



CHAPTER 13

Add and Remove Nodes

This chapter explains how to add and remove Cisco ONS 15310-MA SDH nodes from path protection configurations and linear add-drop multiplexers.

Before You Begin

Before performing any of the following procedures, complete the “[NTP-H56 Document Existing Provisioning](#)” procedure on page 8-2. Also investigate all alarms and clear any trouble conditions. Refer to the *Cisco ONS 15310-MA SDH Troubleshooting Guide* as necessary.

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

1. [NTP-H97 Add a Path Protection Node, page 13-1](#)—Complete as needed.
2. [NTP-H98 Remove a Path Protection Node, page 13-4](#)—Complete as needed.
3. [NTP-H99 Add an End Node to a Linear ADM, page 13-6](#)—Complete as needed.
4. [NTP-H135 Add a Non-ONS 15310-MA Node to a Linear ADM, page 13-7](#)—Complete as needed to add an ONS 15600, ONS 15454, or ONS 15310-MA SDH node to a linear configuration where an ONS 15310-MA SDH is an end node.
5. [NTP-H101 Remove an In-Service Node from a Linear ADM, page 13-9](#)—Complete as needed to remove a node from a linear ADM without disrupting traffic.

NTP-H97 Add a Path Protection Node

| | |
|--------------------------------|--|
| Purpose | This procedure adds a node to a path protection configuration. |
| Tools/Equipment | None |
| Prerequisite Procedures | Cards must be installed and node turn-up procedures completed on the node that will be added to the path protection configuration. See Chapter 1 , “,” and Chapter 3 , “Turn Up a Node.” |
| Required/As Needed | As needed |
| Onsite/Remote | Onsite |
| Security Level | Superuser only |

-
- Step 1** According to local site practice, complete the “[NTP-H102 Back Up the Database](#)” procedure on page 14-2 for all the nodes in the ring.

- Step 2** Verify the card installation on the new node. See the [NTP-H148 Verify Card and SFP Installation, page 3-2](#).



Note In Cisco Transport Controller (CTC), SFPs are called pluggable port modules (PPMs).

- Step 3** Verify that the STM-M ports (or cards in non-310 nodes) that will serve as the path protection trunk (span) ports match the path protection optical rate of the trunk cards to which the new node will be connected. For example, if the adjacent nodes have STM4 ports, the new node must have STM4 ports.
- Step 4** Verify that fiber is available to connect the new node to the existing nodes.
- Step 5** Complete the “[NTP-H26 Verify Node Turn-Up](#)” procedure on page 4-2.
- Step 6** Log into a node in the path protection configuration where you want to add a node. See the “[DLP-H29 Log into CTC](#)” task on page 16-43 for instructions. In order to have CTC visibility to the new node after it is added, you must be an authorized user on the node and you must have IP connectivity to the node.
- Step 7** Complete the “[DLP-H163 Check the Network for Alarms and Conditions](#)” task on page 17-56 to verify that the path protection configuration is free of major alarms or problems. If trouble is indicated (for example, a major alarm exists), resolve the problem before proceeding. See [Chapter 8, “Manage Alarms”](#) or, if necessary, refer to the *Cisco ONS 15310-MA SDH Troubleshooting Guide*.
- Step 8** Count the total number of circuits on the fiber that is cut between the existing nodes. To count the number of circuits, right click on the fiber that is cut, and click circuits.
- Step 9** In network view, click the **Circuits** tab.
- To view Partial circuits, click the Filter button and select **PARTIAL** from the **Status** drop-down list. The Partial circuits, if any, are displayed.
- To view Partial_TL1 circuits, click the Filter button and select **PARTIAL_TL1** from the **Status** drop-down list. The Partial_TL1 circuits, if any, are displayed.
- Resolve any partial circuits (both Partial and Partial_TL1) in the network before proceeding. However, if you want to continue with [Step 10](#), match the number of partial circuits and circuit names that existed before and after adding a path protection node. This ensures that no additional partial circuits are created after this procedure is completed.
- Step 10** Log into the new node:
- If the node has a LAN connection and does not appear on the network map, from the File menu, choose **Add Node**, then enter the IP address or the DNS name of the new node and click **OK**. Wait for the new node to initialize and appear on the network map. Proceed to the next bullet point.
 - If the node has a LAN connection and appears on the network map, from the View menu, choose **Go to Other Node**, then choose the new node from the Select Node to Go to drop-down list on the Select Node dialog box and click **OK**.
 - If the new node is not connected to the network, log into it directly using the “[DLP-H29 Log into CTC](#)” task on page 16-43.
- Step 11** Click the **Alarms** tab and click Synchronize.
- a. Verify that the alarm filter is not on. See the “[DLP-H88 Disable Alarm Filtering](#)” task on page 16-107 as necessary.
 - b. Verify that no critical or major alarms are present, nor any facility alarms, such as LOS, LOF, AIS-L, SF, and SD. If trouble is indicated (for example, a major alarm exists), resolve the problem before proceeding. See [Chapter 8, “Manage Alarms”](#) or, if necessary, refer to the *Cisco ONS 15310-MA SDH Troubleshooting Guide*.
- Step 12** In network view, click the **Circuits** tab.

