, page 2-25
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

- Step 1** In network view, click the **Provisioning > Overhead Circuits** tabs.
- Step 2** Click **Create**.
- Step 3** In the Overhead Circuit Creation dialog box, complete the following fields in the Circuit Attributes area:
- Name—Assign a name to the circuit. The name can be alphanumeric and up to 48 characters (including spaces).
 - Type—Choose either **User Data-F1** or **User Data D-4-D-12** from the drop-down list. (User Data D-4-D-12 is not available if the ONS 15454 is provisioned for DWDM.)
- Step 4** Click **Next**.
- Step 5** In the Circuit Source area, complete the following:
- Node—Choose the source node.
 - Slot—Choose the source slot.
 - Port—If applicable, choose the source port.
- Step 6** Click **Next**.
- Step 7** In the Circuit Destination area, complete the following:
- Node—Choose the destination node.
 - Slot—Choose the destination slot.
 - Port—If applicable, choose the destination port.

- Step 8** Click **Finish**.
- Step 9** Return to your originating procedure (NTP).

NTP-G61 Modify and Delete Overhead Circuits

Purpose	This procedure repairs IP circuits and deletes overhead circuits.
Tools/Equipment	None
Prerequisite Procedures	NTP-G60 Create Overhead Circuits, page 7-13
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher



Caution

Deleting circuits can be service affecting and should be performed during a maintenance window.

- Step 1** Complete the [“DLP-G46 Log into CTC” task on page 2-25](#) for a node on the network where you want to repair or delete a circuit. If you are already logged in, continue with Step 2.
- Step 2** As needed, complete the [“DLP-G111 Repair an IP Tunnel” task on page 7-21](#).
- Step 3** As needed, complete the [“DLP-G112 Delete Overhead Circuits” task on page 7-22](#).
- Stop. You have completed this procedure.**

DLP-G111 Repair an IP Tunnel

Purpose	This task repairs circuits that have a PARTIAL status as a result of node IP address changes.
Tools/Equipment	None
Prerequisite Procedures	DLP-G107 Create an IP-Encapsulated Tunnel, page 7-17
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

- Step 1** Obtain the original IP address of the node in question.
- Step 2** From the View menu, choose **Go to Network View**.
- Step 3** From the Tools menu, choose **Overhead Circuits > Repair IP Circuits**.
- Step 4** Review the text in the IP Repair wizard and click **Next**.
- Step 5** In the Node IP address area, complete the following:
- Node—Choose the node that has a PARTIAL circuit.

- Old IP Address—Type the node's original IP address.

- Step 6** Click **Next**.
- Step 7** Click **Finish**.
- Step 8** Return to your originating procedure (NTP).
-

DLP-G112 Delete Overhead Circuits

Purpose	This task deletes overhead circuits. Overhead circuits include IP-encapsulated tunnels, AIC and AIC-I card orderwire, and UDCs.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC, page 2-25
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher



Caution

Deleting overhead circuits is service affecting if the circuits are in service (IS). To put circuits out of service (OOS), see the “[DLP-G108 Change the Service State for a Port](#)” task on page 7-18.

- Step 1** From the View menu, choose **Go to Network View**.
- Step 2** Click the **Provisioning > Overhead Circuits** tabs.
- Step 3** Click the overhead circuit that you want to delete: local or express orderwire, user data, IP-encapsulated tunnel, or DCC tunnel.
- Step 4** Click **Delete**.
- Step 5** In the confirmation dialog box, click **Yes** to continue.
- Step 6** Return to your originating procedure (NTP).
-

NTP-G62 Create a J0 Section Trace

Purpose	This procedure creates a repeated, fixed-length string of characters used to monitor interruptions or changes to traffic between nodes.
Tools/Equipment	At least one of the following cards must be installed: MXP_MR_2.5G, MXPP_MR_2.5G, TXP_MR_2.5G, TXPP_MR_2.5G, MXP_2.5G_10E, TXP_MR_10E, MXP_2.5G_10G, or TXP_MR_10G.
Prerequisite Procedures	None
Required/As Needed	As needed (optional if path trace is set)
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

-
- Step 1** Complete the [“DLP-G46 Log into CTC” task on page 2-25](#) at a node on the network where you will create the section trace. If you are already logged in, continue with Step 2.
- Step 2** In node view, double-click the MXP_MR_2.5G, MXPP_MR_2.5G, TXP_MR_2.5G, TXPP_MR_2.5G, MXP_2.5G_10E, TXP_MR_10E, MXP_2.5G_10G, or TXP_MR_10G card.
- Step 3** Click the **Provisioning > Line > Section Trace** tabs.
- Step 4** From the Port drop-down list, choose the port for the section trace.
- Step 5** From the Trace Mode drop-down list, enable the section trace expected string by choosing **Auto** or **Manual**:
- Auto—The first string received from the source port is automatically provisioned as the current expected string. An alarm is raised when a string that differs from the baseline is received.
 - Manual—The string entered in the Current Expected String field is the baseline. An alarm is raised when a string that differs from the Current Expected String is received.
- Step 6** In the Section Trace String Size area, click **1 byte**, **16 byte**, or **64 byte**. The 1 byte option allows you to enter one character; the 16 byte option allows a 15 character string and the 64 byte option allows a 62 character string.
- Step 7** In the New Transmit String field, enter the string that you want to transmit. Enter a string that makes the destination port easy to identify, such as the node IP address, node name, or another string. If the New Transmit String field is left blank, the J0 transmits a string of null characters.
- Step 8** If you set the Section Trace Mode field to Manual, enter the string that the destination port should receive from the source port in the New Expected String field. If you set Section Trace Mode to Auto, skip this step.
- Step 9** Click the **Disable AIS and RDI if TIM-P is detected** check box if you want to suppress the alarm indication signal (AIS) and remote defect indication (RDI) when the STS Section Trace Identifier Mismatch Path (TIM-P) alarm appears. Refer to the *Cisco ONS 15454 Troubleshooting Guide* and the *Cisco ONS 15454 SDH Troubleshooting Guide* for descriptions of alarms and conditions.
- Step 10** Click **Apply**.
- Step 11** After you set up the section trace, the received string appears in the Received field. The following options are available:
- Click **Hex Mode** to display section trace in hexadecimal format. The button name changes to ASCII Mode. Click it to return the section trace to ASCII format.
 - Click the **Reset** button to reread values from the port.

- Click **Default** to return to the section trace default settings (Section Trace Mode is set to Off and the New Transmit and New Expected Strings are null).

**Caution**

Clicking Default will generate alarms if the port on the other end is provisioned with a different string.

The expect and receive strings are updated every few seconds if the Section Trace Mode field is set to Auto or Manual.

Stop. You have completed this procedure.