To view Partial circuits, click the Filter button and select **PARTIAL** from the **Status** drop-down list. The Partial circuits, if any, are displayed.

To view Partial_TL1 circuits, click the Filter button and select **PARTIAL_TL1** from the **Status** drop-down list. The Partial_TL1 circuits, if any, are displayed.

Resolve any partial circuits (both Partial and Partial_TL1) in the network before proceeding. However, if you want to continue with [Step 13](#), match the number of partial circuits and circuit names that existed before and after adding a path protection node. This ensures that no additional partial circuits are created after this procedure is completed.

- Step 13** Complete the following steps if the node is on the same subnet as other path protection nodes, it is not provisioned as an ENE (see the [“NTP-H21 Set Up CTC Network Access” procedure on page 3-6](#)), and a CTC computer will directly connect to the node while other CTC computers are directly connected to other path protection nodes. If not, continue with [Step 14](#).
- Click the **Provisioning > Network > General** tabs. View the IP Address and Net/Subnet Mask Length fields to verify the node is on the same subnet as other path protection nodes.
 - Click the **Static Routing** tab and click **Create**.
 - In the Create Static Route dialog box, enter the following settings:
 - Destination IP address: *Local-PC-IP-address*
 - Net Mask: **255.255.255.255**
 - Next Hop: *IP-address-of-the-Cisco-ONS-15310- MA*
 - Cost: **1**
 - Click **OK**.
- Step 14** (Optional) Create test circuits, making sure they pass through the path protection line ports, and run test traffic through the node to ensure the ports are functioning properly. See the [“NTP-H48 Create a Manually Routed Optical Circuit” procedure on page 5-35](#) and the [“NTP-H50 Test Optical Circuits” procedure on page 5-41](#) for information.
- Step 15** Create the DCC terminations on the new node. See the [“DLP-H52 Provision Section DCC Terminations” task on page 16-68](#).
- Step 16** From the View menu, choose **Go to Network View**.
- Step 17** Complete the [“DLP-H166 Initiate a Path Protection Force Switch on a Span” task on page 17-58](#) to switch traffic away from the span that will be broken to connect to the new node.
- Step 18** Two nodes will connect directly to the new node; remove their fiber connections:
- Remove the east fiber connection from the node that will connect to the west port of the new node.
 - Remove the west fiber connection from the node that will connect to the east port of the new node.
- Step 19** Replace the removed fibers with the fibers that are connected to the new node.
- Step 20** Log out of CTC and log back into a node in the network.
- Step 21** From the View menu, choose **Go to Network View** to display the path protection nodes. The new node should appear in the network map. Wait for a few minutes to allow all the nodes to appear.
- Step 22** Click the **Circuits** tab and wait for all the circuits to appear, including spans. Count the number of partial circuits.
- Step 23** Ensure that nodes involved in the node addition operation are in the initialized state. This is because, CTC does not consider nodes that are not initialized (they appear as gray icons in the CTC network map) when evaluating the circuits.

**Note**

[Step 24](#) is recommended to be performed only on nodes (the newly added node, and the existing two nodes in the network between which the new node is added) involved in the node addition operation. Disable network discovery while launching CTC, add only those nodes involved in the node addition operation.

**Note**

CTC automatically creates VT Tunnels. The cross connects should not be created manually in the intermediate nodes.

**Note**

[Step 24](#) does not create the overlay ring circuits. To create overlay ring circuits that route traffic around multiple rings passing through one or more nodes more than once, see the “[NTP-H179 Create an Overlay Ring Circuit](#)” procedure on page 5-52.

- Step 24** In the network view, right-click the new node and choose **Update Circuits With New Node** from the list of options. Wait for the confirmation dialog box to appear. Verify that the number of updated circuits in the dialog box is correct (the circuit count should be same as obtained in [Step 8](#)).
- Step 25** Click the **Circuits** tab and verify that no partial circuits appear. However, if the partial circuits still exist in the network, verify whether they were present in [Step 8](#) and [Step 12](#). This will ensure that no additional partial circuits are created by this procedure.
- Step 26** Complete the “[DLP-H167 Clear a Path Protection Force Switch](#)” task on page 17-59.
- Step 27** (Optional) Complete the “[NTP-H32 Path Protection Acceptance Test](#)” procedure on page 4-11.
- Stop. You have completed this procedure.**

NTP-H98 Remove a Path Protection Node

| | |
|--------------------------------|---|
| Purpose | This procedure removes a node from a path protection configuration. |
| Tools/Equipment | None |
| Prerequisite Procedures | NTP-H102 Back Up the Database , page 14-2 |
| Required/As Needed | As needed |
| Onsite/Remote | Onsite |
| Security Level | Provisioning or higher |

**Caution**

The following procedure minimizes traffic outages during node removals.

**Caution**

If you remove a node that is the only BITS timing source for the ring, you also remove the only source of synchronization for all the nodes in that ring. Circuits that connect to other networks which are synchronized to a Stratum 1 clock will experience a high level of pointer adjustments, which might adversely affect customer service.

-
- Step 1** Draw a diagram of the path protection configuration where you will remove the node. In the diagram, identify the following:
- The node that is connected through its west port to the node that will be removed (the target node)
 - The node that is connected through its east port to the target node
- Step 2** Log into a node in the network where you want to remove a path protection node. See the “[DLP-H29 Log into CTC](#)” task on page 16-43 for instructions.
- Step 3** Complete the “[DLP-H163 Check the Network for Alarms and Conditions](#)” task on page 17-56 to verify that the path protection configuration is free of alarms. If trouble is indicated (for example, a major alarm exists), resolve the problem before proceeding. See [Chapter 8, “Manage Alarms”](#) or, if necessary, refer to the *Cisco ONS 15310-MA SDH Troubleshooting Guide*.
- Step 4** Complete the “[DLP-H115 Delete Circuits](#)” task on page 17-19 for circuits that originate or terminate in the target node. (If a circuit has multiple drops, delete only the drops that terminate on the node you are deleting.)
- Step 5** Complete the “[DLP-H168 Verify Pass-Through Circuits](#)” task on page 17-59 to verify that circuits passing through the target node enter and exit the node on the same VC high-order path or VC low-order path.
- Step 6** Complete the “[DLP-H166 Initiate a Path Protection Force Switch on a Span](#)” task on page 17-58 for all spans connected to the node you are removing.
- Step 7** Remove all fiber connections between the target node and the two neighboring nodes.
- Step 8** Reconnect the fiber of the two neighboring nodes directly, west port to east port.



Note If you delete a node that was in a login node group, you will see partial circuits for that node in CTC network view. (Although it is no longer part of the ring, the removed node still reports to CTC until it is no longer in a login node group.)

- Step 9** Exit CTC and log back in. See the “[DLP-H29 Log into CTC](#)” task on page 16-43 for instructions.
- Step 10** Log into each newly connected node and open the **Alarms** tab.
- Verify that the alarm filter is not on. See the “[DLP-H88 Disable Alarm Filtering](#)” task on page 16-107 as necessary.
 - Verify that the trunk cards/ports are free of alarms. Resolve any alarms before proceeding. Refer to the *Cisco ONS 15310-MA SDH Troubleshooting Guide*.
- Step 11** Complete the “[DLP-H140 Verify Timing in a Reduced Ring](#)” task on page 17-43.
- Step 12** Complete the “[DLP-H167 Clear a Path Protection Force Switch](#)” task on page 17-59.
- Step 13** Click the **Circuits** tab and verify that no partial circuits are present.
- Step 14** (Optional) Complete the “[NTP-H32 Path Protection Acceptance Test](#)” procedure on page 4-11.

Stop. You have completed this procedure.

NTP-H99 Add an End Node to a Linear ADM

| | |
|--------------------------------|--|
| Purpose | This procedure adds a single ONS 15310-MA SDH node to the end of an ONS 15310 linear add-drop multiplexer (ADM) network. |
| Tools/Equipment | None |
| Prerequisite Procedures | NTP-H29 Provision a Linear ADM Network, page 4-6 |
| Required/As Needed | As needed |
| Onsite/Remote | Onsite |
| Security Level | Provisioning or higher |

**Note**

Optical transmit and receive levels should be in their acceptable range as shown in the specifications section for each card in [Table 1-2 on page 1-30](#) for the ONS 15310-MA SDH.

**Note**

In a linear ADM configuration, two STM-M ports in 1+1 protection are connected to two STM-M ports in 1+1 protection on a second node. On the second node, two more STM-M ports are connected to a third node. The third node can be connected to a fourth node, and so on, depending on the number of nodes in the linear ADM. The ONS 15310-MA SDH has four optical ports and can be added as an end node or in the middle of a linear ADM.

**Note**

The two optical ports on the ONS 15310-MA SDH are present on either Slot 3 or Slot 4 of the chassis. Other ONS 15xxx platforms do not allow a 1+1 protection group to be created if the working and protect ports are on the same slot. Any of these ports (Slot 3, Port 1-1 or Port 2-1 or Slot 4, Port 1-1 or Port 2-1 for the ONS 15310-MA SDH) can be designated as the working port, depending on your configuration and fiber connections.

**Caution**

If the linear ADM carries traffic, you cannot add a node between two linear nodes unless you delete and recreate the circuits. Use this procedure to add a node to the end of the linear ADM.

- Step 1** According to local site practice, complete the “[NTP-H102 Back Up the Database](#)” procedure on [page 14-2](#) for all the nodes in the ring.
- Step 2** At the new node, complete one of the following procedures:
- If the node has not been turned up, complete all procedures in [Chapter 3, “Turn Up a Node.”](#)
 - If the node has been turned up, complete the “[NTP-H26 Verify Node Turn-Up](#)” procedure on [page 4-2](#).
- Step 3** Verify that the new node has two available optical ports with the same rate as the linear ADM. If the optical ports are not installed, complete the “[DLP-H16 Install SFP Connectors](#)” task on [page 16-19](#). If the optical ports have different line rates, complete the “[DLP-H194 Change the Optical Line Rate](#)” task on [page 17-89](#).
- Step 4** For the ONS 15310-MA SDH, complete “[NTP-H142 Create Protection Groups for ONS 15310-MA SDH](#)” procedure on [page 3-10](#) for the two STM-M ports that will connect to the linear ADM node.

- Step 5** Complete the “[DLP-H52 Provision Section DCC Terminations](#)” task on page 16-68 for the working STM-M port at the new node. Make sure to set the Port State in the Create RS-DCC Termination dialog box to **unlocked**. (Do not create a DCC termination on the protect port.)



Note DCC failure alarms appear after you create DCC terminations in the linear ADM node until you connect the fiber during [Step 13](#).

- Step 6** Complete the “[DLP-H29 Log into CTC](#)” task on page 16-43 at the linear ADM node that will connect to the new node. If you are already logged in, continue with [Step 7](#).
- Step 7** Complete the “[DLP-H163 Check the Network for Alarms and Conditions](#)” task on page 17-56.
- Step 8** Install the STM-M port that will connect to the new node. See “[DLP-H16 Install SFP Connectors](#)” task on page 16-19. If the ports are already installed, continue with [Step 9](#).



Note If the new node is not an ONS 15310-MA SDH, refer to the corresponding user documentation for installation procedures.

- Step 9** Connect the working port at the existing linear ADM node to the working port at the new node. See “[DLP-H18 Install Fiber-Optic Cables in a 1+1 Configuration](#)” task on page 16-21.
- Step 10** Connect the protect port at the existing linear ADM node to the protect port at the new node.
- Step 11** Complete [NTP-H142 Create Protection Groups for ONS 15310-MA SDH](#), page 3-10 for the two STM-M ports that connect to the new node.
- Step 12** Complete the “[NTP-H142 Create Protection Groups for ONS 15310-MA SDH](#)” procedure on page 3-10 for the two STM-M ports that connect to the new node.
- Step 13** Complete the “[DLP-H52 Provision Section DCC Terminations](#)” task on page 16-68 for the working STM-M port that connects to the working port on the new node. Make sure to set the Port State in the Create RS-DCC Termination dialog box to **unlocked**. (Do not create a DCC termination for the protect port.)
- Step 14** From the View menu, choose **Go to Network View**. Verify that the newly created linear ADM configuration is correct. A green span line should appear between each linear node.
- Step 15** Complete the “[DLP-H163 Check the Network for Alarms and Conditions](#)” task on page 17-56 to verify that no unexpected alarms or conditions are present.

Stop. You have completed this procedure.

NTP-H135 Add a Non-ONS 15310-MA Node to a Linear ADM

| | |
|------------------------|---|
| Purpose | This procedure adds an ONS 15600, ONS 15454, or ONS 15310-MA SDH between two nodes in a 1+1 configuration. The ONS 15310-MA SDH has four optical ports and can be added as a middle node. |
| Tools/Equipment | None |

| | |
|--------------------------------|--|
| Prerequisite Procedures | This procedure requires that the node to be added is reachable (has IP connectivity with CTC). If the PC running CTC and the ONS 15310-MA SDH nodes are not at the same location, two technicians who can communicate with each other during the upgrade might be needed. |
| Required/As Needed | As needed |
| Onsite/Remote | Onsite |
| Security Level | Provisioning or higher |

**Note**

Optical transmit and receive levels should be in their acceptable range as shown in the specifications section for each card in [Table 1-2 on page 1-30](#) for the ONS 15310-MA SDH.

**Note**

If overhead circuits exist on the network, an In-Service Topology Upgrade is service affecting. The overhead circuits will drop traffic and have a status of PARTIAL after the upgrade is complete.

- Step 1** Complete the “[DLP-H29 Log into CTC](#)” task on [page 16-43](#) at a node on the point-to-point or linear ADM. If you are already logged in, continue with [Step 2](#).
- Step 2** In network view, right-click the span between the two nodes where you want to add the new node. The Select Upgrade Protection dialog box appears.
- Step 3** Select **Terminal to Linear** from the drop-down list. The first page of the wizard, Upgrade Protection: Terminal to Linear, appears.
- Step 4** The Upgrade Protection: Terminal to Linear page lists the following conditions that must be met before adding a new node:
- The terminal network has no critical or major alarms.
 - The node that you will add has no critical or major alarms.
 - The node has a compatible software version with that of the terminal nodes.
 - The node has four unused optical ports matching the speed of the 1+1 protection group and no communications channel has been provisioned on these four ports.
 - Fiber is available to connect the added node to the terminal nodes.

If all of these conditions are met and you wish to continue with the procedure, click **Next**.

**Note**

If you are attempting to add an unreachable node, you must first log into the unreachable node using a separate CTC session and configure that node.

- Step 5** Enter the node host name or IP address, or choose the name of the new node from the drop-down list. If you type in the name, make sure it is identical to the actual node name. The node name is case sensitive.
- Step 6** Click **Next**. The Select Protection Group Ports page appears.
- Step 7** Select the working and protect ports on the new node that you want to connect to each terminal node from the drop-down lists.
- Step 8** Click **Next**. The Re-fiber the Protected Path dialog box appears.
- Step 9** Follow the instructions in the dialog box for connecting the fibers between the nodes.

Step 10 When the fibers are connected properly, click **Next**. The Update Circuit(s) on *Node-Name* dialog box appears.



Note The Back button is not enabled in the wizard. You can click the **Cancel** button at this point and choose the **Yes** button if you want to cancel the Upgrade Protection procedure. If the procedure fails after you have physically moved the fiber-optic cables, you must restore the fiber-optic cables to the original positions and verify (through CTC) that traffic is on the working path of the nodes before restarting the process. To check traffic status, go to node view and click the **Maintenance > Protection** tabs. In the Protection Groups area, click the 1+1 protection group. You can see the status of the traffic in the Selected Group area.

Step 11 Click **Next** on the Update Circuit(s) on *Node-Name* dialog box.

The Force Traffic to Protect Path dialog box appears. This dialog box states that it is about to force the traffic from the working to protect path for the terminal nodes.

Step 12 When you are ready to proceed, click **Next**.

Step 13 Follow each step as instructed by the wizard as it guides you through the process of refibering the working path between nodes and forcing the traffic back to the working path. The final dialog box informs you when you have completed the procedure.

Step 14 Click **Finish**.

Stop. You have completed this procedure.

NTP-H101 Remove an In-Service Node from a Linear ADM

| | |
|--------------------------------|---|
| Purpose | This procedure removes a single ONS 15600, ONS 15454, pr ONS 15310-MA SDH node from a linear ADM that contains an ONS 15310-MA SDH as an end node(s). |
| Tools/Equipment | None |
| Prerequisite Procedures | NTP-H29 Provision a Linear ADM Network, page 4-6 |
| Required/As Needed | As needed |
| Onsite/Remote | Onsite |
| Security Level | Provisioning or higher |



Note The 1+1 protection group must be unidirectional in order to delete a node from a linear ADM. If your 1+1 protection group is bidirectional, see the [“DLP-H137 Modify a 1+1 Protection Group” task on page 17-41](#) to change it to unidirectional. After you have removed the node from the linear group you can then change the protection setting back to bidirectional.

Step 1 Complete the [“DLP-H29 Log into CTC” task on page 16-43](#) at a node in the network where you will remove the node.

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

- Step 3** Click the **Alarms** tab and click Synchronize.
- Verify that the alarm filter is not on. See the “[DLP-H88 Disable Alarm Filtering](#)” task on [page 16-107](#) as necessary.
 - Verify that no unexplained alarms appear on the network. If unexplained alarms appear, resolve them before continuing. Refer to the *Cisco ONS 15310-MA SDH Troubleshooting Guide* if necessary.
- Step 4** On the Conditions tab, and click Retrieve. Verify that no unexplained conditions appear on the network. If unexplained conditions appear, resolve them before continuing. Refer to the *Cisco ONS 15310-MA SDH Troubleshooting Guide* if necessary.
- Step 5** On the network map, double-click a node in the 1+1 protection group that is adjacent to the node you intend to remove (the target node).
- Step 6** In node view, click the **Maintenance > Protection** tabs.
- Step 7** Initiate a Force switch on the working port:
- In the Protection Groups area, click the 1+1 protection group.
 - In the Selected Group area, click the working port.
 - Next to Switch Commands, click **Force**.
 - In the Confirm Force Operation dialog box, click **Yes**.
 - In the Selected Group area, verify that the following appears:
 - Protect port - Protect/Active [FORCE_SWITCH_TO_PROTECT], [PORT STATE]
 - Working port - Working/Standby [FORCE_SWITCH_TO_PROTECT], [PORT STATE]
- Step 8** Repeat [Step 5](#) through [Step 7](#) for the node that is connected directly to the other side of the target node.
- Step 9** Remove the fiber from the working ports of the target node.
- Step 10** Connect the fiber between the working ports of the two nodes that were directly connected to either side of the target node.
- Step 11** On the node where you initiated a Force switch in [Step 8](#), clear the switch:
- Next to Switch Commands, click **Clear**.
 - In the Confirm Clear Operation dialog box, click **Yes**.
- Step 12** Initiate a Force switch on the protect port:
- In the Selected Group area, click the protect port. Next to Switch Commands, click **Force**.
 - In the Confirm Force Operation dialog box, click **Yes**.
 - In the Selected Group area, verify that the following appears:
 - Protect port - Protect/Standby [FORCE_SWITCH_TO_WORKING], [PORT STATE]
 - Working port - Working/Active [FORCE_SWITCH_TO_WORKING], [PORT STATE]
- Step 13** From the View menu, choose **Go to Network View**.
- Step 14** On the network map, double-click the other node where you initiated a Force switch.
- Step 15** In node view, click the **Maintenance > Protection** tabs.
- Step 16** Clear the Force switch on the working port:
- In the Protection Groups area, click the 1+1 protection group.
 - In the Selected Group area, click the working port.
 - Next to Switch Commands, click **Clear**.

- d. In the Confirm Clear Operation dialog box, click **Yes**.
- Step 17** Complete [Step 12](#) to initiate a Force switch on the protect port.
- Step 18** Remove the fiber from protect ports of the target node.
- Step 19** Connect the fiber between the protect ports of the two nodes on each side of the target node.
- Step 20** Clear the Force switch:
- a. Next to Switch Commands, click **Clear**.
 - b. In the Confirm Clear Operation dialog box, click **Yes**.
 - c. In the Selected Group area, verify the following states:
 - Protect port - Protect/Standby
 - Working port - Working/Active
- Step 21** Repeat [Step 13](#) through [Step 16](#) to clear the switch on the other node.
- Step 22** Exit CTC.
- Step 23** Relaunch CTC at any one of the nodes that were adjacent to the target node. The nodes will now show the circuit status as DISCOVERED when checked.
- Stop. You have completed this procedure.**
-

